PUB. 158

SAILING DIRECTIONS (ENROUTE)

★

JAPAN VOLUME I

★

Prepared and published by the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
Springfield, Virginia

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2022

EIGHTEENTH EDITION

Preface

Pub. 158, Sailing Directions (Enroute) Japan, Volume 1, Eighteenth Edition, 2022, is issued for use in conjunction with Pub.120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia. Companion volumes are Pubs. 154, 155, 157, and 159.

Digital Nautical Charts 12, 23, and 24 provide electronic chart coverage for the area covered by this publication.

This publication has been corrected to 26 March 2022, including Notice to Mariners No. 13 of 2022. Subsequent updates have corrected this publication to 1 July 2023 including Notice to Mariners No. 26 of 2023.

Explanatory Remarks

Sailing Directions are published by the National Geospatial-Intelligence Agency (NGA) under the authority of Department of Defense Directive 5105.60, dated 29 July 2009, and pursuant to the authority contained in U. S. Code Title 10, Chapter 22, Section 451 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 (Enroute) include detailed coastal and port approach information which supplements the largest scale chart produced by the National Geospatial-Intelligence Agency. This publication is divided into geographic areas called "Sectors."

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.

Charts.—Reference to charts made throughout this publication refers to hard copy paper charts and electronic charts.

As the maritime community moves towards electronic navigation, the Maritime Safety Office will begin reducing NGA's Standard Nautical Chart portfolio. Further information can be found in the "What's New" section of the NGA Maritime Safety Information web site (https://msi.nga.mil).

Corrective Information.—Users should refer corrections, additions, and comments to NGA's Maritime Operations Desk, as follows:

NGA Maritime—Contact Information	
Maritime Operations Desk	
Toll free	1-800-362-6289
Commercial	571-557-5455
DSN	547-5455
E-mail	navsafety@nga.mil

NGA Maritime—Contact Information	
Maritime Safety Office	
DNC web site	https://dnc.nga.mil
Maritime Domain web site	https://msi.nga.mil
E-mail	MarHelp@nga.mil
Maritime Quality Feedback System (MQFS)	https://marhelp.nga.mil
Mailing address	Maritime Safety Office National Geospatial-Intelligence Agency Mail Stop N64-SFH 7500 Geoint Drive Springfield VA 22150-7500

New editions of Sailing Directions are corrected through the date of publication shown above. Important information to amend material in the publication is available is updated as needed and available as a downloadable corrected publication from the NGA Maritime Domain web site.

NGA Maritime Safety Office Web Site
https://msi.nga.mil

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.

Wherever possible, names used on NGA charts and in NGA publications are in the form approved by the United States Board on Geographic Names (BGN). Generally, local official

spellings are used for those features entirely within a single sovereignty, names of countries and those features which are common to two or more countries or which lie beyond a single sovereignty may carry Board-approved conventional spellings (i.e., names in common English language usage). When alternate names would be of value to the user, they may be shown for information purposes within parentheses. Important individual name changes are made to all revised charts as the opportunity permits.

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

BGN approved names may be found at https://geonames.nga.mil/geonames/GNSHome/welcome.html.

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 boundary 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.

Telephone and Facsimile Numbers.—Within this publication, the international telephone and facsimile numbers provided as contact information contain the minimum digits necessary to dial. Please note that these contact numbers do not include additional digits or special characters, such as (0) or (+), which may be required when dialing. The necessity of such digits and characters depend upon numerous factors and conditions, such as the user's geolocation and service provider. Mariners are advised to consult their communications equipment and service provider user manuals for guidance.

Time.—Time is normally expressed as local time unless specifically designated as Universal Coordinated Time (UTC).

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 web site given below.

Standard Time Zone of the World Chart
https://www.cia.gov/the-world-factbook/world-regional

U.S. Maritime Advisory System.—The U.S. Maritime Advisory System is a streamlined inter-agency approach to identifying and promulgating maritime security threats. The system replaces Special Warnings to Mariners (State Department), MARAD Advisories (Maritime Administration), and Marine Safety Information Bulletins (U.S. Coast Guard) and consists of the following items:

1. U.S. Maritime Alert—Provides basic information (location, incident, type, date/time) on reported maritime security threats to U.S. maritime industry interests. U.S. Maritime alerts do not contain policy or recommendations for specific courses of information.
2. U.S. Maritime Advisory—Provides more detailed information, when appropriate, through a "whole-of-government" response to an identified maritime threat.

Maritime Administration (MARAD)—U.S. Maritime Advisory System
https://www.maritime.dot.gov/msci-advisories

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 Department Sailing Directions.

Japanese Sailing Directions.

Various port handbooks.

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:

1. Port of Yokohama Home Page
   http://city.yokohama.jp/me/port/index-e.html
2. Bridges of Japan
http://member.nifty.ne.jp/bridges/japane.htm#AA

Date of Change: 1 July 2023	
Notice to Mariners: 26/2023	
Sector	**Paragraphs**
Sector 2	Paragraphs 2.32, 2.34, and 2.44
Sector 3	Paragraph 3.21
Sector 4	Paragraph 4.22
Sector 5	Paragraphs 5.17, 5.29,and 5.31
Sector 6	Paragraphs 6.12, 6.27, 6.30, and 6.35
Sector 7	Paragraphs 7.4. 7.26, 7.28, 7.31, and 7.53
Sector 8	Paragraphs 8.10, 8.24, 8.68, and 8.90

Date of Change: 30 July 2022	
Notice to Mariners: 31/2022	
Sector	**Paragraphs**
Sector 1	Paragraph 1.9
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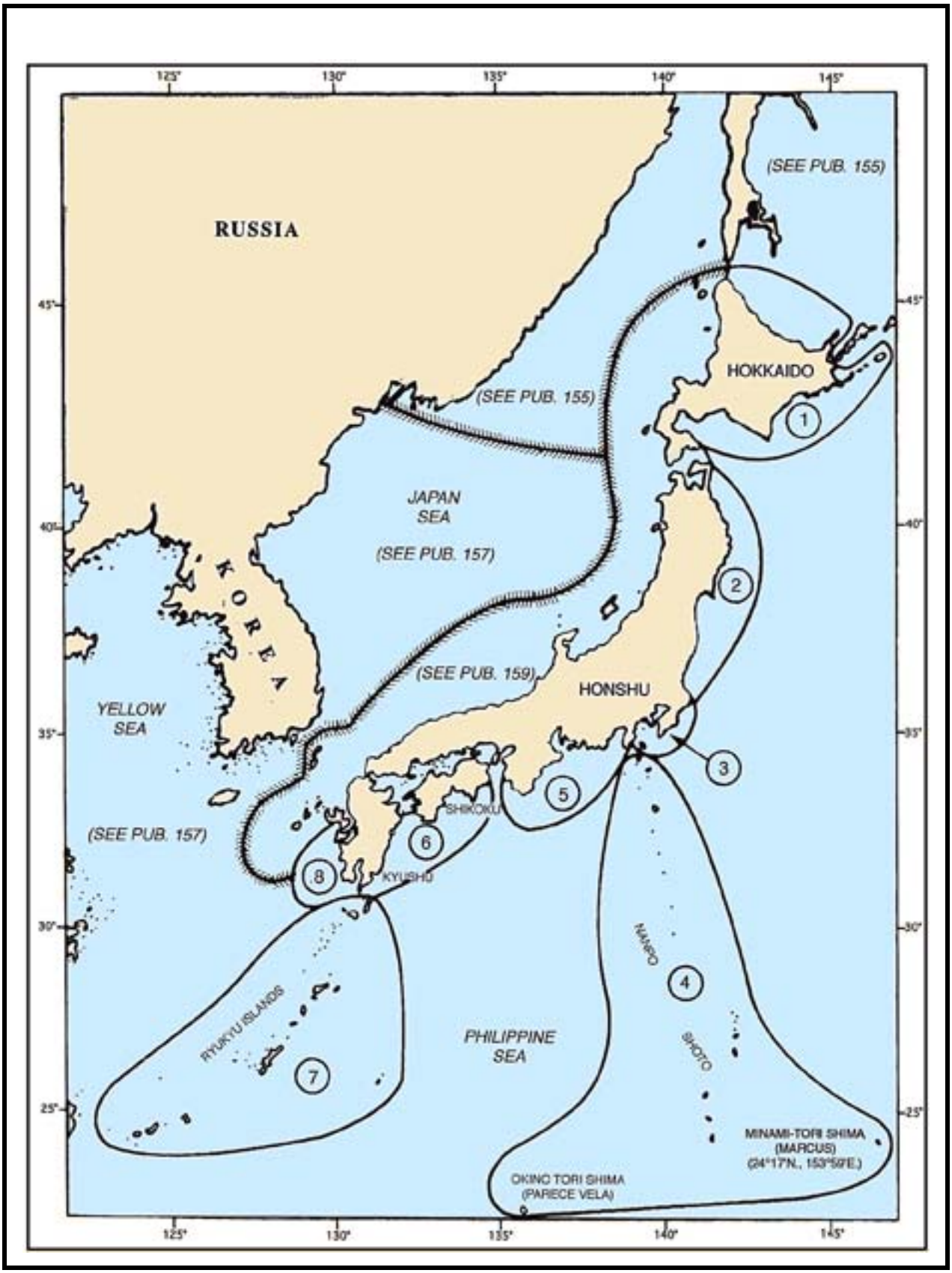
Sector 3	Paragraph 3.12
Sector 5	Paragraphs 5.20 and 5.31
Sector 6	Paragraph 6.27
Sector 7	Paragraph 7.26
Sector 8	Paragraph 8.10



SECTOR LIMITS—**PUB. 158**

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)
gt	gross tons	nt	net 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	VLOC	Very Large Ore Carrier
Lo-lo	Lift-on Lift-off	FSO	Floating Storage and Offloading
NGL	Natural Gas Liquids	FSU	Floating Storage Unit
FSRU	Floating Storage and Regasification Unit	FPSO	Floating Production Storage and Offloading

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	TFW	Tropical Fresh Water
HWS	high water springs	HAT	highest astronomical tide
LWN	low water neaps	LAT	lowest astronomical tide

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

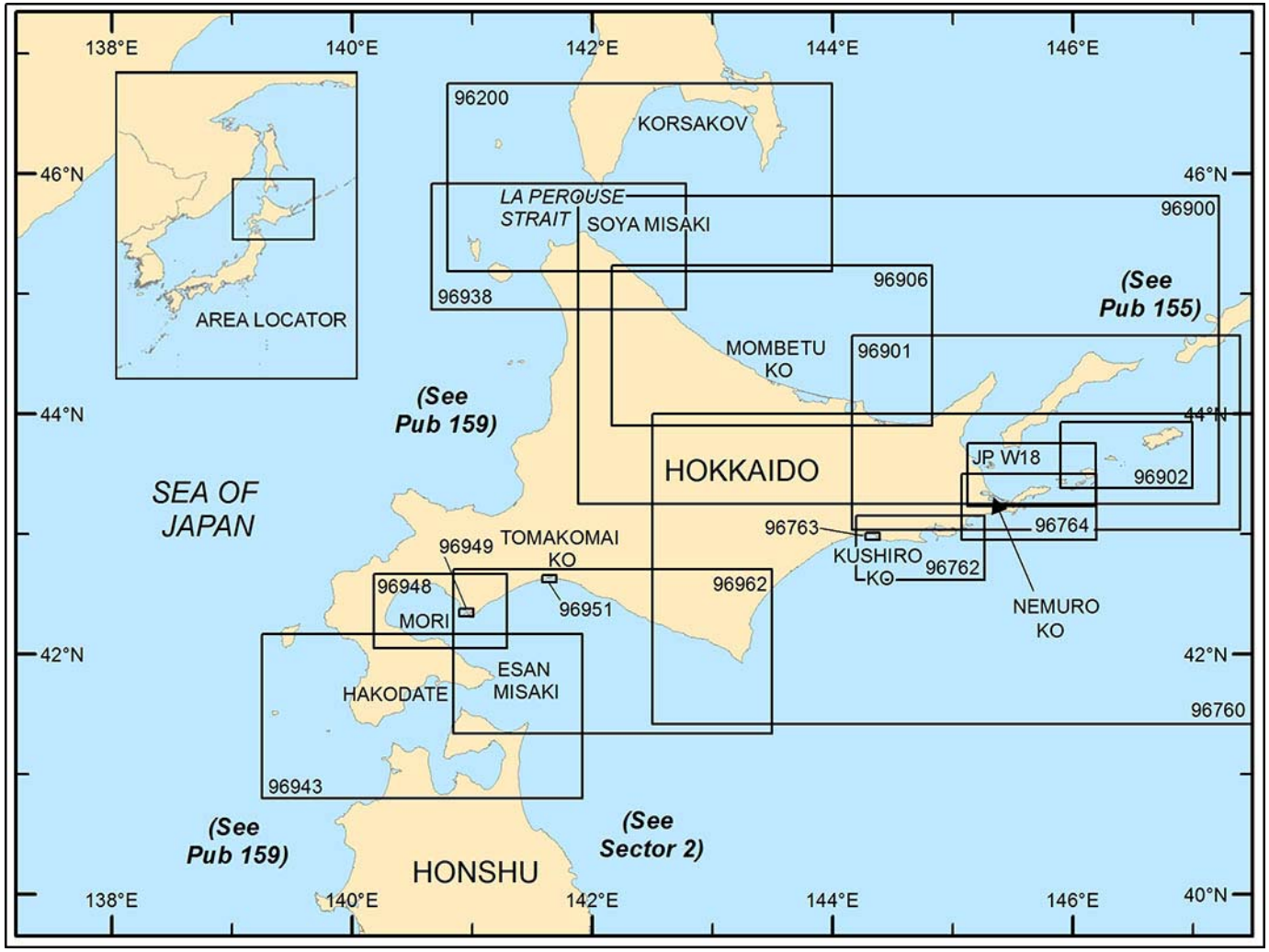
LANBY	Large Automatic Navigation Buoy	SBM	Single Buoy Mooring
NAVSAT	Navigation Satellite	SPM	Single Point Mooring
ODAS	Ocean Data Acquisition System	TSS	Traffic Separation Scheme
CBM	Conventional Buoy Mooring System	VTC	Vessel Traffic Center
MBM	Multi-Buoy Mooring System	VTS	Vessel Traffic Service
CALM	Catenary Anchor Leg Mooring		

The following abbreviations may be used in the text:

Miscellaneous

AIS	Automatic Identification System	MMSI	Maritime Mobile Service Identity Code
COLREGS	Collision Regulations	No./Nos.	Number/Numbers
IALA	International Association of Lighthouse Authorities	PA	Position approximate
		PD	Position doubtful
IHO	International Hydrographic Organization	Pub.	Publication
IMO	International Maritime Organization	SOLAS	International Convention for Safety of Life at Sea
IMDG	International Maritime Dangerous Goods Code		
LOA	length overall	St./Ste.	Saint/Sainte
UKC	Under keel clearance	ISPS	International Ship and Port facility Security
ITC	International Convention on the Tonnage Measurement of Ships (1969)	ECDIS	Electronic Chart Display and Information System

Contents



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR 1 — CHART INFORMATION

SECTOR 1

HOKKAIDO—NORTH, EAST, AND SOUTH COASTS

Plan.—The coasts of Hokkaido are described in the following sequence: N coast., E coast., and S coast. The W coast of Hokkaido is described in Pub. 159, Sailing Directions (Enroute) Japan, Volume II.

The N coast of Hokkaido extends from Soya Misaki ESE to Shiretoko Misaki and includes the S shore of La Perouse Strait (Soya Kaikyo). The N shore of La Perouse is described in Pub. 155, Sailing Directions (Enroute) East Coast of Russia.

The E coast extends from Shiretoko Misaki, S to Nosappu Saki, the E extremity of Hokkaido. Suisho Shoto, a chain of small islands, extends NE from Nosappu Saki and is described with the E coast.

The S coast extends from Nosappu Saki, WSW to Esan Misaki. Off-lying islands are described with their adjacent coasts. The S coast of Hokkaido forms the N shore of Tsugaru Kaikyo, but a great part of this coast fronts on the Pacific Ocean.

Caution.—Due to the earthquakes that occurred on 11 March 2011, offshore of the Tohoku region in Japan, and the resultant tsunami, variation of the coastline and seafloor must be considered and caution exercised. Wrecks and obstructions may be displaced from previously charted positions and new obstructions experienced along the E coast of Hokkaido and in the harbors. Breakwaters may be altered in position and length and many aids to navigation destroyed. The charts of these areas have been significantly affected and will be updated as surveys and time allow.

General Remarks

1.1 Hokkaido, the farthest N of the main islands of Japan, has an area of 34,000 square miles. Hokkaido is mountainous and rises to a height of 2,290m near its center.

On the N, Hokkaido is separated from Sakhalin by La Perouse Strait; on the S, Tsugaru Kaikyo separates the island from Honshu. The Kuril Islands, which extend NE from the E coast of Hokkaido to Kamchatka, are described in Pub. 155, Sailing Directions (Enroute) East Coast of Russia.

The principal ports described in this sector are Abashiri, Mombetsu, Muroran, Tomakomai, Tokachi, and Kushiro. There are no harbors with port facilities on the islands E of Hokkaido.

The Japanese Coast Guard has instituted the Japanese Ship Reporting System (JASREP), effective October 1, 1985. The purpose and participation in this system is similar in intent and format to the AMVER system. Any vessel desiring to participate in both JASREP and AMVER may do so by sending notice of dual participation to the appropriate coastal station. The service area of the JASREP system is the area N of 17°N and W of 165°E. For further information, see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Winds—Weather.—Hokkaido is located near the N boundary of the temperate zone and has a cold and humid climate with seasonal characteristics.

In winter, the region is dominated by the cold Northwest Monsoon which prevails from November to February and is responsible for the many days with strong winds and severe cold. Winter precipitation is mainly snow, which blankets Hokkaido and the islands to the E, from January through February.

In spring, the Continental High weakens and violently shifting pressure patterns cause periodic weather. In March, the Northwest Monsoon gradually becomes intermittent, and low humidity anticyclones frequently pass through until May. The spring pressure often has a low in the N with resulting strong S winds. At times, a stationary high pressure system covers Hokkaido, bringing a succession of clear days with extremely dry air. In the spring, air temperatures gradually rise, and snow accumulations completely disappear by May. From March through June the season is relatively dry.

In summer, the Pacific High dominates the area and Hokkaido then comes under the influence of the warm Southeast Monsoon winds. On occasion in June, a high pressure system may cover the Okhotsk Sea producing a relatively mild, but cold and humid wind that brings temperatures down and periods of damp weather; when this high deteriorates the Southeast Monsoon revives. These monsoon winds are relatively weak and land and sea breezes predominate. In this period, humidity reaches maximum levels, sea fogs are prevalent, and heavy rains are frequent. Visibility is poor along the Pacific coasts from April through August during the frequent sea fogs. The summer rainy season extends from the beginning to the middle of July, however, in places the rainfall is greatest during September. July and August are the hottest months, but there are few days of extreme heat. The heavy rain season occurs from July through October.

In autumn, the Continental High begins to build up even while the Pacific High is dominant. Like spring, this too is a season of violent pressure pattern changes. There is relatively little danger from typhoons, although precautions must be taken when a typhoon approaches directly from the Sea of Japan or reaches Hokkaido, when there is a stationary front in the vicinity. Migratory anti-cyclones pass through, most frequently in October, giving that month the greatest number of clear days. The temperature drop in the fall is sharp and some localities record their first snowfall in October.

At Wakkanai, winds between the S and SE are common in spring and summer, and between the NW and NE in autumn and winter. Gales are frequent in winter and strong, local SW winds sometimes occur in summer.

Esashi has strong SW winds that in spring and autumn raise clouds of fine sand that interrupt communications with shore.

At Abashiri, NW winds are prevalent from January to March, SW in April and from September to December, and SE from May to August. North sea breezes blow on summer afternoons. The average wind speed is 7 knots from November to January and 4 knots in July and August. The record high velocity is 51 knots from NNW in December.

With local variations, W to N winds are prevalent during the colder season along most of the coast from Nemuro to Esan Misaki but at Esan Misaki. they begin earlier in the autumn and last until later in the spring. In the vicinity of Muroran Ko, strong NW winds, which raise a sea, are frequent from mid-September until late March.

In summer, there is a greater frequency of S to E winds, with the highest development of S to SE directions at Nemuro. In early winter, the mean velocity, 11 knots, is the same at both of these extreme points. In summer, the lowest means are 6 knots in July at Esan Misaki and 7 knots in August at Nemuro. Esan Misaki has a maximum velocity of 47 knots, NNW in January, and Nemuro of 60 knots, NW, in February. In Nemuro Strait, W to NW winds are most frequent from September to April, often rising to gale force accompanied by snow from November to March. In May and June, squally SE winds are common, but in July and August light S winds and calms may be expected.

At Akkeshi, SE winds are most frequent in summer, N winds in autumn, and E winds in winter, while at nearby Hamanaka the summer winds are SW and those of winter are NW.

In wind speed, Kushiro has a low mean range from 8 knots in November to January, and 6 knots in July to September. The record high is 48 knots, NNE, in March. Urakawa has a high mean speed of 13 knots in December and a low mean of 5 knots in July. Its record high is 54 knots, W, in December.

The mean number of days with fog is highest, 100 days or more, along the E portion of the Pacific Ocean coast and the islands to the E. The means for other coastal regions are 20 to 60 days for the W portion of the Pacific Ocean, and 23 to 30 days for the Okhotsk Sea coast. These figures vary mainly according to the number of sea fog occurrences during the Southeast Monsoon season.

The sea fogs appear between April and October and blanket the E portion of the Pacific Ocean coast and the islands to the E with great frequency, so that from May through August there are over 10 days of fog each month; in July there may be as many as 20 days. Sea fogs that develop over the entire area tend to be extremely thick, although not uniformly so. They usually roll in to the coastal areas in the evening or early morning, but may on occasion persist for several successive days. In the W portion of the Pacific Ocean coast there may be more than 15 days with fog in July, and sieges of dense long-lasting fogs are not infrequent.

From April through June, sea fogs originating in the Okhotsk Sea and borne by NE winds may cover the Okhotsk Sea coast and the E portion of the Pacific Ocean coast. These are less dense than the Pacific Ocean variety and tend to dissipate during the day. They are extremely cold and wet fogs, so that even after the mist has dissipated the weather often remains dank.

The precipitation calendar in Hokkaido may be divided into the Northwest Monsoon precipitation period from November through February, the relatively dry season from March through June, and the heavy rain season from July through October.

The annual rainfall in Hokkaido is relatively light when compared with Honshu. Regionally, the W portion of the Pacific Ocean and the Okhotsk Sea coasts collect about 1,000mm of rainfall per year and less than 800mm in places.

Along the E portion of the Pacific Ocean coast, winter is a relatively dry season, and the monthly average precipitation is generally below 550mm. The months of April and May are the dry months along the Okhotsk Sea coast. The mean monthly precipitation in this period is from 38 to 76mm.

In July and August, all areas register from 106 to 165mm precipitation per month, with the higher measures recorded along the W portion of the Pacific Ocean coast.

September marks the beginning of the fall rainy season, when all areas receive the highest amount of rainfall for the entire year. Average monthly totals approximate 150mm, while over 200mm is recorded along the W portion of the Pacific Ocean coast, and some spots may receive as much as 260mm during the month of September.

Snow comes to all areas between late October and early November, but the real snow season is from late November to late March, when the Northwest Monsoon predominates. Precipitation during this period is almost exclusively snow; there may occasionally be some hail or sleet, but rarely any rain. Thus, the amount of snowfall and the amount of precipitation are the same. Snowfall is heaviest along the W portion of the Pacific Ocean coast and the Okhotsk Sea coast, and the E portion of the Pacific Ocean coast coming last. During the snow season, snow falls on the average 20 days per month along the W Pacific Ocean and the Okhotsk Sea coasts, and 15 days per month along the E portion of the Pacific Ocean coast.

Ice.—Ice fields are generally formed throughout the area N of Hokkaido and E of La Perouse Strait; they are most prevalent from January to early April. The use of icebreakers has been frequently reported in this area. The worst conditions apparently occur during late March and the first part of April, when the counterclockwise ocean current in the Okhotsk Sea and the N winds drive the ice down from the N, across the E entrance to La Perouse Strait.

The N and E coasts of Hokkaido are generally hemmed with fast ice and drift ice may be found off them. Fast ice may also fill the shores along the SE coast, but W of Erimo Misaki it is usually limited to thin ice forming in shallow areas along the inner shores of the bays. The drift ice brought to the SE side of the island by the Oyashio Current, also decreases in the region W of Erimo Misaki.

Tides—Currents.—In general the tides and currents on the N, E, and S coasts of Hokkaido are discussed with the coastal descriptions. Weather factors peculiar to certain bays frequently reduce actual water depths to considerably shallower depths than those indicated on navigation charts.

Information concerning the prediction of ocean currents in Japanese waters is announced weekly by radio facsimile as “Ocean Currents Forecast Charts.” The service can also be received by telephone facsimile from the Japan Pilot Association.

The ocean current that flows into Hokkaido waters is the warm Tsushima Kairyu that flows in a N direction off the W coasts of Honshu and Hokkaido; branches of this current set E through Tsugaru Kaikyo and La Perouse Strait, and are known as the Tsugaru Danryu and the Soya Danryu. The warm currents are generally stronger in the summer and the cold currents are more vigorous in winter.

On the N side of Hokkaido the branch of Tsushima Kairyu flowing E from La Perouse Strait sets along the coast to the area N of Shiretoko Misaki, where one part turns toward the Ok-

hotsk Sea region to the NE, and the other turns S into Kunashiro Suido and Numero Strait.

The Higashi Karafuto Kairyu, which flows S along the E coast of Sakhalin, is the most prominent segment of a current revolving in a counterclockwise direction inside the Okhotsk Sea. In winter, its drift is approximately 0.5 knot, and it reaches the waters off the N coast of Hokkaido. In spring and fall it has very little strength.

The summer months are the times of greater strength of the ocean currents off the N coast of Hokkaido. The drift of the current is about 1.5 knots in the spring and fall. In the summer, the drift may increase to 3 knots, but is virtually stagnant in winter.

In summer, the cold Oyashio sets S from the E side of the Kuril Islands and turns W off the SE coast of Hokkaido, reaching the area off Erimo Misaki. It then combines with the south-setting Isugaru Danryu, and the resultant flow is S. The velocity is generally less than 1 knot, but it may exceed 1 knot when very close to the coast. The area and velocity of the Oyashio are reported to be somewhat greater in the winter and spring than in summer.

A SW ocean current, with a velocity of 1.75 knots, is charted about 5 miles E and S of Erimo Saki.

Observations made on the W side of Erimo Saki indicate that in summer, at a distance about 3 miles off there is a SE ocean current in the area, about 25 miles long, between the cape and Urakawa Ko. This set, with a velocity of about 1.3 to 2 knots, becomes S in the vicinity of the cape. Local reports are that on rare occasions this current may reverse its direction.

That branch of the Tsushima Kairyu which flows E through Tsugaru Kaikyo, after clearing the strait, may set immediately S or may curve S after it arrives at a point some 40 miles SW of Erimo Saki. The former course is generally followed in winter; the latter is generally followed in summer. Current velocities range from 1 to 3 knots and are higher in winter than in summer.

Caution.—Fish havens, which may be on the sea bed, at intermediate mid-layer depths, or floating on the surface, are numerous in Japanese waters and are continually being augmented. Fish havens on the sea bed are usually composed of concrete block, scrap metal, discarded vehicles, or sunken hulks. Floating or mid-layer havens are often of a temporary nature. Concentrations of fishing vessels can be expected in their vicinity. Caution should be exercised as the placement of fish havens may well precede their inclusion in the Notice to Mariners.

Hokkaido—North Coast

1.2 The N coast of Hokkaido fronts the Okhotsk Sea and extends from Soya Misaki, SE for 160 miles to Shiretoko Misaki.

From Soya Misaki to Notoro Misaki, the coast has a smooth regular shoreline. The only major projection is Notoro Misaki, the W entrance to Abashiri Wan. The only significant bay is Abashiri Wan, located between Notoro Misaki and Shiretoko Misaki.

There are virtually no detached islands or reefs along this coast and the offshore water depths are regular, with the exception of two large offshore banks which lie N of Notoro Misaki.

1.3 La Perouse Strait (Soya Kaikyo) (45°40'N., 142°00'E.) is a short, important passage which separates Hokkaido from Sakhalin and links the Japan Sea with the Okhotsk Sea. This strait is 30 to 70m deep, and 23 miles wide, with a single lighted offshore danger charted 20 miles NNE of Soya Misaki.

Soya Misaki (45°31'N., 141°57'E.), a grass-covered cape 53m high, is the N extremity of Hokkaido; it rises about 2 miles inland to Maru Yama, a rounded hill with a height of 168m. A light is shown from Soya Misaki. Maru Yama can sometimes be seen when the cape itself is obscured by fog. The cape is fringed with rocky ledges and the bottom in the vicinity is uneven; there are no dangers seaward of the 20m line, which lies up to 2 miles offshore.

Caution.—Due to the dangers in the vicinity of Soya Misaki, and of the tidal currents in La Perouse Strait, Soya Misaki should at all times be passed at a distance of at least 5 miles.

1.4 From Soya Misaki, the coast trends in a SSE direction 36 miles to Kamui Misaki. The coast is almost a straight stretch of sandy beach, with a thick growth of bamboo grass behind it. The hills, covered with a dense forest of fir, recede inland, leaving lakes and swamps near the coast.

The 20m line lies from 1 to 3 miles offshore along this coast. Detached rocks and reefs are numerous. Todo Shima, two rocks, lie close offshore, 13 miles SSE of Soya Misaki. Hama-Onisibetu is a fishing village on the coast 0.9 mile SW of Todo Shima. A light is shown from a tower in Hama-Onisibetu, with an auxiliary light that illuminates Todo Shima.

Chiraibetsu is a small fishing port situated 3.5 miles WNW of Todo Shima. Sarufutsu, a village situated on the coast 6 miles SSE of Todo Shima, affords exposed anchorage to vessels loading lumber during the summer.

Hama-Tonbetu is a small fishing port at the mouth of Tombetsu Kawa, situated 6 miles NW of Kamui Misaki. In summer, vessels load lumber in the open roads off the town.

Kamui Misaki (45°04'N., 142°30'E.), a rocky headland, is the most prominent landmark on the N coast. It rises steeply from the sea in two pointed summits; the E peak is 137m high and the W peak is 162m. A light shown from a cylindrical concrete structure, 18m high, situated on the headland.

Otoineppu is located 32 miles SSE of Kamui Misaki. The coastline is cliffy where the foothills of the highlands press against the seashore. There are rocky headlands between the low shore cliffs. Between Otoineppu and Mombetsu Ko, 25 miles farther SSE, the coast is mainly sand beach, with growths of bamboo grass and dwarf oaks; there are only a few small headlands along this entire stretch of coast.

Poronupuri Dake (Poronupuri Yama) (44°58'N., 142°24'E.) is a twin-peaked mountain, 839m high, that rises 7.25 miles SSW of Kamui Misaki. The mountain, which is quite conspicuous, is not visible from N; it is the last mountain in the area to lose snow in the spring. Hako Dake, 1,129m high, is the highest peak in the N section of the interior highlands. The mountain, which has a conspicuous white precipice on its N side, rises 18 miles S of Poronupuri Dake.

Along this stretch of coast dangerous reefs extend about 1 mile offshore. The reefs may be avoided by staying in depths of 20m or more.

1.5 Esashi Ko (Esasi Ko) (44°56'N., 142°35'E.), situated on the coast 8 miles SSE of Kamui Misaki, is a base port for the Okhotsk Sea fishery, and in September and October, during the mackerel-pike season, the port is crowded with fishing craft.

Aspect.—The following navigational marks may be of use when approaching Esashi Ko:

1. Three temples with green roofs, 0.35 mile SW of Esashi Misaki.
2. A radio tower, with an elevation of 25m, 183m WSW of Esashi Misaki.
3. Lights on the SE detached breakwater.

Anchorage.—Anchorage may be found, in 11m, mud, with the light on the E mole of the boat harbor bearing 322°, about 0.5 mile distant. This position is sheltered from all winds except from the W.

Omu Ko, a small fishing harbor 26 miles SSE of Esashi Ko, has a boat harbor opening to the SE. When the winds are offshore, temporary anchorage may be found in the area E of the boat harbor, in a depth of 10m, with the N breakwater light bearing 260°, 0.55 mile distant.

Caution.—A dangerous wind, known locally as the hikata, occurs in the vicinity of Omu Ko. This dry, strong, WSW wind, which comes up suddenly during clear weather, reaches forces of 35 knots and more. These storms are most frequent from March to May and are known to appear on occasion in the summer and autumn. Normal duration is about 6 hours, but the hikata have been known to blow continuously for 2 days. Storm effects are felt up to 12 miles offshore, and from 10 miles N of Omu Ko to Saruru, about 14 miles S.

1.6 Monbetsu Ko (Monbetu Ko) (44°21'N., 143°21'E.) (World Port Index No. 61110), is a fishing port, which is the second largest port on the Hokkaido N coast is situated 22 miles SSE of Omu Ko. There is an inner basin and an outer harbor protected by breakwaters.

The harbor is vulnerable to penetration by waves and swells when strong N and SE winds are blowing, and in rough weather it is dangerous to moor or anchor anywhere except in the inner port or boat harbor.

Depths—Limitations.—The approach channel to Wharf 1 is 12m, the approach channel to Wharf 2 is 7.5m. The depths alongside the wharves range from 4 to 12m. Vessels of up to 28,000dwt and 6.7m draft have been accommodated. The harbor tends to silt up, so deep-draft vessels need to be alert for changed depths.

Aspect.—The courthouse, a red brick building, is situated about 0.7 mile WNW of the North Breakwater light. Three radio masts stand 0.6 mile SW of the North Breakwater light. A temple, with a conspicuous red triangular roof, is situated 130m S of the three radio masts.

Pilotage.—Pilotage is not compulsory; however, pilots are available with ample advance notice from Kushiro.

Regulations.—Vessels should send an ETA upon departure and 10 days, 4 days, 2 days, and 24 hours prior to arrival.

Anchorage.—Inside the breakwaters, the bottom is soft mud, poor holding ground. Outside the breakwater, anchorage may be taken, in 12m, sand, with the North Breakwater Light bearing 256°, distant 0.3 mile. Anchorages outside the breakwaters have good holding ground, but are unsuitable shelters in strong NW winds.

Caution.—Onne Se, with a least depth of 2.7m, lies at the outer end of an extensive reef ridge that extends 0.6 mile ENE from Benten Misaki, just N of Mombetsu Ko. A totally submerged sunken vessel lies about 0.3 mile NNE of the North Breakwater Light. There is an obstruction, comprised of concrete blocks, 0.2 mile E of the North Breakwater Light.

1.7 The coastline from Mombetsu Ko to **Notoro Misaki** (44°07'N., 144°15'E.) is 41 miles long. The W entrance point of Abashiri Wan, trends in a general ESE direction. The straight sandy coast is backed by a series of narrow hills about 10m high. In this stretch are the mouths of two streams and two lagoons, Saroma Ko and Notoro Ko. The sand dunes between Saroma Ko and the sea are thickly wooded with small trees. There are swamps and low-lying marshes, or wasteland, behind the sand beach on the W side of the lagoon. Further inland the terrain gradually rises toward the highlands of the interior.

The principal landmarks along this coast are, as follows:

1. Fumi Yama, 437m high, with a ridge resembling a horse's mane, located 12.5 miles SSE of Mombetsu Ko and a summit appearing when viewed from the E, but sharp when viewed from the N.
2. Naka Yama, a mountain 360m high, with a conical shape, rising 5 miles ESE of Fumi Yama.
3. Horoiwa Yama, with a flat wooded top and the most conspicuous landmark in the area, rising to a height of 376m close S of the S shore of Saroma Ko.
4. Iwakeshu Yama, a mountain 425m high, located 6.8 miles SE of Horoiwa Yama, and conspicuous from all sides.
5. Bushi Yama, 481m high, the highest peak in the vicinity and conspicuous when viewed from N and NE.

Along this stretch of coast the 10m curve lies, generally, between 0.5 and 1 mile offshore. There are no sunken dangers of less than 10m beyond 1 mile offshore.

Kitami-Yamatotai, a large elongated bank, lies off the coast near Notoro Misaki; it extends 42 miles N from a position 14 miles N of Notoro Misaki and has a least depth of 12.3m. The bank is about 3 to 6 miles wide from E to W.

Caution.—Between July and December, there are numerous fish traps within 1.5 miles of shore along this part of the coast.

Scallop beds, marked by red flags and red lights, may be encountered up to 5 miles off this coast.

1.8 Shimo Yubetsu (44°14'N., 143°37'E.), located on the coast 14 miles SE of Mombetsu Ko, provides open anchorage, either in a depth of about 12m, sand, 0.5 mile off the river mouth, or, in a depth of 15m, with a prominent watch tower in the town bearing 227°, distant about 1.3 miles.

Saroma Ko, the largest lagoon in Hokkaido, entrance is located 7.5 miles SE of Shimo Yubetsu. The entrance was originally dredged to a width of 100m and a depth of 5m, but in recent years it has silted up and become shallow. This entrance is marked by a light on the W side. Another light is displayed about 2 miles W.

Notoro Misaki, the W entrance point of Abshiri Wan, is a prominent headland marked by reddish cliffs, 42m high, located 21 miles ESE of the entrance to Saroma Ko. A seasonal light, is shown from an octagonal concrete tower, 21m high, situated on the point.

From Notoro Misaki to Shiretoko Misaki (Siretoko Misaki), 49 miles ENE, the shoreline recedes to form Abashiri Wan (Abasiri Wan), a large deep bay.

From Notoro Misaki to Abashiri Ko (Abasiri Ko), 6 miles S, the coast consists largely of steep cliffs, which are backed by a hilly terrain 200m high. The 23-mile stretch E of Abashiri Ko consists of sandy beaches backed by sand dunes. The shore is backed by a thickly-wooded plain lying at the foot of a volcano. From this position NE to Shiretoko Misaki, the almost straight shoreline consists of steep cliffs with a few sand and gravel beaches. The coastal terrain is high, rising abruptly to elevations of 300m or more and merging with the higher land in the interior.

The S shore of Abashiri Wan is backed by some conspicuous peaks and Shiretoko Hanto, which forms the E side of the bay, also rises to conspicuous peaks.

Mokoto Yama (43°42'N., 144°20'E.), 1,005m high, rises 24 miles S of Notoro Misaki; it is a conspicuous cone-shaped mountain. Shari Dake (Syari Take), 17 miles ENE of Mokoto Yama, is a dark steep-sided peak standing apart from other mountains to the NE, that rises to a height of 1,545m. Unabetsu Dake, 1,419m high, is located 9 miles NE of Shari Dake, and Onnebetsu Dake rises to a height of 1,339m 9 miles farther NE.

Io Zan (44°08'N., 145°11'E.), on the peninsula E of Abashiri Wan, is a bare yellowish-colored mountain, with four peaks that rise to a height of 1,563m; the W peak is the highest of the four. Shiretoko Dake, 1,254m high, rises 7.5 miles NE of Io Zan.

Abashiri Ko (44°01'N., 144°17'E.)

World Port Index No. 61120

1.9 Abashiri Ko (Abasiri Ko), is a regulated port and a designated port of entry and local port. This is the largest port on the N coast and serves as the base for the Okhotsk Sea fishing fleet. There is heavy fishing boat traffic from September to November, which is the mackerel-pike season.

Winds—Weather.—The weather at this port is generally calm between May and October, but in strong E and S winds, swells may enter the Inner Port. Between November and the time the harbor freezes in December, the Northwest Monsoon winds frequently bring swells that spill over the breakwaters and make it impossible for vessels to remain at their berths. The port averages about 27 days of fog each year, with about 6 days each in June, July, and August. Fog is rare during October, November, December, and January.

Ice.—Shore ice begins to form in Abashiri Wan in late December and by early January, the entire coast is frozen up. Pack ice begins to appear in late December, and from early January until late March, all seagoing traffic in this region comes to a standstill.

The pack ice appears in different forms. Initially it consists of drifting floes made up of rubble ice, but by late January, tightly packed ice fields cover vast areas of the sea.

Numerous ice hillocks, some which rise as much as 1.5m above the surface, form on these ice fields.

Tides—Currents.—There is a large diurnal inequality at Abashiri Ko. Off the harbor the tidal current sets NW with the rising tide and SE on the falling tide. There is normally almost no wave activity inside the estuary, but about four or five times a year during the autumn and winter, swells spilling into the harbor cause a reverse flow in the river, making it difficult for vessels moored there to get underway.

The mean spring range averages 0.5m and the mean neap range is about 0.4m.

Depths—Limitations.—Abashiri Ko has a harbor protected by breakwaters, is situated at the mouth of the Abashiri Gawa, 5.5 miles SSE of Notoro Misaki. The port within the breakwaters is known as the Inner Harbor; the area outside the breakwaters is known as the Outer Harbor. Detached breakwaters extend from both the N and S breakwaters and lead into the Inner Harbor. Close S of the detached breakwater extending from the S breakwater is another detached breakwater protecting another small harbor enclosing No. 4 Wharf and No. 5 Wharf. No. 3 Wharf is located close S of the main S breakwater while No. 1 Wharf and No. 2 Wharf are located within the Inner Harbor along with many other berths.

A quay on the S shore of the Abashiri Gawa has depths as deep as 3.5m alongside, but the depths in the river are subject to frequent silting. Berth Lights are shown from the seaward ends of the N and S detached breakwaters, as well as from the N end of the other detached breakwater.

There is a large reef ridge, covering an area 100m wide and with a minimum depth of 6.4m, lying between a point 0.2 mile E and 0.2 mile SSW of the East Breakwater Light. Another reef, located 0.2 mile E of the North Breakwater Light, has a depth of 8m. There are also shallows inside the North Breakwater; a reef, with a depth of 3.4m, lies 50m WSW of the North Breakwater Light. For further information see the table titled **Abashiri—Berth Information**,

Abashiri—Berth Information

Berth	Length	Depth	Vessel Size
Wharf No. 1			
No. 1 Quay	202m	5.5m	2,000 dwt
Dolphin Berth	12m	8.0m	7,500 dwt
Wharf No. 2			
No. 1 Quay	100m	5.5m	2,000 dwt
No. 2 Quay	130m	7.5m	5,000 dwt
Wharf No. 3			
No. 1 Quay	260m	5.5m	5,000 dwt
No. 2 Quay	180m	7.5m	5,000 dwt
Wharf No. 4			
No. 1 Quay	185m	10.0-11.0m	15,000 dwt
No. 2 Quay	240m	12.0m	30,000 dwt
Wharf No. 5			
No. 1 Quay	202m	5.5m	—
South Breakwater			
Dolphin	12m	8.0m	5,000 dwt

Aspect.—The courthouse on the hill above the reddish-brown cliff, 0.4 mile SW of the East Breakwater Light provides a good mark. Bairagi Saki (Futatsu Iwa), 1.3 miles NW of Abashiri, is a cliffy headland 44m high; a yellowish cylindrical rock, 46m high, located nearby, is conspicuous when viewed from the NE. Boshi Iwa (Watara Iwa), 23m high, a remarkable square rock, lies on a reef on the N side of the harbor; it is sometimes obscured by the terrain behind it.

Pilotage.—Pilotage is not compulsory, but is recommended. Pilots are available only during daylight hours. Pilots board in position 39°47'27"N, 139°58'18"E.

Regulations.—Vessels should send an ETA upon departure from their previous port 10 days, 4 days, 2 days, and 24 hours prior to arrival.

The load line zone for the North Pacific Winter seasonal zone is from 16 October to 15 April of the following year. The load line zone for the North Pacific Summer seasonal zone is from 16 April to 15 October.

Contact Information.—See the table titled **Abashiri—Contact Information**.

Abashiri—Contact Information	
Pilots	
Telephone	81-154-526-352
Facsimile	81-154-526-358
Port Authority	
Telephone	81-152-446-111
Facsimile	81-152-436-151
E-mail	kowan-kuko@pref.akita.lg.jp

Anchorage.—A quarantine anchorage area, with a radius of 300m, is centered on position 41°07'46"N, 144°17'55"E.

Additional anchorage may be obtained approximately 750m E of the N breakwater, in 15m, sand.

1.10 **Shari Hakuchi** (43°55'N., 144°40'E.) is a fishing port situated in the Shari Gawa estuary, 18 miles ESE of Abashiri Ko. Except for two training walls, one on each side of the river, there are no port facilities. The constantly shifting sand bar across the mouth of the estuary makes access to the port difficult even for small craft.

From Shari Hakuchi the coast trends in a NE direction, 17 miles to Utoro. Utoro is a small artificial fishing harbor enclosed by breakwaters. There are depths of 4m alongside the quay on its S shore.

Shiretoko Misaki (44°21'N., 145°20'E.), the NE extremity of Hokkaido, is also the NE entrance to Abashiri Wan. The cape is faced with a cliff, 19m high, and is ringed by sunken and above-water rocks, up to 0.5 mile offshore; a light is shown. Shiretoko Iwa is an isolated conspicuous rock, 6m high, located 183m N of the point. An extensive bank, with a least depth of 16m, extends from 2.5 to 10 miles NE of the cape; elsewhere in the vicinity, the 200m line lies up to 2 miles offshore.

An ocean current sets NNE over the bank NE of Shiretoko Misaki at rates up to 4.8 knots. Tide rips occur in the vicinity of the bank.

Hokkaido—East Coast

1.11 The E coast of Hokkaido extends from Shiretoko Misaki to Nosappu Saki, about 62 miles SSE. The N section of this coast is the E side of the Shiretoko Hanto and is relatively unindented. The terrain in the middle and S sections of this coast is generally low-lying country. Between Nokke Saki and Nemuro Hanto, 17 miles SE, is a large shallow bay known as Nemuro Wan.

Among the very few ports and harbors along this coast, only Nemuro Ko is capable of accommodating general shipping.

Nemuro Strait.—The E coast of Hokkaido, from Shiretoko Misaki to Nosappu Saki, 62 miles S, is fronted by Nemuro Strait; Ostrov Kunashir (Kunashira Shima) lies on the E side of the strait. The strait is 40 miles wide at its N end and 20 miles wide at the S end. The narrowest part, Notsuke Suido, is 8.5 miles wide.

In the N, the depths of Nemuro Strait are over 2,000m, but S of latitude 44°N the strait shoals rapidly and, in the area of Notsuke Suido, there are many shoals of less than 7.3m. No navigational aids mark the channel, and terrain on either side is low and featureless. It is difficult to negotiate this channel and the transit of deep-draft vessels is an especially dangerous undertaking. Since the shoals are constantly changing in size, location, and depth, it is dangerous to overly rely on the charts.

Whether or not a vessel can transit Nemuro Strait depends on pack ice conditions and its ability to negotiate Notsuke Suido.

Shallower depths than charted have been reported (1995) in Notsuke Suido.

1.12 Shiretoko Misaki to Rausu Hakuchi is a 20-mile stretch of coast with narrow gravel beaches and 100m cliffs that fringe the water. The terrain behind the shore rises abruptly to heights of over 1,000m, as it merges into the mountain range that forms the spine of the peninsula. These highlands are thickly wooded.

The coast is steep-to and the 200m line lies between 0.5 and 2 miles from shore.

Caution.—When a low pressure system passes N of Shiretoko Hanto, a violent W to NW wind, known locally as dashikaze, blows down the mountain sides after a cold front passes.

The dashikaze, that is further intensified by a whirlwind phenomenon, causes the most damage during the months of April and May. The duration of the typical dashikaze is short.

The storm strikes with the strongest force on the downwind side of breaks in the ridge line of the peninsular mountain range. The most vulnerable places include the Sashirui Gawa and Rausu Gawa estuaries. This wind, at times accompanied by rain, sleet, and snow, has estimated velocities up to 88 knots. It has been concluded from past storms that the dashikaze has its maximum destructive effect on vessels located within 2 to 3 miles of the coast.

1.13 **Rausu Hakuchi** (Rausu Ko) (44°01'N., 145°12'E.), a fishing port, is the only usable port on the E side of Shiretoko Hanto. From late September to early December, the squid fishing season, the port is crowded with about 300 fishing boats that take up every bit of available space. There is about 370m

of quays, with depths alongside up to 4m. Vessels may anchor, in 12.5m, good holding ground, with No. 2 South Breakwater Light bearing 270°, 0.11 mile distant.

The principal landmarks of Shiretoko Hanto have been described with the N coast of Hokkaido beginning in paragraph 1.2.

The 35-mile stretch of coast between Rausu Hakuchi and Nokke Saki is practically all rock beaches.

Between Rausu Hakuchi and Uembetsu Gawa, 10 miles SSW, the E slopes of the mountain range that forms the spine of Shiretoko Hanto run down to the sea, forming an almost continuous line of cliffs rising from the water.

From Uembetsu Gawa, the coast trends in a SSE direction about 12 miles to Shibetsu. The terrain between these points consists of terraced plateaus covered with large trees. Sheer cliffs, 20m high, line the shore. From Shibetsu the coast trends 11 miles SE to Nokke Saki; the coast is backed by low marshland and wooded terrain.

The 200m line lies 1 mile off Rausu Hakuchi. The waters of Notsuke Suido became more shallow as the strait is approached.

1.14 Shibetsu Hakuchi (43°40'N., 145°08'E.), an open roadstead off Shibetsu, 22 miles S of Rausu Hakuchi, offers suitable temporary anchorage, except in N winds, for vessels southbound through Notsuke Suido.

Nokke Saki (43°34'N., 145°21'E.), the E point of a low spit extending 7 miles SE from the general coastline, forms the W shore of Notsuke Suido. The spit lies 11 miles SE of Shibetsu Hakuchi. Small vessels seeking shelter between Nokke Saki to Nosappu Sakier from N winds anchor S of the spit in less than 5.4m.

Nokke Saki to Nosappu Saki 23 miles SE, the coast recedes to the S and forms a large shallow bay known as Nemuro Wan.

The shoreline of Nemuro Wan trends in a NW direction to the root of the sand spit, which terminates at Nokke Saki. Bekkai, located on the W shore of Nemuro Wan, lies 15 miles S of the root of the sand spit; then the coast trends SE about 11 miles to the village of Tobai. From Tobai, the thickly-wooded coast trends NE 5 miles to Nemuro Ko, then 5 miles farther NE to Nokkamappu Saki. Nosappu Saki, the E extremity of Hokkaido, lies 7 miles E of Nokkamappu Saki. This stretch of coast is thickly overgrown with bamboo and stunted trees; the points and low cliffs are all very dark in color.

Nemuro Ko (43°20'N., 145°35'E.)

World Port Index No. 61130

1.15 Nemuro Ko, in the SE part of Nemuro Wan, is the only natural harbor on the E coast of Hokkaido; it is designated as a port of entry and specified port. The Inner Harbor is enclosed by the N and S breakwaters, which extend N and S, respectively, from Benten Shima, an islet on the NW side of the harbor. A breakwater extends W from Benikemui Saki, a point of land on the NE side of Nemuro Ko. The Inner Harbor has a N and S entrance. General shipping uses the N entrance; only small vessels with drafts of 3 to 4m can use the S entrance.

Winds—Weather.—Sudden summer fogs are common here and are most frequent during July and August; however, May through August are the months with the greatest number of days with fog. The average number of days with fog for these months is 20 days each.

With strong N winds, a heavy sea and swell sets into the harbor, making entry dangerous and rendering the inner anchorage and dock area hazardous. At Nemuro Ko, a falling barometer with a backing wind predicts N winds.

Nemuro Ko is closed in winter during the freeze-up, and from January to April, drift ice may close the port and hinder navigation in Nemuro Wan. During these periods ships are diverted to Hanasaki Ko, on the S coast of Nemuro Hanto.

Tides—Currents.—In the outer harbor of Nemuro Ko, the tidal current flows toward the shore on the rising tide and away from the coast with the falling tide. These tidal currents combine with the E ocean current resulting in a NE or SE set.

Depths—Limitations.—Depths in the approach are less than 20m. with the 10m line extending to the breakwaters at the N entrance. In the N section of the inner harbor depths range from 6.4 to 7.6m, decreasing to less than 1.8m in the S part. The SW entrance, S of Benten Shima, has a depth of 2.1m; a mud flat fronts the SE shore of the inner harbor.

Vessels up to 2,000 gt can be accommodated. The largest ship to anchor in the inner port was a vessel of 1,150 gt and in the outer anchorage a vessel of 6,586 gt.

Aspect.—There is a radio tower, with a height of 111m, situated on the E side of downtown Nemuro. Several radio towers stand about 1.5 miles SE of the N breakwater light.

Anchorage.—Good anchorage may be found in the outer harbor, about 0.4 mile NW of Benten Shima, in 15m, sand bottom. It is best to use double anchors positioned for maximum holding against NE winds.

1.16 Nokkamappu Saki (43°23'N., 145°39'E.), located 4.5 miles NE of Nemuro Ko, is the NW extremity of Nemuro Hanto. Tosamporo Saki, the N extremity of Nemuro Hanto, is located 4.5 miles farther E; Nosappu Saki lies 2.5 miles farther ESE.

Kaigara Sendan (43°23'N., 145°52'E.), an extensive foul area of rocks and islets, lies about 1 mile E of Nosappu Saki. The sea usually breaks on these shoals, especially during the summer with SE winds. A light, shown from a cylindrical concrete structure, 19m high, is situated on an islet in the NW part of the shoal.

Goyomai Kaikyo (43°23'N., 145°50'E.), the passage between Nosappu Saki and Kaigara Sendan, has a fairway 0.5 mile wide between the 20m line; there is deep water in midchannel. Inside the 18.3m line, there are scattered reefs.

To pass through this channel safely, navigators must exercise great care, as the low-lying terrain on either side offers few good landmarks. This is an important waterway joining the Pacific Ocean and Nemuro Strait.

Fog frequently blankets this area; dense fogs occur whenever there is a S wind, and visibility is reduced to almost zero. These fogs are most frequent between May and July. During June and September, hundreds of small boats are in the vicinity of Kaigara Shima to harvest kelp. In poor visibility, extreme care is needed to avoid collision.

Currents in Goyomai Kaikyo are extremely unequal, caused by the inequality of the diurnal tides which is especially great; the set and drift vary markedly from day to day.

In the narrows 0.5 mile E of Nosappu Saki, the tidal currents set SE and N at a maximum drift in both directions of 3 knots. On the S side of the channel, 2.5 miles SE of Nosappu Saki, the current sets S from 3 hours after LW to 3 hours after HW, reaching a velocity of 1.5 knots at HW. From 3 hours after HW to 3 hours after LW, it sets N and E with a velocity not exceeding 0.5 knot. The stronger S current is believed to be caused by a strong ocean current flowing S through the narrows. On the N side of the channel, 2 miles N of Nosappu Saki, the current sets E and S from 1 hour after LW to 1 hour after HW. It sets NW from 1 hour after HW to 1 hour after LW. The NW flow reaches a maximum velocity of 1.5 knots, the S flow does not exceed 0.5 knot.

Countercurrents on both sides of the channel produce violent eddies, but they present no danger if the vessel keeps to the deepest part of the channel. On the other hand, the strong ocean currents that occasionally enter the channel can be hazardous.

Suisho Shoto

1.17 Suisho Shoto is a chain of small low islands extending NE from Nosappu Saki. Though these islands are located S of the main Kuril Islands, they are a part of the Kuril chain.

Suisho To (43°26'N., 145°55'E.), located 4 miles NE of Nosappu Saki, is 9.1 to 18.3m high, and is covered with a thick growth of coarse grass. Above-water rocks fringe the island. A light is situated on the SW extremity of the island and is displayed from a quadrangular structure, 2.4m high. Akiyuri Shima, located 3.5 miles SSE of Suisho To, is a small islet ringed with reefs. Hanare Iwa, the S danger in the group, is a steep-to above-water rock that lies 1.25 miles S of Akiyuri Shima. A 3.6m depth is located about 0.5 mile N of Hanare Iwa.

Nokano Se (43°22'N., 145°57'E.), a reef surmounted by drying rocks, lies 2 miles W of Akiyuri Shima. The reef obstructs the S entrance of Suisho Suido.

Yuri Shima (43°25'N., 146°04'E.), 3.25 miles E of Suisho To, has a shoreline of sand and gravel beaches between stretches of steep cliffs. The island rises to a height of 41m in its W extremity. Harukaru Shima is a chain of rocky islets, located 2.8 miles SE of Yuri Shima, that rises to a greatest height of 39m. Foul ground extends up to 0.5 mile from its extremities.

Suisho Suido lies between Suisho To and Yuri Shima. There are irregular depths in the passage and it is not recommended.

Yuri Suido, the passage between Yuri Shima and Akiyuri Shima, is a deep navigable channel with a width of less than 1 mile.

1.18 **Shibotsu Shima** (43°30'N., 146°08'E.), the largest island in the group, lies 1.3 miles NE of Yuri Shima. The island rises to a height of 30m on the S end and 9m on the N end. A black chimney near Aitomari Saki, the W extremity of the island, is a good landmark. A light, from which a radiobeacon transmits, is situated on the NE extremity of the island. Shibotsu Suido lies between Tomari Saki, the S extremity of Shibotsu Shima, and Yuri Shima. The passage is not navigable.

Taraku Shima (43°38'N., 146°19'E.) lies 6 miles NE of Shibotsu Shima. The island is low and treeless, with sandy beaches between stretches of cliffs.

Taraku Suido, the strait between Shibotsu Shima and Taraku Shima, has a width of 2.5 miles between the 6m lines. Depths in the passage are irregular, and less than 7.6m in places. There is usually a heavy swell in the strait and the tidal currents are strong.

Hira Iso, a steep-to drying rock, usually marked by breakers, lies 2.5 miles SE of the E extremity of Taraku Shima.

Todo Shima (43°34'N., 146°25'E.), a cluster of rocks 41m high, appears as a single islet from a distance. A sunken rock, that does not break unless there is a swell running, lies 1.5 miles SSW of Todo Shima. Kabuto Shima is a group of four steep-to prominent rocks, up to 42m high, located 1.3 miles ENE of Todo Shima. Kanakuso Iwa, formed by two steep-to isolated rocks 26m high, is located 1.5 miles N of Kabuto Shima.

Caution.—The waters off the Suisho Shoto have irregular depths and are full of detached rocks and reefs.

1.19 **Ostrov Shikotan** (43°48'N., 146°46'E.), an island separated from the islands of Suisho Shoto by Shikotan Suido, is 14 miles long in a NE to SW direction and is 6 miles wide. Shakotan Yama, 414m high, the highest mountain on the island, rises near the N extremity of the island. From the N the mountain's treeless summit appears rounded, but from NE it is saddle-shaped.

On the S coast of the island there are two bays, Matsugahama Wan and Inemoshiri Wan, that provide anchorage for small vessels; on the N shore there are three bays that will accommodate small vessels. From E to W these bays are Shakotan Ko, Matakoton Ko, and Anama Wan. On the W side of the island, Notoro Ko indents the island, but is so encumbered it is difficult for even small boats to enter.

Pack ice may be encountered around Shikotan To as late as early April, but is rarely seen after mid-April.

Sea fogs in the Shikotan To area are most frequent in June, July, and August. Only rarely during this period is there clear weather all day, and clear days are normally followed by a siege of dense fog.

The 20m curve lies close inshore, except off the W side of the island, where depths of less than 18.3m extend up to 1 mile offshore. There is a charted shoal patch, whose existence is doubtful, 2 miles NE of Eitannotto Saki (Eitannotto Saki), the E extremity of the island.

Anchorage is available off Shakotan Ko entrance, in 14.6m, sand, good holding ground. The anchorage is open to wind and swell from the W to NE. During January through April, drift ice may render the anchorage untenable.

1.20 **Shikotan Suido** (43°40'N., 146°30'E.) is 12 miles wide with a single obstruction, Amagi Sho, which reduces the E channel to a width of 8 miles, with depths in excess of 26m.

Amagi Sho (43°43'N., 146°24'E.), a rocky area some 3 miles by 2.5 miles in extent, has a least depth of 2.1m.

The irregular tidal currents in Shikotan Suido set S with a rising tide and NE with a falling tide. A N ocean current sets through the middle of the passage, weakening the S and strengthening the N current. Off the SE entrance to the strait, the ocean current deflects the S current SE toward Shikotan To.

Caution.—A Traffic Separation Scheme is located in the strait.

East of Taraku Shima, 3 to 4 miles offshore, tide rips may develop as the N current reaches its maximum strength. When this happens, it is difficult for slow-speed vessels to make way

against the current.

Hokkaido—South Coast

1.21 The S coast of Hokkaido extends from Nosappu Saki in a SW direction to Esan Misaki, about 240 miles. The coastline, which is fronted by the North Pacific Ocean, recedes and forms bays on which there are several important ports; among these ports are Akkeshi Ko, Kushiro Ko, Tomakomai Ko, and Muroran Ko.

The 145-mile stretch of coast between Nosappu Saki and Erimo Saki forms the E portion of the Hokkaido S coast. From Nosappu Saki to Shiriha Saki, 53 miles WSW, there are many indentations; detached reefs and islands also abound. Beyond Shiriha Saki, SW to Erimo Saki, the coastline recedes in a shallow curve and is quite free of irregularities.

The coast between Erimo Misaki and Chikiu Misaki, 105 miles WNW, recedes toward the N and is quite smooth. The first 30 miles of this coast runs roughly towards the WNW and has a relatively large number of indentations. Four ports, Horoizumi Ko, Samani Ko, Urakawa Ko, and Mitsuishi, lie in this section. The terrain behind the coast consists of high ground and hills rising toward and joining the mountain range in the interior.

From Mitsuishi to Tomakomai, 50 miles farther WNW, the coast has few irregularities and no significant ports or harbors. The first 25 miles of this coast is backed by marine terraces made up of plateaus that have formed at the SW foot of the mountain range inland. Small coastal plains are found only near the mouth of streams entering the sea. Then the coastline consists entirely of sandy beaches, with many marshes in some of the lowlands near the Abira Gawa (Yufutsu Gawa) estuary.

From Tomakomai, the N extremity along this shore, the coast trends 35 miles SW to Chikiu Misaki (Tikiu Misaki), the N entrance point to Uchiura Wan (Utiura Wan). This stretch is almost entirely wave-washed sandy beach, except for two rocky headlands. Streams meander behind the dunes along the shore before emptying into the sea. The land rises to mountains inland that rise to over 1,000m.

Suna Saki, the S entrance point of Uchiura Wan, lies 15 miles SW of Chikiu Misaki. Uchiura Wan, an important bay, extends about 28 miles NW from the entrance.

Esan Misaki lies 29 miles SE of Suna Saki. The intervening coastline is made up almost entirely of volcanic foothills reaching down to the sea; there are two active volcanoes along there.

1.22 Nosappu Saki to Hanasaki Misaki.—The 12-mile coast between these two points is heavily eroded and highly irregular. The terrain inland is flat, with elevations of less than 50m.

Goyomai Saki (43°22'N., 145°49'E.), 1 mile SSW of Nosappu Saki, is a flat, rocky, bare headland, 15m high. From Goyomai Saki the coast trends 7 miles SW to Tomoshiri Saki, then 4 miles farther SW to Hanasaki Misaki.

The 20m curve lies up to 1.5 miles off Goyomai Saki and as little as 0.25 mile off other points. Nekogashira Sho is a large rock, awash, 1 mile SSE of Goyomai Saki. This rock lies near the navigation routes and is extremely dangerous.

Isomoshiri To (43°20'N., 145°47'E.), 2.25 miles SW of Nekogashira Sho, lies on the seaward side of a coastal reef which extends 0.75 mile offshore. A light shown from a white, quadrangular, concrete tower, 10m high, is situated on the W extremity of the island.

Habomai Ko (43°21'N., 145°46'E.) is a coastal port protected by breakwaters and is 2 to 4m deep. The port faces Isomoshiri To and is almost exclusively used by fishing craft of less than 100 gt. A light is shown on the head of each breakwater and from a square concrete tower, 11m high, at Habomai, along with a directional radiobeacon. A light is shown off Onneppu, situated about 3 miles SW of Habomai.

1.23 Tomoshiri To (Tomoshiri Shima) (43°18'N., 145°40'E.), an islet 19m high, is located on a shallow spit that extends 1.25 miles SSW of Tomoshiri Saki.

Tomoshiri Wan is an open bay that lies between Tomoshiri To and Hanasaki Misaki, 3.75 miles SW. The bay affords good shelter against W to N winds, but is exposed to swells in S winds.

When entering and leaving port, care should be taken to avoid the reefs SW of Tomoshiri To and the fish traps that extend 0.6 mile to the SSE from the SW tip of that island between May and November.

Anchorage may be taken in Tomoshiri Wan, in depths of 11 to 13m, sand bottom, on a bearing of 130° to the summit of Tomoshiri To; it is protected against waves from the E to SE.

Tatsumino Se (43°15'N., 145°42'E.), a ridge lying 3.25 miles SSE of Tomoshiri To, is the outermost reef on the coast between Nosappu Saki and Ochiishi Saki and is extremely dangerous. It consists of two reefs separated by fairly deep water; Yuburinami Sho is the NE reef. The reef on the SW side has several rocks, awash, which dries at 0.2m, while the reef on the NE is covered to a minimum depth of 1.9m. Waves constantly break over these reefs; they can be spotted from 3 to 4 miles away. Reportedly the waves breaking over the reefs can sometimes be detected on radar. A sunken wreck, dangerous to navigation, lies about 1 mile W of Yuburinami Sho. An obstructed fish haven lies about 1.5 miles E of Yuburinami Sho.

Hanasaki Misaki (43°17'N., 145°36'E.), a cliffy headland, is the E entrance point of Hanasaki Byochi. A light is shown from an octagonal concrete tower, 10m high, situated on the point.

1.24 Hanasaki Ko (43°17'N., 145°35'E.) (World Port Index No. 61140), situated on the W side of Hanasaki Misaki, is a designated local port. It is the best port on the S coast of Nemuro Hanto; it also serves as the auxiliary port for Nemuro Ko when that port is iced. Hanasaki Ko is subject to periodic freezing between January and March. Pack ice appears in the vicinity from late February to late April, and depending on the wind, sometimes immobilizes the entire harbor; most of the time it drifts away in 2 or 3 days. If pack ice penetrates the inner harbor, it is difficult to clear and interferes with the movement of small craft. The pack ice that drifts down in April may be 5 to 6m thick.

South Breakwater extends 0.5 mile W from a point on the shore 0.3 mile NNW of Hanasaki Hana Light. A light is shown on the breakwater head.

West Breakwater projects about 0.2 mile ENE from a position 0.4 mile N of Choboshi Saki.

Another breakwater extends 0.4 mile SSW from the rocks close S of Hanasaki Hana; a light is shown from its S end.

Photograph courtesy Japan Coast Guard

Hanasaki Ko

Depths—Limitations.—East Wharf No. 1 Quay is 185m long and has an alongside depth of 10m; vessels of up to 10,000 tons can be accommodated. East Wharf No. 2 and No. 3 Quays have a combined berthing length of 260m and an alongside depth of 7.5m.

Anchorage.—Anchorage is available, in 9 to 10.5m, sand, W of Hanasaki Misaki Light. The roadstead is open to the S, and with strong S winds, a swell sets into the anchorage.

A quarantine anchorage is located about 0.5 mile S of Hanasaki Hana Light.

1.25 From Choboshi Saki, the coast trends SSW about 8 miles to Ochiishi Saki. The coast is backed by low land that rises to less than 50m. The headlands are flanked by steep cliffs, and the inlets generally have sand beaches.

A ridge of reefs extend ESE from **Choboshi Saki** (43°16'N., 145°34'E.), and about 0.3 mile out on this ridge is Nakano Se, with a least depth of 4.2m.

Yururi To (Yururi Shima) (43°13'N., 145°36'E.), a cliffy flat-topped island, 43m high, lies 1.5 miles offshore, 3.25 miles SSE of Choboshi Saki. Moyururi To (Moyururi Shima), a similar flat-topped island, 35m high, lies about 0.5 mile NNE of Yururi To. These two islands are surrounded by many rocks and reefs. Todo Shima (Todo Shima), a rock 9m high, surrounded by reefs, lies 0.7 mile NNE of Moyururi To.

Yururi Kaikyo, the strait between the above-described islands and the shore, is a navigable channel about 1 mile wide with water over 5m deep. There are covered rocks and reefs on both sides of the strait and some 6.6 to 8.5m high in the middle of the channel. It is impossible for deep-draft vessels to use this strait, although it is a popular route for most other craft.

A light is shown on the W side of Yururi Kaikyo, 1.75 miles WNW of Yururi Shima Light.

Bokkiriso Wan is a small bay that extends about 1 mile W on the NE side of Ochiishi Hanto, close N of Bokkiriso Saki.

Bokkiriso Ko (43°11'N., 145°31'E.), a boat harbor situated in the SW corner of Bokkiriso Wan, is enclosed by an E and W breakwater. The harbor, whose depth is 4m between the entrance and the wharf, is almost entirely used by the local fishing craft under 100 gt.

Ochiishi Saki (43°09'N., 145°30'E.), the SW extremity of Ochiishi Hanto, is a prominent table-topped headland connected to the mainland by a low neck. Vessels report the 91m radio masts on the cape visible from the ESE up to 22 miles offshore.

1.26 The coast from Ochiishi Saki to Tobutsu Saki, 15 miles WSW, is indented by two large bays and other small bays. The coast consists largely of sand beaches, except near the headlands; the interior is made up of low plateaus. The E half is very rugged with irregular depths. Along the W half of this coast, scattered reefs are found within a mile of the shore.

Kombu Se (43°08'N., 145°26'E.) is an extensive reef stretching W from a position 1.75 miles SW of Ochiishi Saki for a distance of 3 miles. The E part of the reef is always awash; the middle part is marked by drying rocks; the W extremity does not uncover when the sea is calm, and is thus extremely dan-

gerous.

Ushima Saki (43°10'N., 145°30'E.) is a reef-fringed point, 0.5 mile NNW of Ochiishi Saki.

Ochiishi Wan is an open bay entered close N of Ushima Saki. It is fairly shallow, but offers protection from waves produced by N to W winds. There is danger that swells caused by strong S winds may cause the anchor to drag. To obtain maximum shelter, vessels should anchor as close as their draft will permit to the N of Ushima Saki. Anchorage may be taken, in 7.8m, fine sand, with Ushima Saki bearing 190°, distant 0.4 mile.

The water depths between Kombu Se and the shore N are irregular, and there are many covered reefs. Particularly dangerous is a rock that covers 5m, 2 miles W of Ochiishi Saki.

1.27 Kombu Se (43°07'N., 145°13'E.), not to be confused with Kombu Se, 10 miles farther E, is a shoal patch that extends 1.25 miles offshore from a position on shore 4 miles NNE of Tobutsu Saki. There is less than 1m depth on the reef. A dangerous rock, with a depth of less than 1.7m, lies 1 mile ENE of Kombu Se.

Hamanaka Wan (43°07'N., 145°10'E.) is enclosed by land on three sides. The entrance, 3.5 miles wide, opens to the E. In addition to Kombu Se, off the N entrance, there are reefs off the S entrance that help to block waves coming in from the E.

The N shore of the bay has many rocks, which are backed by cliffs that give way to low hills. The W shore is mainly sandy beach, backed by marshland, and the S shore is formed by Kiritappu Hanto. Kiritappu Ko is situated near the W end of the S shore. Depths of less than 1m are fouled by seaweed inside the breakwaters.

Oki Se (Okino Se), 3.6m deep, is located 1 mile offshore in the NW part of the bay. Jino Se (Chino Se), to the W of Oki Se, consists of submerged rocks dangerous to navigation.

1.28 Tobutsu Saki (43°04'N., 145°10'E.), the E extremity of Kiritappu Hanto, is 35m high. The point is fronted by shoal water with large boulders that extend about 0.3 mile E. A light is situated on this point.

Kuro Iwa, 5m high, is located 1 mile NE of Tobutsu Saki. The islet lies on the W end of a ridge, which is constantly awash, and extends about 1 mile E. Hokake Iwa, 13m high, lies on the reef 0.6 mile E of Kuro Iwa.

Anchorage, in depths of 9 to 10m, rock, is available with Kuro Iwa bearing 104°, 1.8 miles distant.

From Tobotsu Saki to Shiriha Saki the coast trends in a SW direction 8 miles to Chirippu Saki, a headland that rises to a height of 55m. The coastal marshland close SW of Tobutsu Saki, rises slowly to plateaus behind Chirippu Saki.

The water depths along this coastal area are varied and there are many rocks and reefs inside the 20m line.

Kemboki Shima (43°03'N., 145°07'E.), a flat-topped 59m high islet, located 3.3 miles SW of Tobutsu Saki, has two conspicuous rocks, 21 and 16m high, located near its SW end.

The channel between Kemboki Shima and Biwase Hana, 0.4 mile W, is suitable only for boats. A light marks the entrance of Biwase Kawa.

Tate Iwa, a yellowish wall-like rock, 38m high, is located on the SW of Chirippu Saki. This rock is conspicuous when viewed from the E or W.

Mabiro Saki (42°59'N., 144°53'E.), at the E entrance of Akkeshi Wan, lies 6.5 miles W of Chirippu Saki. A light is shown at the cape. The coast between these two points is deeply-indented cliffs, formed by wave erosion of the 1,000m high plateau that overlooks the sea. The water is shallow near the entrance to Akkeshi Wan, but elsewhere the 20m curve lies up to 183m or more offshore.

Daikoku Shima, an island with steep cliffs, lies 1.25 miles S of Mabiro Saki. A shoal, with depths of less than 1.5m, extends from Mabiro Saki to Daikoku Shima. Ko Shima, with a height of 32m, is located on the shoal about 0.5 mile S of Mabiro Saki. A light is shown from a cylindrical concrete structure, 8m high, situated on the S extremity of Daikoku Shima.

1.29 Akkeshi Ko (43°02'N., 144°51'E.) a fishing port, is situated at the NE end of Akkeshi Wan, a circular bay some 6 miles in extent, entered between Daikoku Shima on the E and Shiriha Saki on the W. Foul ground extending E from Shiriha Saki reduces the fairway width in the entrance to 1.5 miles; the channel passes close W of Daikoku Shima.

Winds—Weather.—Prevailing winds at Akkeshi Wan are SE in spring and summer, N in autumn, and E during the winter. The peak fog period is May through August. From late June to late July, fogs may occur that last an entire day.

Fast ice forms along the shores of the bay from February through March, but the middle of the bay is always open. Drift ice and floes may enter the area from February until April; it is usually 1.5m thick and can make navigation difficult.

Tides—Currents.—During the summer off the entrance of Akkeshi Wan, the influence of the ocean current results in a W current with a rate of 1.5 knots. Within the bay, the weak tidal currents set N with a rising tide and S with the falling tide; change occurs around HW and LW.

At the opening into Akkeshi Ko, the flood current sets toward the E and the ebb current toward the W, reversing 1 to 2 hours after HW or LW. The drift here is 3 knots.

Anchorage.—Anchorage is available, in depths of 7.5 to 9.5m, mud, 1 mile WNW of Aikappu Saki. Aikappu Saki is located 1.5 miles SSW of Akkeshi Ko.

1.30 The coast from Shiriha Saki to **Shireto Hana** (42°58'N., 144°22'E.) has a few indentations along the 19 miles of coast at the E entrance to Kushiro Ko. The shoreline extends farthest S near Mataidoki, 13 miles W of Shiriha Saki; then it trends WNW to Shireto Hana. In this area the beaches are mainly sand or shingle and the foreshore is extremely rocky.

The interior consists mostly of plateau-type hills about 100m high that follow the coastline and are higher and steeper in the E, gradually falling off toward the W. Sea eroded cliffs are common, some rising directly from the water. A light stands on the coast 1.5 miles ENE of Mataidoki; it is shown from a square concrete tower, 9.4m high. Another light shown close NE on the coast.

The 20m line lies about 0.2 mile off Shiriha Saki, and about 1.5 miles off Mataidoki. Kushiro Dashi, a shoal patch with a depth of 5.8m, lies close off the foul ground that extends 0.8 mile S of Mataidoki

Foul ground extends 0.6 mile S of Shireto Hana; even small craft should remain at least 1 mile offshore when in transit along this coast.

Kushiro Ko (42°59'N., 144°22'E.)

World Port Index No. 61160

1.31 Kushiro Ko (Kusiro Ko), at the mouth of the Kushiro Gawa, a port of entry, is the most important port on the SE coast of Hokkaido. It is designated as a specified port. The harbor limit is a line drawn 180° to a point about 0.2 mile S of Shireto Hana Light, then 270° for 3.2 miles, then N to the shore. The port is divided into two separate harbors. The E section is called Kushiro Ko Higashi Ku (Kushiro Ko Higasi Ku); the W is called Kushiro Ko Nishi Ku (Kushiro Ko Nisi Ku). The river, which inundates the plain, enters the sea 1.5 miles N of Shiro Hana; the old mouth, Kusiro Kawa, emerges within the E section.

Ice.—During severe winters, fast ice may form along the shores of the harbor from mid-December through late March. From early March until late April, drift ice may enter the roadstead. When pack ice appears off the S coast of Hokkaido, special caution is necessary, particularly when entering port at night.

Winds—Weather.—Prevailing winds at Kushiro Ko are NNE in autumn and winter, NE to SE in spring, and SE during the summer.

Fogs occur from June through September, usually with S or NE winds. Heavy fogs tend to form when S winds back to SSE or SE, or when there is a high pressure system off the coast.

Tides—Currents.—At a distance of 2 to 5 miles from shore, S of Kushiro Ko, the flood current sets NNW and the ebb current sets to the SE. Change occurs 1 to 2 hours after HW and LW; rates seldom exceed 0.5 knot.

Depths—Limitations.—The Kushiro Ko approach is free of dangers; the 20m line lies 1 mile off the breakwater entrance and the 10m line reaches the fairway. There are depths alongside the piers of 2 to 10.8m in the E section. The W section has depths alongside the berths that generally range from 3 to 12m. The S side of No. 4 Wharf in this section has a depth alongside of 14m; vessels of up to 50,000 dwt can be accommodated. There are four oil berths at No. 1 Wharf with depths of 5 to 11m alongside. Inside the breakwater, the depths in the extreme N and E parts of the harbor are less than 5.5m; elsewhere, there are depths from 5.5 to 10.4m. For further berthing information refer to the table titled **Kushiro—Berth Information.**

Aspect.—The two chimneys at the paper mill, 0.5 mile N of the new entrance of Kushiro Gawa, are conspicuous. The highest of the two is 123m high. The radar station at the SE extremity of Kushiro Ko, near Shireto Hana, is a white structure, and is more conspicuous by day than the lighthouse.

Kushiro—Berth Information

Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Beam	
East Area (Center Terminal)						
C-01	—	9.0m	140m	6.3m	21.0m	Petroleum products.
C-02	—	9.0m	140m	6.3m	21.0m	Bunkers.
C-03	180m	10.0m	183m	7.2m	26.0m	Bunkers.
C-04	130m	7.5m	105m	6.4m	16.0m	Bunkers.
C-05	130m	7.5m	105m	6.4m	16.0m	Bunkers.
C-06	130m	7.5m	105m	6.4m	16.0m	Bunkers.
C-07	—	—	240m	8.1m	32.0m	Breakbulk and bunkers.
East Area (North Terminal)						
N-01	—	9.0m	105m	6.3m	16.0m	Fishing and bunkers.
N-02	—	9.0m	105m	6.3m	16.0m	Fishing and bunkers.
N-03	—	9.0m	105m	6.3m	16.0m	Fishing and bunkers.
N-04	126m	8.0m	109m	6.0m	17.0m	Fishing and bunkers.
N-05	165m	8.1m	—	—	—	Closed.
N-06	107m	2.8m	—	—	—	Closed.
N0 12	161m	9.0m	115m	7.0m	18.6m	Cement and bunkers.
No 13	157m	8.1m	115m	7.0m	18.6m	Cement and bunkers.
East Area (South Terminal)						
Coal loading Berth	217m	7.5m	109m	7.4m	17.0m	Coal and bunkers.
General Berth	91m	—	81m	5.4m	14.5m	Aggregates and bunkers.

Kushiro—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Beam	
West Area T2						
W 08	90m	5.5m	74m	—	13.5m	—
W 09	130m	7.5m	167m	6.9m	27.0m	—
W 10	215m	10.0m	167m	7.5m	27.0m	Freight and bunkers.
W 11	200m	12.0m	229m	10.5m	32.0m	Grain and bunkers.
W 12	280m	12.0m	229m	10.5m	32.0m	Grain and bunkers.
W 13	195m	9.0m	173m	7.1m	27.0m	Ro-ro and bunkers.
West Area T3						
W 16	130m	7.5m	—	6.3m	15.0m	Bunkers.
W 17	130m	7.5m	—	6.3m	15.0m	Bunkers.
W 18	300m	12.m	183m	9.7m	29.5m	Bunkers.
W 19	240m	12.0m	186m	10.8m	30.0m	Bunkers.
West Area T4						
W 21	230m	10.0m	—	8.1m	37.5m	Steel products.
W 22	267m	12.0m	—	9.5m	29.5m	Steel products.
W 23	282m	5.0.0m	—	—	—	—
East Area (New South Terminal)						
No. 4	130m	—	109m	7.4m	17.0m	Bunkers.
No. 5	—	22m	—	—	—	LPG.
North Tanker	24m	7.5m	106m	6.7m	16.0m	—
South Tanker	24m	7.5m	106m	6.0m	16.0m	—
West Area (T1)						
Oil Pier No. 1 E	145m	7.5m	105m	6.0m	16.0m	—
Oil Pier No. 1 W	145m	7.5m	105m	6.0m	16.0m	DDP.
Oil Pier No. 2 E	145m	7.5m	—	6.9m	—	—
Oil Pier No. 2 W	145m	6.0m	—	6.9m	—	—
W 01	90m	5.5m	76m	4.8m	11.5m	—
W 02	165m	9.0m	175m	7.7m	37.0m	Cement and ro-ro.
W 03	165m	9.0m	175m	7.7m	29.0m	Ro-ro.
W 04	270m	12.0m	175m	7.2m	37.0m	Bunkers.
W 05	220m	9.0m	175m	7.2m	29.0m	Bunkers.
Gyoko Wharf						
W 05	140m	9.0m	95m	7.2m	13.8m	Bunkers.
W 06	140m	9.0m	95m	4.8m	13.8m	Bunkers.
W 07	220m	9.0m	95m	4.8m	13.8m	Bunkers.

A number of chimneys and tanks, which are floodlit at night, are situated 5 miles NW of Shireto Hana.

Pilotage.—Harbor Radar Control, located at Shireto Hana Light, is operated during periods of poor visibility, when visibility is less than 3 miles. Service is available to ships of 1,000 gt and above at a distance of 10 miles and to smaller vessels at a distance of 2 miles.

Pilotage is not compulsory, but it is available for entry during

daylight and for departure until 2100 and is provided by Kushiro Pilots Association. The pilot boards, as follows:

1. Higashi Ko Ku:—Approximately 1.1 miles W of Higashi Ku Submerged Breakwater Light.
2. Nishi Ko Ku—Approximately 1.4 miles SW of Nishi Ku South Breakwater Light.

Pilotage is also provided for Abashiri Ko.

The Quarantine Station operates from daylight until sunset.

Regulations.—Vessels should send an ETA upon departure and 10 days, 4 days, 2 days, and 24 hours prior to arrival.

Signals.—Vessels may be instructed by the pilot to fly course indicator signals of the International Code when underway in this port.

Contact Information.—See the table titled **Kushiro—Contact Information**.

Kushiro—Contact Information	
Pilots	
Telephone	81-1545-26352
Facsimile	81-1545-26358
Port Authority	
Telephone	81-1545-33371
Facsimile	81-1545-33373
E-mail	ko-kouwankuukou@city.kushiro.lg.jp

Anchorage.—The best anchorage is found in the E section, with the North Breakwater Light bearing 230°, about 0.3 mile distant, in 10m, mud, good holding ground. With strong S to SW winds, a swell sets into the Inner Harbor; winds from other quarters have little effect. Vessels anchor as convenient in the Outer Harbor during heavy fogs.

The Quarantine Anchorage is in the Outer Harbor. There are designated anchorages for vessels carrying hazardous cargoes.

Caution.—This is the largest base for the northern waters fisheries and is constantly busy with heavy traffic of both large and small vessels; it is particularly congested during the summer fishing season. Marine accidents are not uncommon in this port.

Exploration for gas or oil may be taking place in the SW approaches to Kushiro Ko, within about 6 miles of the port. Exploitation platforms, from which lights are shown and horn fog signals are sounded, may be encountered in this area.

Land reclamation and new development are presently (2016) taking place in Kushiro Ko Nishi Ku. This includes the construction of a new breakwater extending 1 mile from the mainland to position 42°59.3'N, 144°18.8'E.

1.32 From Kushiro Ko, the coast trends SSW 65 miles to Tokachi Ko, then 22 miles S to Erimo Saki. The coastline that lies between Kushiro Ko and Tokachi Ko consists of sandy beaches which are backed by high dunes. For 9 miles inland, the terrain is mostly flat hills, which reach a height of about 400m. The currents that enter the sea along here, both large and small, are generally trapped behind the dunes and meander behind them until they eventually find an outlet; lagoons and marshes surround the estuary areas.

Between Kushiro Ko and Tokachi Ko (Tokachi Hiroo), the only ports are small fishing villages.

Between May and November, fish traps may be encountered within 1.5 miles of this coast. A fish haven is situated 4.8 miles ENE of the entrance to Tokachi Ko.

The 40m curve lies up to 6 miles off this stretch of coast; there are no charted dangers outside this line.

Oakan Take (Oakan Dake) (43°27'N., 144°10'E.), a cone shaped peak, 1,371m high, is located 29 miles NNW of Kushiro Ko. Meakan Take (Meakan Dake), with several summits, rises to a height of 1,503m, 8 miles SW of Oakan Take. These peaks are prominent from offshore.

1.33 **Tokachi Ko** (Hiroo) (42°17'N., 143°20'E.), a small fishing harbor, is a designated important port, and a port to which port regulations apply.

The port, which is protected by breakwaters, lies on the N side of Hiroo Hana. The port has depths of 4.3 to 10.7m alongside the wharves in the N part, where development is taking place; other berths in the S part have depths of about 5.5m.

It is well-protected against W winds, but waves and swells cross over the S breakwater in strong E winds. In bad weather, it is advisable not to try to enter port and, when the situation permits, to seek shelter at another port.

Lights are shown from the breakwaters and a radiobeacon is situated 1.75 miles N of Hiroo Hana. The South and Outer North Breakwater were being extended.

A jetty extends 0.1 mile SE from a position 0.2 mile NNE of the root of New North Breakwater. There are depths from 5.5 to 7.6m alongside the N face of this jetty.

A quay, 240m long, with a depth of 5.5m alongside, extends NNE from the root of the above jetty.

From Tokachi Ko to Erimo Saki, 22 miles S, the mountain range comes down to sea. Hyakunin Hama, the beach area close N of Erimo Saki, is a desert-like expanse of sand about 3 miles long and 0.5 mile wide. The strong winds in this area can whip up severe sandstorms.

1.34 **Erimo Saki** (41°56'N., 143°15'E.) is a steep, rocky cape at the S end of a large, mountainous, promontory. The cape forms the S extremity of a narrow tableland and is backed by Toyoni Yama (Toyoni Dake), 1,105m high, which rises 9 miles inland. Foul ground and above-water rocks extend 1 mile SE of the cape. It is advisable to keep in water over 37m in depth when rounding the cape.

From Erimo Saki to Chikiu Misaki, the coast recedes in a general N curve to Chikiu Misaki, about 105 miles WNW. The shoreline is broken by several river mouths. In general, the coast is steep-to with no off-lying dangers. The 20m curve lies farthest seaward near the head of the bay.

Erimo Ko (Horoizumi Ko) (42°01'N., 143°09'E.) is a small fishing harbor situated 7 miles NNW of Erimo Saki. Local vessels anchor off the town, in 9.1m, or further out, in a depth of 12.8m, sand. Some shelter is afforded from the N to E winds, but the anchorage is open S and W. The port has berths for 1,000 ton ore carriers in a basin at the N end of the harbor.

Erimo Ko provides shelter during strong winds from between E and N for vessels waiting to round Erimo Saki.

1.35 **Samani Ko** (42°08'N., 142°55'E.) is a fishing port situated about 12 miles NW of Erimo Ko on the W side of Sama-

ni Hana. It is used by ore carriers.

The headland at the S end of Samani Hana, which is 73m high, looks like an island from a distance, but can be recognized from 10 miles away; it is the best radar mark on this coast.

Urakawa Ko (42°10'N., 142°47'E.) lies 7 miles NW of Samani Ko. It is primarily a fishing harbor, but it is also used by lumber and ore carriers.

Aspect.—A radio tower, 0.4 mile NNW of Urakawa Ko Light, marked by obstruction lights, is a useful mark at night only.

Urakawa Ko Light, shown close inland of the S part of the harbor from a square tower, is 12m high. A fog signal is sounded from a position 340m SW of the light.

There are many shallow reefs within 0.3 mile of the shore N of the North Breakwater Light and within 0.2 mile of the shore E of the South Breakwater Light.

A shoal area, with a depth of 0.9m, lies 0.1 mile NW of the head of North Breakwater; the SW side of this area is marked by two special buoys. Water depths on the W side of the breakwater appear to be less than those charted. In 1975, a vessel with a draft of 5m, touched bottom in an area 119m W of the North Breakwater Light, where a depth of 8.6m is charted.

From Urakawa Ko the coast trends about 11 miles NW to Mitsuishi Ko, a small fishing port. Kamoi Take (Kamui Dake), a peak 1,593m high, rises 17 miles NNE of Urakawa Ko. The foreshore between these ports has scattered reefs and rocks.

Caution.—When a typhoon or developed storm system passes near this coast, a powerful wind known as the "Hikada Oroshi" sweeps down the mountain slopes, and the sea surface is assaulted by violent, gusty, NE winds. In September of 1958, a typhoon passed through with a mean maximum wind speed of 55 knots; the absolute maximum on this occasion was 90 knots.

1.36 From Mituishi Ko to Mombetsu Hana, about 25 miles NW, the coast is backed by plateaus that have formed at the SW foot of the mountain range that lies inland.

Sasa Yama (42°28'N., 142°31'E.), located 14 miles N of Mitsuishi Ko, rises to a height of 806m. It is easily distinguished as it is covered with bamboo grass instead of the trees found on neighboring peaks. Spring snow melts earliest on this peak. Toriharai Yama, 7.5 miles SW of Sasa Yama, with a height of 390m, is conspicuous when viewed from the S. A brown cliff, 46m high, located on the NW side of an estuary 13 miles NW of Mitsuishi Ko, is conspicuous. A headland, 2.5 miles NW of Mombetsu Hana, is radar conspicuous.

The 25 miles of coastline between Mombetsu Hana and Tomakomai Ko consists entirely of sandy beaches with many marshes in the estuary 5 miles E of Tomakomai Ko.

Many dangerous rocks and reefs, some of which are located just inside the 20m curve, are scattered along the shoreline and should be watched.

Tomakomai Ko (42°38'N., 141°38'E.)

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1.37 Tomakomai Ko, a port of entry, is Japan's earliest artificial harbor. Breakwaters protect the entrance to the fairway that leads to the Inner Harbor. The Inner Harbor, which is comprised of Districts 1 and 2, extends 4 miles ENE from the breakwater entrance. The Outer Harbor is comprised of District 3, the area W of the breakwaters, and District 4, the outer port area E of the breakwaters, including Tomakomai Higashi Ko. The shores of the Inner Harbor are lined with industrial plants.

Tomakomai Home Page
http://www.jptmk.com

Winds—Weather.—The weather is relatively mild with a short snow season. Sea fog is common during April and May and most frequent in June and July, occurring normally with SSW winds. Fogs tend to dissipate with the prevailing E wind; the maximum duration is 8 hours. At their densest, visibility may be reduced to 27m; however, visibility averages 0.3 to 0.4 mile.

Tides—Currents.—Currents are seasonal and vary in direction with shifts in the cold and warm ocean currents. From May to October, the prevailing current is E, and from November to April it is W; velocities seldom exceed 0.5 knot.

According to observations, wind wave conditions in the Outer Harbor are generally as follows:

In winter, SSW winds are most frequent and the waves produced by these winds rarely exceed 1m.

From late March to early April, wave heights greater than 3m may occasionally be encountered.

In spring and summer, there are frequent ocean swells from the SSE, ranging from 0.8 to 1.5m, with 10 second periods.

In the fall, an approaching typhoon may produce E and NE winds that may generate wave heights of 2.5m.

Depths—Limitations.—The Tomakomai approach is open and free of dangers. The 10m curve reaches to the breakwater entrance and the 20m curve lies 0.5 to 0.8 mile farther seaward and parallel to the shoreline. There is an obstruction about 0.9 mile, bearing 238° from the West Breakwater Light.

The channel from the Outer Harbor to the Inner Harbor is dredged to a least depth of 14m. The water shoals suddenly outside the channel boundaries, so careful navigation is required.

The depths alongside the wharves of the Inner Harbor range from 5.2 to 14m. Yufustsu Wharf has six berths with depths of 5 to 12m. Berths No. 1 and No. 5, with depths of 12m, are the deepest of the six berths. The berths are designed to accommodate vessels up to 65,000 dwt.

Tomakomai Higashi Ko, part of District 4, lies about 8 miles E of Tomakomai Ko. The basin is sheltered by an E breakwater and a large area of reclaimed land on its W side. Central Wharf has depths alongside of 11.9 to 13.9m.

Idemitsu-Hokkaido Sea Berth lies about 1.5 miles SE of the West Breakwater Light, in a depth of 24m. The berth is comprised of seven dolphins that extend in a NW and SE direction, and is about 490m long. The berth can accommodate vessels up to 280,000 dwt, having a length of up to 340m. A submersible oil boom encircles the berth; the berth is connected to the shore by an underwater pipeline running NNE from the center dolphin. The berth is lighted in the middle and on each side.

An overhead power line, with a vertical clearance of 55m, crosses the channel, close E of Central Wharf, in Section 1.

A detached and lighted breakwater protects a berth for large tankers.

Photograph courtesy Japan Coast Guard

Tomakomai Ko

A basin is situated W of the reclaimed land, protected by a breakwater extending 0.5 mile SSW from a position 0.5 mile NNW of the SW corner of the reclaimed land. A light is shown at the head of this breakwater. A detached breakwater extends 0.2 mile SSW from a position 183m W of the head of the above breakwater. Lights are shown from both ends of this breakwater. There is a berth, with depths from 8.8 to 9.7m alongside the SE side of this basin, close N of the SW corner of the reclaimed land.

The tanker berth, surrounded by a submersible oil boom, is approached by a channel dredged at its entrance to 17.5m. The continuation of the channel and the turning area off the berth are dredged to 16m. A branch channel leading to the basin is dredged to 14m.

A bulk cargo wharf, 280m long and within the area dredged to 14m, is situated on the SE side of the reclaimed land.

Range beacons, in line bearing 059°, lead towards the basin.

Range beacons, in line bearing 082.75°, lead towards the tanker berth. Range beacons, in line bearing 012°, lead towards the Central Wharf. The approach to the berth is marked by a lighted buoy moored 0.8 mile WNW of the W end of the detached breakwater. Lighted buoys mark the channel and the limits of the turning area

Tomakomai—Berth Information

Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
Dry Cargo Terminals						
Mauruchin Steel Tube Terminal	184m	7.5m	—	6.7m	5,000 dwt	Steel products.
General Berth	184m	7.5m	—	6.7m	5,000 dwt	Steel products.
Nippon Light Metal Terminal						
Harumi Wharf 1	240m	12.0m	—	—	—	Steel products.
Harumi Wharf 2	240m	12.0m	—	—	—	Wood chips.
Harumi Wharf 3	170m	10.0m	—	—	—	Machinery.
Nippon Light Metal	200m	14.0m	—	—	—	Coal and sand.
Tomakomafuto Harumi	221m	12.0m	—	—	—	Stone and bulk.
Tomakomia East Port Ferry Terminal						
Ferry Terminal	240m	12.0m	—	10.8m	30,000 dwt	Ferries.

Tomakomai—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
Tomakomai International Container Terminal						
Central Wharf 2	330m	12.0m	—	—	—	Reefer.
Central Wharf 3	330m	14.0m	—	—	—	Reefer.
Tomakomia West Port Ferry Terminal						
No-01	238m	8.5m	—	8.5m	13,000 gt	Ro-ro.
No-02	238m	8.5m	—	8.5m	13,000 gt	Ro-ro.
No-03	193m	7.5m	—	7.5m	6,000 gt	Ro-ro.
Tomatoh Coal Center Terminal						
EH	151m	7.5m	—	—	—	Cement and cola.
ETT2	280m	14.0m	245m	12.6m	90,000 dwt	Coal .
ETT3	155m	6.1m	—	—	2,000 dwt	General cargo.
Western district Commercial port						
East Wharf 3	145m	9.0m	—	—	10,000 dwt	Paper products.
East Wharf 4	165m	9.0m	—	—	10,000 dwt	Paper products.
East Wharf 5	130m	9.0m	—	8.1m	—	General cargo.
East Wharf 6	130m	9.0m	—	8.1m	40,000 dwt	Containers.
Irifune Wharf	330m	14.0m	—	2.6m	40,000 dwt	Containers.
North Wharf 1	130m	7.5m	—	6.7m	5,000 dwt	General cargo.
North Wharf 2	130m	7.5m	—	6.7m	5,000 dwt	General cargo.
North wharf 3	90m	5.5m	—	—	—	General cargo.
North Wharf 4	90m	5.5m	—	—	—	General cargo.
South Wharf 1	185m	10.0m	—	9.0m	15,000 dwt	Steel products.
South Wharf 2	185m	10.0m	—	9.0m	15,000 dwt	Steel products.
South Wharf 3	195m	11.0m	—	8.1m	10,000 dwt	Breakbulk.
West Wharf 1	165m	9.0m	—	—	10,000 dwt	Breakbulk.
East area (New South Terminal)						
West Wharf 2	165m	9.0m	—	8.1m	10,000 dwt	Breakbulk.
West Wharf 3	165m	9.0m	—	8.1m	10,000 dwt	Ro-ro and lo-lo.
West Wharf 4	165m	9.0m	—	8.1m	10,000 dwt	Ro-ro and lo-lo.
Western District Industrial Port (North)						
Central North Wharf 1	240m	7.5m	—	—	—	Breakbulk.
Central North Wharf 2	130m	7.5m	105m	—	—	DDP.
Central North Wharf 3	130m	7.5m	—	—	—	—
Central North Wharf 4	69m	7.5m	—	—	—	—
Denka and Hinode Wharf	500m	10.0m	—	—	—	Breakbulk.
Western District Industrial Port (South)						
Central South Wharf 1	240m	10.0m	—	—	—	Fertilizer.
Central South Wharf 2	240m	12.0m	—	—	—	Steel.

Tomakomai—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
Central North Wharf 3	158m	7.5m	—	—	—	Steel.
Central South Wharf West	210m	9.0m	—	—	—	Steel.
Western District Industrial Port (Yufutsu Wharf)						
Yufutsu Wharf 1	280m	9.0m	—	—	—	Wood chips.
Yufutsu Wharf 2	185m	9.0m	—	—	—	Machinery.
Yufutsu Wharf 3	130m	9.0m	—	—	—	Machinery.
Yufutsu Wharf 4	130m	7.5m	—	—	—	Paper products.
Yufutsu Wharf 5	240m	12.0m	—	—	—	Paper products.
Yufutsu Wharf 6	165m	9.0m	—	—	—	General cargo.
Soda Group						
Wharf A	300m	10.8m	—	—	—	Sodium hydroxide cargo.
Wharf B	190m	10.8m	—	—	—	Chemicals.
Tomakomia Futo Oil Terminal						
No. 1	25m	7.0m	—	6.3m	—	CPP.
No. 2	21m	7.0m	—	6.3m	—	CPP.
No. 3	—	—	—	—	—	LPG.
No. 4	—	—	—	—	—	CPP.
Tankers						
Godo Shuesei Terminal	30m	12.0m	56m	—	10,000 dwt	—
Hokuren Transport Tanker	14m	7.5m	—	182m	—	CPP.
Idemitsu Kosan Hokkaido (Tomakomai)						
No. 1	20m	7.5m	—	—	—	LPG.
No. 3	24m	7.5m	—	—	—	LPG.
No. 4	24m	7.5m	—	—	—	CPP.
No. 5	20m	7.5m	—	—	—	Petroleum products.
No. 7	37m	7.5m	—	—	—	Petroleum products.
No. 8	53m	7.5m	—	—	—	Petroleum products.
No. 9	53m	7.5m	—	—	—	Petroleum products.
Sea Berth	42m	24.0m	340.8m	20.5m	280,000 dwt	Crude.
West Berth	28m	14.0m	245m	12.5m	70,000 dwt	DPP.
Japan Oil Network Piers (Tomakomai)						
No. 1	16m	130m	—	—	—	Crude.
No. 2	32m	120m	—	—	—	Crude.
Japex Terminal						
No. 1	185m	7.5m	—	—	—	CPP.
No. 2	165m	7.5m	—	—	—	LNG.

Tomakomai—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
JX Nippon Tomakomai Chemical Terminal						
Tomakomai Chemical	330m	10.0m	185m	9.0m	35,000 dwt	Chemicals.
Shinsanso Kagaku Terminal						
Chemical Berth	185m	7.5m	—	—	—	Chemicals.
Tomakomai Oil Storage Terminal						
Kyodo Oil Terminal Sea Berth	27m	14.0m	273m	12.6m	300,000 dwt	Crude.

A submerged wave meter, connected to the detached breakwater by submarine cable, is moored nearly 2 miles S of the breakwater elbow.

Aspect.—A good mark when entering the port are two chimneys situated about 1.5 miles NW of the West Breakwater Light. The W chimney is 206m high. A 161m high square-shaped chimney stands about 1.3 miles ENE of the root of the East Breakwater. Two 104m high transmitter towers stand on either side of the channel, about 1 mile ENE of the square-shaped chimney.

Tarumae Yama rises to a height of 1,041m about 11 miles WNW of Tomakomai Ko. The mountain is an active volcano, with a dome-shaped summit rising from the crater; there is a constant emission of white smoke. This peak is conspicuous from a distance.

Pilotage.—Pilotage is not compulsory, but strongly advised for vessels over 6,000 gross tons. Pilots are available from 0430 to 2200 and arrangements for their services may be made through the Tomakomai Pilotage District Pilot Association. Vessels should send a request for pilots 12 hours in advance, stating:

1. Vessel's name.
2. Tonnage.
3. Total length.
4. Draft.
5. Name and address of owner.
6. Speed.
7. Type of cargo.
8. Time pilotage needed.
9. Pilot boarding position, whether or not quarantine is required, and other necessary items.

Any amendments to the pilotage request should be sent 2 hours in advance.

The pilot boards, as follows:

1. Vessels entering Tomakomai Ko Area No. 1, Area No. 2, and Area No. 3—Approximately 1.3 miles SSW of Tomokomai Ko Outer East Breakwater Light
2. Vessels entering Tomakomai Higashi Ko Area No. 4—Approximately 2.3 miles WSW of Higashi Chiku East Breakwater Light
3. Vessels entering Idemitsu Sea Berth—Approximately 2.5 miles SE of the berth

Signals.—Traffic is regulated by the signals displayed at the signal station on the W side of the entrance or from the station situated 2.25 miles ENE of the first station. Course indicator signal directions are compulsory in this port. The signal station indicates traffic direction, as follows:

1. Blinking "I" indicates vessels may enter the port (vessels under 500 dwt may exit).
2. Blinking "O" indicates vessels may exit the port (vessels under 500 dwt may exit).
3. Blinking "F" indicates vessels over 500 dwt entering or exiting the harbor must stop and wait.
4. Blinking "X" indicates that entry or exit is prohibited except for vessels authorized by the harbor master.

A vessel is required to display the flags of the International Code and corresponding AIS symbol to indicate the position of the wharf to which the vessel is proceeding, as listed in the table titled **Tomakomai Ko—Berth Signals**.

Tomakomai Ko—Berth Signals	
Flags Disposed Vertically	Position of Wharf
Second substitute 1E	Section I—E and S side.
Second substitute 1N	Section I—N side.
Second substitute 2E	Section II—E side.
Second substitute 2N	Section II—N side.
Second substitute 2W	Section II—W side.
Second substitute 2S	Section II—Wharf on W side of approach to basin.

Traffic in Tomakomai Ko is regulated by the following signals:

1. Flashing letter "I"—Ships waiting to enter the harbor may now do so; vessels under 500 gt may leave the harbor, but vessels over 500 gt must not move.
2. Flashing letter "O"—Ships waiting to depart the harbor may now sail; vessels over 500 gt entering the harbor must leave the fairway clear for the outgoing traffic.
3. Flashing letter "F"—Ships under 500 gt may enter or leave the harbor.
4. Flashing letter "X"—Only vessels permitted by the Captain of the Port may move within the harbor.

Contact Information.—See the table titled **Tomakomai—Contact Information**.

Anchorage.—The port has a sand bottom which provides

View of Chikyu Misaki from SSE

good holding, but there is no protection from winds coming from any direction. Quarantine anchorage, 0.5 miles in diameter, is situated close SW of the West Breakwater. An obstruction lies 0.15 mile NNE of this anchorage.

Section 1 of the Inner Harbor and Section 4 of the Outer Harbor are designated anchorages for vessels carrying hazardous cargo.

Anchoring is prohibited in the vicinity of the entrance to Tomakomai Ko: the limits of this area are best seen on the chart.

Tomakomai—Contact Information	
Pilots	
VHF	VHF channel 16
Telephone	81-144-343-070
Facsimile	81-144-346-210
Port Authority	
Telephone	81-144-345-905
Facsimile	81-144-345-559
E-mail	aco6-inqu.sinkou@jptmk.com

Caution.—A fish haven has been established 3.7 miles SW of Tomakomai Ko, in position 42°35.8'N, 141°32.8'E.

Two wrecks dangerous to navigation lie SW of Tomakomai Ko in position 42°35.0'N, 141°35.5'E.

Less water than charted was reported (1998) in Section 2 and Section 3, on the W side of the entrance channel.

1.38 **Chikyu Misaki** (Tikiu Misaki) (42°18'N., 141°00'E.) is a steep, lofty headland on the S side of a peninsula, located about 34 miles SW of Tomakomai Ko. A lighthouse, a direction finding station, and a fog signal station are situated on the summit of Chikyu Misaki.

The 30-mile stretch from Tomakomai Ko to Washibetsu Saki is almost entirely sandy beach, except for two rocky headlands. The mountains behind the coast reach NE; some of them exceed 1,000m high.

Kuttara Yama (42°30'N., 141°12'E.) is a mountain with two peaks; the highest is 534m. This peak, a good radar mark, is located 21 miles SW of Tomakomai Ko. A mountain rising to a height of 1,040m, 5.75 miles WNW of Kuttara Yama, has a pointed peak that is remarkable when viewed from the S.

Ayoro Bana (42°27'N., 141°12'E.), a tongue-shaped headland, 36m high, is located on the coast 4 miles SSW of Kuttara Yama. The headland is highly visible despite its low profile.

Wasibetu Take (Muroran Take), 911m high, 9 miles W of Ayoro Bana, is easily distinguished as it is the S peak in the area. Wasibetsu Saki, 5.5 miles SSE of Wasibetu Take, is a dark steep-sided headland, 107m high, that is conspicuous from a distance because it stands out from flat surroundings.

The 20m depth contour lies about 1 mile from shore along this coast; the 10m line is less than 0.6 mile from shore. There are virtually no detached reefs.

Caution.—Between April and December, many fish traps are rigged within 2 miles of shore between Tomakomai Ko and Ayoro Bana. Aquaculture farms are situated within 1.5 miles of shore between Tomakomai Ko and Washibetsu Saki.

1.39 Uchiura Wan, a large unencumbered bay, some 26 miles in extent, is entered between Chikyu Misaki on the N and Suna Saki, 16 miles SW. Muroran Ko is situated in the NE section of the bay. From Suna Saki, the coastal shoreline of cliffs and narrow shingle beaches trends SE for 29 miles to Esan Saki.

Etomo Hanto (42°20'N., 140°59'E.), a hilly elongated peninsula, forms an elbow-shaped projection on the N side of the entrance to Uchiura Wan. Several submarine cables lie between Chikyu Misaki and Suna Saki. Reference should be made to the chart for exact locations. It is joined to the mainland by a low-lying isthmus.

The outer coastline of Etomo Hanto consists primarily of eroded cliffs, 50 to 150m high, with scattered, narrow rock, or sand beaches. Wasibetsu Saki, previously described in paragraph 1.38, is located at the NE extremity of this peninsula. Itaki Bana, on the E side of the above-mentioned isthmus, is located 1.5 miles SSW of Washibetsu Saki and then 2.5 miles farther to Chikyu Misaki. On the W side of Etomo Hanto is Enrumu Saki (Yenrumu Saki), located 3.75 miles NW of Chikyu Misaki, and 2.25 miles farther NNW is Poroshire Saki (Porosireto Misaki); Muroran Ko is entered between these two points.

Daikoku Shima, 35m high, is located 0.6 mile NNW of Enrumu Saki.

Muroran Ko (42°21'N., 140°58'E.)

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1.40 Muroran Ko is a port of entry and the principal industrial city of Hokkaido.

This excellent natural harbor is 1 to 2 miles wide and extends 4 miles inward from its mouth. The E side of the harbor is low, flat ground, so a strong W wind can whip up waves even in the inner harbor.

The port area is divided into three port districts, which may be seen on the chart. District 1 and District 2 are generally known as the Inner Harbor; District 3 is generally known as the Outer Harbor. Lights are shown from the heads of the N and S, inner and outer, breakwaters.

Winds—Weather.—Strong NW winds are frequent in the vicinity of Muroran Ko from mid-September until late March; these winds raise a heavy sea off the harbor, which is open to the W. In September and October, typhoon winds reach their maximum intensity when the typhoon has passed. The record maximum wind speed in this area was 72 knots from the S. There are usually more than 5 days per month between November and February with wind speeds in excess of 29 knots. The district meteorological observatory is situated on the seaward side of Etomo Hanto; the wind data recorded there may differ greatly from the actual wind conditions at Muroran Ko.

Muroran—Berth Information

Berth	Length	Depth	Maximum Vessel	
			Draft	Size
Nippon Petroleum				
Sea Berth J-1	33m	16.5m	16.0m	115,811 dwt
Wharf	67m	16.5m	10.7m	59,200 dwt
Motowanishi Wharf	176m	9.0m	8.0m	12,000 dwt
Nippon Steel				
North Nos. 1-3	470m	9.0m	7.4m	12,000 dwt
North No. 5	245m	12.0m	11.4m	40,000 dwt
Nos. 8-9	250m	7.2m	11.4m	5,000 dwt
No. 14	160m	8.6m	8.3m	10,000 dwt
Nos. 15-17	540m	8.0m	7.7m	10,000 dwt
No. 18	250m	13.4m	13.4m	100,000 dwt
No.19	300m	16.5m	16.0m	150,000 dwt
Nittsu Pier No. 5	150m	9.0m	8.7m	10,000 dwt
Nittsu Pier No. 6	160m	9.0m	8.7m	10,000 dwt
Nittsu Pier No. 7	110m	7.5m	7.2m	10,000 dwt
Centre Pier	306m	9.0m	8.7m	50,000 dwt
West Wharf No. 1				
Nos. 1-2	257m	7.0m	6.7m	5,000 dwt
West No. 2 Wharf				
No. 1	175m	8.9m	8.6m	10,000 dwt
No. 2	185m	10.0m	9.7m	15,000 dwt
No. 3	150m	6.0m	6.7m	5,000 dwt
Nos. 4-5	257m	6.6m	6.3m	5,000 dwt
West No. 3 Pier				
No. 1	125m	7.0m	6.7m	10,000 dwt
No. 2	185m	8.4m	8.1m	15,000 dwt
No. 3	135m	7.4m	7.1m	5,000 dwt
No. 4	195m	9.0m	8.7m	10,000 dwt
East Ward (Higashi Ku)				
Nikko Pier				
No. 1	140m	7.9m	7.6m	8,000 dwt
No. 2	135m	7.9m	7.6m	7,000 dwt

Muroran—Berth Information				
Berth	Length	Depth	Maximum Vessel	
			Draft	Size
Sakimori Wharf				
Nos. 1-3	555m	10.0m	9.7m	15,000 dwt
Nos. 4-5	480m	12.0m	11.7m	30,000 dwt
Quay No. 6	280m	14.0m	13.6m	100,000 dwt
Quay No. 7	185m	10.0m	9.7m	15,000 dwt
No. 8	170m	10.0m	9.7m	15,000 dwt
Shukuzu Wharf				
No. 1	185m	10.4m	10.1m	50,000 dwt
No. 2	185m	12.0m	11.7m	—
Tanker Terminals				
JXTG Nippon Oil Terminal				
H-1	27m	11.0m	9.9m	51,549 dwt
H-2	18m	18.5m	—	2,550 dwt
H-3	13m	8.7m	—	5,900 dwt
H-4	18m	7.4m	—	3.000 dwt
H-5	—	5.4m	—	—
J-0	10m	8.5m	—	5.000 dwt
J-2	16m	8.0m	—	4,000 dwt
J-3	15m	8.0m	—	5,5000 dwt

Snow occurs from early November until early April; rainfall is heaviest in September and October. Muroran has a mean of 39 days with fog each year. The maximum, 12 days, occurs in July. April, May, June, and August average 6.3 days each. In summer, E winds blowing off the Oyashio Current lower the temperature and are accompanied by fog, which thickens as the wind increases.

Ice.—Ice within the harbor area is rare, allowing the port to be open throughout the year.

Depths—Limitations.—Wharves line the entire shoreline of the Inner Harbor, which is enclosed by a N breakwater and a S breakwater. Other wharves and a sea berth are situated along the N shore of the Outer Harbor, which is protected by the N outer breakwater and the S outer breakwater that extends between Daikoku and Enrumu Saki.

Muroran Ko approach is open and free of dangers. The 20m curve lies close outside the outer breakwaters. The fairway leads E, into the harbor, and is dredged to 16.5m, as is the sea berth on the N side of the Outer Harbor. The depths at the principal berths range from 4.5 to 16.5m. There are numerous berths for smaller vessels that range from 1.5 to 5m. For further berthing information refer to the table titled **Muroran—Berth Information**.

Aspect.—The principal landmarks along the shores of the port are:

1. A conspicuous chimney that may be seen 0.65 mile N of the head of the N inner breakwater; its height is 185m.

The Hakucho Bridge

2. Four prominent green tanks at the oil refinery, about 0.1 mile E of the root of the same breakwater. Several additional tanks are situated close E.
3. A wooded hill, 145m high to the tops of the trees, is 0.7 mile S of the root of the inner S breakwater.

The Hakucho Bridge, with a vertical clearance of 53m, spans the entrance channel in the vicinity of the inner N breakwater.

Pilotage.—Pilotage is not compulsory, but is advisable for VLCC size vessels. If the services of a pilots is desired, it can be arranged through the ship's agent. A 24-hour notice of ETA is required. Harbor pilots are available at the outer anchorage.

Pilots normally embark about 2 miles WSW of South Outer Breakwater Red Light. VLCCs board pilots approximately 2.3 miles SW of South Outer Breakwater Red Light.

As a rule, tankers and large vessels (those greater than 30,000 dwt) do not enter at night.

Contact Information.—See the table titled **Muroran—Contact Information**.

Muroran—Contact Information	
Pilots	
Telephone	81-143-224-049
	81-143-235-656
Facsimile	81-143-238-085
Port Authority	
Telephone	81-1432-23191
Facsimile	81-1432-26069
E-mail	kouwan-ken@muroran.lg.jp

Anchorage.—Quarantine anchorage is situated about 1.8 miles WSW of Poroshire Saki. The designated anchorage for vessels carrying hazardous cargo is in the Outer Harbor, District 3. Small vessels may use District 2 during the winter. The bottom is mostly sand, inside and outside the port area, and provides good holding in depths of 9m.

Caution.—At times, W and NW winds tend to converge at the harbor mouth and are funneled E through the port with unexpected force. The resulting high waves have been responsible for many anchor dragging and parted mooring lines each year.

During rough weather, the traffic in the bay becomes confused; ships' captains unfamiliar with these waters and conditions should contact the harbormaster for guidance. A submarine wave meter and submarine power cable extend 0.15 mile SW of the outer S breakwater head. This cable runs along the breakwater to Daikoku Shima, and from the E side of Daikoku Shima to Enrumu Saki.

At night, the various leading lights and lighted buoys, and the lights on the breakwater, are often difficult to distinguish against lights in the background, and it is reported that the breakwaters are covered at HW. Even in daylight, the large number of vessels in the harbor may make it difficult to see very far ahead.

An area of land reclamation is being undertaken off the Nakau Wharf, E of a line joi9ning the following positions:

a. 42°21'22.4"N, 140°58'56.2"E.
b. 42°21'10.4"N, 140°58'50.6"E.

1.41 Usu Take (42°32'N., 140°50'E.), located on the NE shore of Uchiura Wan, is a conspicuous active volcano with two rounded peaks that rise to a height of 732m, 12.5 miles NNW of Muroran Ko. White vapor rises from the E peak, which is the highest, with the volume increasing before or after a rain.

The 15 miles of coast between Poroshire Saki and Toyoura Byochi consists of mountains either pressing against the water or receding inland.

Arutori Misaki (Esokusoki Saki) (42°30'N., 140°47'E.) projects SW from the shoreline, 9.75 miles NNW of Poroshire Saki. It is 26m high, prominent, and from a distance resembles an island. It is fringed with reefs and should be given a wide berth. Usu Wan, located close N of Arutori Misaki, is encumbered with volcanic rock ejected from Usu Take. This shoal area extends 0.75 mile offshore.

Toyoura Byochi, a small roadstead off the fishing village of Toyoura, 6 miles NNW of Arutori Misaki, affords anchorage, in 7m, sand, good holding ground. The prevailing wind is offshore, but strong S winds are sometimes experienced.

Lights are shown from the breakwaters.

Abuta Byochi, located 2.5 miles SE of Toyoura Byochi, affords good anchorage with protection against E winds, in depths of 12 and 13m. There is good holding ground of sand, mud, and shells. High waves occur when S winds blow. The best berth is with Sankaku Yama, a hill 1 mile E of Poronai Saki, in line with Ganke, a cliff 0.4 mile SSW of Sankaku Yama, bearing about 020°. Farther E, the anchorage is not bad.

1.42 Ikorishireto Saki (42°34'N., 140°35'E.), in the N part of Uchiura Wan, lies 6 miles WSW of Toyoura Byochi. The intervening coast is a series of cliffs and ravines.

The 5-mile stretch between Ikorishireto Saki and Shizukari Byochi, to the WNW, is marked by steep cliffs 100 to 200m high that have been eroded by the sea. Behind the cliffs are thickly-wooded hills, 300m high, that appear black when viewed from a distance. A light is shown from a position 5 miles WNW of Ikorishireto Saki.

The W coast of Uchiura Wan, from Shizukari Byochi S 21 miles to Yurabu Gawa, is a low, flat, crescent of beaches. The mountains inland are not very high. A radio tower, 185m high, is situated close SW of the mouth of Oshamambe Kawa, about 7 miles SW of Shizukari Byochi. The radio tower is a good mark both day and night.

Along this entire coastal stretch, the bottom suddenly shoals about 0.3 mile offshore. There are no detached reefs, but a constant surf makes it difficult even for small boats to land.

Yakumo (42°16'N., 140°17'E.), a small fishing harbor at the mouth of the Yurabu Gawa, has only an E breakwater and no mooring facilities. A light is shown 0.75 mile SSE of the mouth of Yurabu Gawa.

The S shore of Uchiura Wan trends SE 16 miles from Yakumo to Mori Ko. The coastline consists mostly of rocky beaches backed by a few low cliffs; inland is mostly mountainous. From Mori Ko the coast trends 6 miles ENE to Suna Saki. Sawara Wan is formed between Dokui Saki, 2 miles W of Suna Saki, and that point.

Except for Komaga Dake, 5 miles SSW of Suna Saki, good landmarks are few. About 9 miles NW of Mori Ko, there is a cliff, 48m high, that is highly visible from a distance. A light is shown from the vicinity of the village of Otoshibe, situated about 8.5 miles NW of Mori Ko.

1.43 Mori Ko (42°07'N., 140°35'E.) is an open roadstead protected by three breakwaters. The entrance, which is about 69m wide, faces NE. The water depth alongside the piers is 3.5 to 5.5m. The port entrance and inner area are too small to accommodate vessels larger than 1,000 gt. When NW to NE winds are strong, waves may enter the harbor, making it impossible for vessels to remain at their moorings.

There is a small basin, with depths of 1.8 to 2.6m, at the W end of the harbor. There are breakwaters marking the entrance

to the basin. An overhead power cable, with a vertical clearance of 11m, spans the entrance.

Aquaculture installations are situated in Mori Ko. Anchoring is not possible within 1.75 miles of the shore throughout the area.

Weather signals are displayed at night from a tower near the root of the E breakwater.

Sawara Ko (42°08'N., 140°41'E.), a fishing port situated at the head of Sawara Wan, is the best port for vessels under 150 gt in Uchiura Wan.

In winter, strong NW winds may carry waves over the breakwaters, making it impossible for vessels to remain at their moorings.

A light is shown from the head of the North Breakwater.

Anchorage, about 0.5 mile outside the boat harbor, in 10m, mud, provides good protection from E to W winds.

Caution.—Since Suna Saki and Dokui Saki are growing outward, there are shallows near their seaward tips. Five submarine cables extend to Muroran Ko from a point near Suna Saki.

1.44 Suna Saki (42°08'N., 140°43'E.), the S entrance point to Uchiura Wan, is a flat sandy spit which is backed by grassy marshes without trees or houses. A light is situated about 0.2 mile within the point. The lighthouse is a cylindrical concrete tower, 13m high.

Dekima Saki, a rock headland 16m high, backed by a series of low hills which appear as flat land when viewed from a distance, lies 5.5 miles SE of Suna Saki. Matsuya Saki, a headland 32m high, lies about midway between the two above points. Matsuya Saki can be distinguished from Dekima Saki by a background of trees and steeper cliffs at the tip.

From Dekima Saki, the coast trends 23 miles farther SE to Esan Misaki. There are several notable features along this coast; within 5.5 miles inland some of the peaks reach a height of over 1,000m. A light is shown on the coast about 1 mile SSE.

Hakamagoshi Dake (41°55'N., 140°49'E.), a conspicuous mountain, 1,107m high, rises 9 miles S of Dekima Saki.

Esan Misaki from E

E San (41°48'N., 141°08'E.), an active volcanic mountain 618m high, occasionally has clouds shrouding its peak; it constantly emits sulfurous fumes. The E side of the summit is covered with red rock fragments and the W side has sulfur blotches that look like clouds from a distance. E San rises 1 mile W of Esan Misaki. This volcano, along with the sharp-peaked mountain 690m high that rises 4.25 miles NW, are the primary marks for vessels making for Esan Misaki from the E.

Esan Misaki Light

1.45 Osatsube Ko (41°54'N., 141°00'E.), 14 miles SE of Dekima Saki, is a small fishing harbor consisting of a camber protected by breakwaters. A light is shown from the head of the N breakwater. A light is shown about 3 miles E. A light is also shown at the head of the N breakwater at Kakkumi, 1.5 miles WNW.

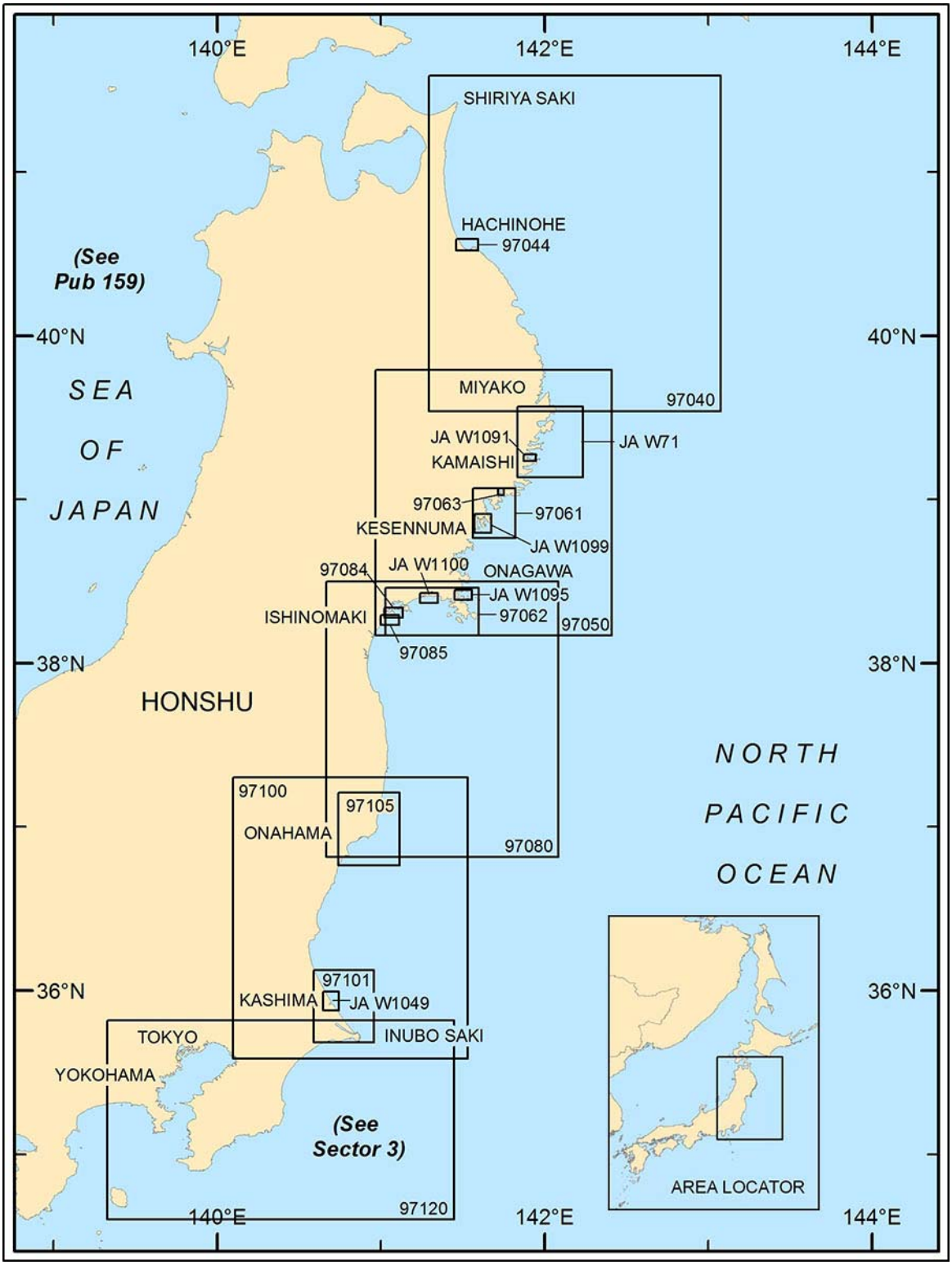
Benten Shima, 3.5 miles NW of Osatsube Ko, consists of three rocky islets. These islets are 12m high and located on a reef that dries and extends about 0.3 mile offshore. A light is shown here.

Todohokke Ko (41°50'N., 141°09'E.), about 6.5 miles SE of Osatsube Ko, is a small fishing harbor protected by a breakwater. A light is shown on the breakwater head. The harbor can provide shelter on a limited basis for small vessels. Todohokke Wan can provide anchorage for larger vessels.

Esan Misaki (Esan Saki) (41°49'N., 141°11'E.) forms the S point of Todohokke Wan. It is a steep promontory, 260m high, on which there is a lighthouse, a radiobeacon, and a direction finding station.

A conspicuous above-water rock, 8.4m high, stands near the S corner of the headland. The lighthouse is a cylindrical concrete tower, 19m high.

For information on Tsugaru Kaikyo and the W coast of Hokkaido, refer to Pub. 159, Sailing Directions (Enroute) Japan, Volume II.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **2** — CHART INFORMATION

SECTOR 2

EAST COAST OF HONSHU—SHIRIYA SAKI TO INUBO SAKI

Plan.—The E coast of Honshu is described from Shiriya Saki, the NE extremity of the island, S to Inubo Saki. The sector is described from N to S.

General Remarks

2.1 This sector describes the coast of Honshu that is fronted by the Pacific Ocean. The coast extends S from Shiriya Saki, for about 345 miles, to Inubo Saki. Todo Saki, 116 miles S of Shiriya Saki, is the E extremity of the island of Honshu.

The principal dangers along this coast, with a few exceptions, are contained within the 20m line. Off-lying dangers are described in order with the appropriate coastal section.

The mountains which rise inland, N of Same Kaku, offer no marks from the far offing, but S of Same Kaku there are several mountains which serve as useful marks.

An Ocean Data Acquisition System (ODAS) lighted buoy is moored well offshore in position 36°40'N, 145°40'E.

Winds—Weather.—Since the E coast of Honshu, fronting on the Pacific Ocean, is backed by mountainous terrain and faces Oyashio, the climate is controlled by these features.

The E coast of Honshu is generally very cold during the winter. Temperatures are low, and there are frequent blizzards with strong W to NW winds. On the coast from Shiriya Saki to Hachinohe Ko, it is reported that there are often snowstorms at sea E of Ogawara Ko, even when the weather is clear at Hachinohe Ko.

The summer climate is generally hot under the influence of the North Pacific high, with relatively light SE winds. Ocean fogs are frequent. Also, in years when the Okhotsk high is unusually developed, the early summer rainy season front lingers over Honshu much longer than normal.

Temperatures in this area are lower, both summer and winter. Mean annual temperatures are about 7° lower than those of other localities at the same latitudes in the Northern Hemisphere.

The number of stormy days in this coast are greater in the spring than in the winter, except in the vicinity of Shiriya Saki.

At Shiriya Saki, strong winds persist throughout the year, especially the seasonal winter wind, which will blow several days continuously from the W, at speeds of over 19 knots. Vessels sailing in this area during the winter should pay strict attention to weather reports. In summer, a SE wind prevails; however, since fog formation makes navigating hazardous, this condition should be treated with the same degree of attention as the winter winds.

On this coast, weather reports are broadcast from the radiobeacon and direction finding stations at Shiriya Saki, Todoga Saki, and Kinkasan.

Tides—Currents.—In general, tidal currents are weak, setting S and N in most places. They are influenced by the S ocean currents, and often flow in irregular directions and irregular speeds.

To the NE of Shiraya Saki, the flood current sets S and the ebb current sets N.

On the coast from Shiraya Saki to Kuro Saki, the flood current sets SW and the ebb tide sets NE, with a weak current. At maximum strength, there is acceleration as the current sets S. The N or S flow is strongest N of Same Kaku at the high or low tide.

The time of maximum velocity is 5 hours later from the time of high or low water off Same Kaku, 4 hours afterward off Kuji Ko, and 3 hours after off Kuro Saki.

At a point 1.5 miles E of Todoga Saki, a tidal current of 1.8 knots has been measured on the final day of the summer high tides flowing S; at a point 2 miles off Kobe Saki, the current was measured at 1.5 knots flowing SSW, also on the final day of summer high tides.

Off the area from Kesennuma Wan entrance to the Enoshima Retto, the flood current sets N and the ebb current sets S. Off Kinkasan and Enoshima Retto, the flood current sets W while the ebb current sets E. In all these areas, the strength of the current is weak.

Caution.—Due to the earthquakes that occurred on 11 March 2011, offshore of the Tohoku region in Japan, and the resultant tsunami, variation of the coastline and sea floor must be considered and caution exercised. Wrecks and obstructions may be displaced from previously charted positions and new obstructions experienced along the E coast of Honshu and in the harbors. Breakwaters may be altered in position and length and many aids to navigation destroyed. The charts of these areas have been significantly affected and will be updated as surveys and time allow.

Shiriya Saki to Same Kaku

2.2 **Shiriya Saki** (Siriya Saki) (41°26'N., 141°28'E.), the NE extremity of Honshu, is the termination of a projection whose outer part is low. There is a light and radiobeacon situated here. A ramark also transmits from the vicinity of the light. From Shiriya Saki to Same Kakul (Same Kado), 55 miles to the S, the coast consists entirely of a sandy beach, except for cliffs around Kukidono Saki and Nakayama Saki, 3 and 20 miles, respectively, S of Shiriya Saki. The area S of Nakayama Saki is especially sandy, marked by low hills, and the outlets of marshes are connected to the plain. The 20m line lies from 1 mile offshore in the N to 2 miles offshore in the S.

Dangers.—There are many dangers within a 1 mile radius of Shiriya Saki, including O Ne.

2.3 **O Ne** (41°26'N., 141°29'E.), protruding above the surface, lies 0.9 mile ENE of Shiriya Saki. In calm weather, the rocks are difficult to identify, but swells break over them in rough weather. There are many wrecks, submerged rocks, and rocks awash in this vicinity.

A long rock shelf under 36m in depth runs for 3 miles NNE of Shiriya Saki. Its E slope is steep, but the N and W sides are

more gradual. Swift violent currents flow continuously above this shelf.

Sunken rocks lie 1 mile off the coast, about 1.3 miles S of Shiriya Saki. Waves will break on the rocks in strong winds. Todo Shima is a prominent black islet about 16m high, 0.3 mile NNE of Shiriya Saki.

Shikkari Hakuchi, about 3.8 miles S of Shiriya Saki, has a sandy shoreline and bottom. This area is used as a stopping place by many vessels waiting for the winter westerlies to calm down. Many ships anchor here when heading toward Isugaru Kaikyo. Care should be exercised because, close to the shore, the bottom is rocky and fixed fishing nets are laid out throughout the year. Further offshore the bottom is sandy and the holding ground is good.

Shiranuka Ko is a small fishing harbor on the N side of Monomi Saki, about 18 miles S of Shiriya Saki. A light is shown from Shiranuka Ko and Monomi Saki.

Kitatadai Ne and Minamitadai Ne are two shoals located 8 miles NNE of Monomi Saki, and about 1 mile offshore. The depths on these shoals are 12.8 and 14.6m.

From Shiranuka Ko, the coast trends in a southerly direction about 37 miles to Same Kaku.

Mutsu-Ogawara Ko (40°57'N., 141°25'E.) consists of a large lighted superbuoy about 1.5 miles offshore, 4 miles NNE of the entrance to Takase Kawa. An oil pipeline connects the mooring buoy to the shore.

Wave recorders, connected to the shore W by submarine cables, are situated on the seabed 2 miles SSE and 2 miles SSW of the superbuoy.

An orange spherical buoy is moored 5 miles SSE of the superbuoy.

Hachinohe Ko (Hatinohe Ko) (40°32'N., 141°33'E.)

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2.4 Hachinohe Ko, on the W side of Same Kaku, is an industrial center. The port includes the districts, from E to W, of Samemachi, Shirogane (Shirokane), Minatomachi, and Konakanomachi. There are fishing harbors at Samemachi and Minatomachi, and there is also a whaling station at Samemachi. There are extensive breakwaters which protect the harbor area that is open to the N and is exposed to the strong N winter winds. Extensive reclamation work has taken place, NE of Kawajiri East Breakwater, NW of River Mouth Breakwater and SW of the breakwater which form the SW side of West Fairway.

Winds—Weather.—The prevailing winds are from the SW. When a low pressure moves S of Hachinohe Ko, a strong N or E wind comes up, causing breakers in waters under 20m. Heavy fogs may occur from June through August. During January and February, the average is 22 days of snow per month. The snowstorms usually last for several days.

Tides—Currents.—Extensive recent construction on numerous breakwaters in this general area may have altered the directions of the currents. Prior to the construction, the S resultant of the current and the tidal currents diverted the outflow from the rivers, and there was always an easterly set on Kabu Shima that gave rise to a small countercurrent in the vicinity, especially for two or three days after a strong W or N wind had been blowing. Strong SE winds set up a W current.

Since the completion of an outer breakwater, the port is protected from high waves from the open sea. When there is a strong N wind, however, swells may penetrate into District 1 and District 2, so that the approach becomes difficult. Also when there is a strong E wind, the W channel may become impossible to use because of strong oscillatory waves.

Hachinohe Ko W breakwater is in ruins (2012).

Depths—Limitations.—The 10m curve extends to the entrance of the E breakwaters and to the E breakwater on the W side of the harbor.

The depth in the E passage approaching the port is 10m; Hattaro Passage has a dredged depth of 14m, although shoaling is liable to occur. Draft limitation in the channel is 12m at LW.

There are tanker berths for vessels up to 5,000 dwt, with a maximum draft of 6.5m, and two LNG berths. The port will accommodate vessels up to 50,000 dwt, with a maximum length of 230m and a draft of 13m. For further information refer to the table titled **Hachinohe—Berth Information**.

Hachinohe—Berth Information

Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
Hattaro Wharf						
A	171m	7.5m	141m	6.8m	5,000 dwt	Bunkers.
B	172m	7.5m	141m	6.8m	5.000 dwt	Bunkers.
C	172m	10.0m	170m	9.5m	15,000 dwt	Aggregates, cement, and bunkers.
D	295m	13.0m	230m	12.0m	50,000 dwt	Bunkers.
E	295m	13.0m	230m	12.0m	50,000 dwt	Bunkers.
F	215m	10.0m	175m	9.8m	15,000 dwt	Bunkers.
G	215m	10.0m	175m	9.8m	15,000 dwt	Cement and bunkers.

Hachinohe—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
H	157m	7.5m	110m	7.0m	5,000 dwt	Fishing vessels and bunkers.
I	158m	7.5m	110m	7.0m	5,000 dwt	Bunkers.
J	260m	13.0m	230m	12.0m	50,000 dwt	Bunkers.
L	130m	7.5m	110m	7.0m	5,000 dwt	Bunkers.
M	130m	7.5m	110m	7.0m	5,000 dwt	Bunkers.
N	180m	7.5m	110m	7.0m	5,000 dwt	Bunkers.
No 1 Ferry	193m	7.5m	—	—	—	Cruise vessels.
No 2 Ferry	180m	12.0m	230m	11.0m	30,000 dwt	Ro-ro.
P	240m	12.0m	230m	11.0m	30,000 dwt	Ro-ro.
Mitsubishi Wharf						
Inner Wharf	150m	10.0m	130m	9.5m	15,000 dwt	Wood chips.
Outer Wharf	240m	12.0m	167m	11.0m	5,000 dwt	Wood chips.
Sumikin Cement Terminal						
Sumikin Cement	265m	11.0m	180m	9.7m	20,000 dwt	Cement.
Tohoku Grain Terminal						
Tohoku Grain Pier	233m	13.0m	230m	11.9m	50,000 dwt	Grain.
Kawaragi Terminal						
A	280m	14.0m	230m	12.7m	50,000 dwt	Bunkers.
B	130m	7.5m	110m	7.0m	50,000 dwt	Bunkers.
C	285m	9.0m	110m	—	50,000 dwt	Bunkers.
E	80m	5.0m	199m	—	61,648 dwt	General cargo.
F	250m	5.5m	—	—	—	Bunkers.
G	250m	5.5m	—	—	—	Bunkers.
K-Ni	10m	—	151m	—	—	Bunkers.
KD-1	12m	—	44m	—	—	Chemicals.
KD-2	23m	—	43m	—	—	Chemicals.
KD-3	18m	9.0m	105m	7.7m	—	Ro-ro.
KD-4	18m	33.0m	105m	—	5,916 dwt	Chemicals.
KD-6	12m	7.5m	122m	—	1.206 dwt	Chemicals.
KZ-1	199m	—	—	—	40,810 dwt	Bunkers.
W 06	140m	9.0m	95m	4.8m	—	Bunkers.
W 07	220m	9.0m	95m	4.8m	—	Bunkers.
Shirogane						
A	165m	9.0m	155m	8.2m	10,000 dwt	Cement.
B	180m	10.0m	175m	9.3m	15,000 dwt	Cement.
C	115m	7.5m	110m	7.0m	5,000 dwt	Bunkers.
S 1	93m	6.0m	—	—	—	Bunkers.

Hachinohe—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
S 2	132m	6.5m	—	—	—	General cargo.
S 3	140m	5.0m	—	—	—	General cargo.
S 4	140m	5.0m	—	—	—	General cargo.
Tanker Terminals						
ENE No. 1	33m	14.0m	—	—	—	Bunkers.
ENE No. 2	18m	6.0m	—	—	—	Bunkers.
K-tsu 8	8m	—	—	—	—	Bunkers.
Mitsui Tanker	—	—	—	—	—	Chemicals.
K-To	10m	—	—	—	—	Bunkers.

Aspect.—Monomi Ishi (Monomi Iwa), a large rock, surmounts a hill 52m high on Same Kaku. Seen from the SE, the hill appears saddle-shaped; from the NE the summit appears pointed.

A power station chimney, painted in red and white bands, 122m high, is the highest of four chimneys situated about 3 miles WSW of Monomi Ishi. A chimney, 82m high, the tallest of three chimneys, is situated about 2.5 miles NW of the chimney, 122m high, mentioned above.

Hashikame Dake (Hasikami Take), 740m high, 8 miles S of Same Kaku, is a useful mark when approaching from the N.

Pilotage.—Pilotage is not compulsory; however, harbor pilots are available. Vessel must report updates or changes to their ETA. The pilot boards at the quarantine anchorage. For deep-draft vessels, the pilot boards from position 40°33.5'N, 141°33.3'E. The pilot boat is unable to communicate directly with vessels; therefore, vessels must keep close communication with agents. Pilotage is available 24 hours. Vessels should communicate with the harbormaster on VHF channel 16.

Regulations.—Navigation is prohibited within 30m of tankers loaded with flammable dangerous cargo berthed in the harbor, unless specifically authorized by the harbormaster. Vessels so loaded are required to display a notice to this effect, illuminated at night.

Vessels should send an ETA upon departure from the previous port and 10 days, 4 days, 2 days, and 24 hours prior to arrival.

Contact Information.—See the table titled **Hacinohe—Contact Information**.

Hachinohe—Contact Information	
Pilots	
Telephone	81-17-828-9421
Facsimile	81-17-828-4975
Port Authority	
Telephone	81-17-734-9676
Facsimile	81-17-734-8194
E-mail	kowan-kuko@pref.akita.lg.jp

Anchorage.—The quarantine anchorage is established 1.5 miles N of the North Breakwater Light. The mid-segment of the line connecting the W end of the W breakwater with the NE end of the Shirogane Wharf is 7m deep, with a fine sand bottom and good holding. Anchorage is good on the S side of the N breakwater, but in a strong N wind, swells pour over the breakwater. There is also open sea anchoring, in depth of 22m, with a sandy bottom in the vicinity of position 40°34.0'N, 141°33.5'E. Pilots will board at this position regardless of weather conditions. Vessels carrying dangerous cargo should anchor in District 3 and display the proper signs.

Caution.—During the fishing season, June to November, 400 to 500 fishing vessels leave the port daily, usually between 1200 and 1700.

A wave meter lies on the sea bed approximately 0.9 mile N of Kabu Shima; it is connected to the shore by two submarine cables.

2.5 **Same Kaku** (Same Kado) (40°32'N., 141°35'E.) is fringed with numerous sunken rocks. Kabayama Ne, with a least depth of 4.1m; Ogomune, with a least depth of 1.7m; and Ko Ne, with a least depth of 2.2m lie, respectively, 0.6 mile NNW, 0.6 mile NW, and 1.1 miles WNW of Same Kaku Light. Ko Ne, three rocks between 0.7 to 3.3m high, lie 0.6 mile NW of the light. Ko Ne is seldom marked by breakers, except during strong winds. Care should be taken against being set to the E upon these dangers.

Dangerous wrecks lie 0.5 mile NE of Same Kaku Light, and about 0.1 mile SE of Kawaragi East Breakwater Light.

Rocks, with a depth of 10m, lie 0.9 mile E of Same Kaku Light.

Same Kaku to Miyako Ko

2.6 From Same Kaku to Miyako Ko, 55 miles SSE, the land slopes gradually to the sea and terminates for the most part in steep cliffs or crumbling slopes. There are occasional sandy beaches along this coast, which is indented by two shallow bays, Kuji Wan and Noda Wan, 24 and 30 miles, respectively, SSE of Same Kaku. There are no good landmarks along this coast except Hashikame Dake, previously described in

paragraph 2.4, and Kujihira Take (Kuzihira Take) (40°21'N., 141°37'E.), 706m high, located 3 miles SSE of Hashikame Dake.

The coast is generally steep-to and deep, but dangerous sunken and above-water rocks lie up to 1 mile offshore.

Caution.—Fog is common on this coast in the summer, especially in June and July. Traffic is heavy, with squid fishing vessels in the summer and mackerel-pike fishing vessels in autumn.

2.7 **Yagi Ko** (40°21'N., 141°46'E.) is a small fishing harbor protected by breakwaters situated 14 miles SSE of Same Kaku. Two leading lights, in line bearing 236.8°, shown from concrete towers, lead clear of dangers to the harbor entrance.

Shigeta Su (Tsugeta Su), a rock with a depth of 5.9m, lies near the 20m line, 1.3 miles N of Yagi Ko. Several sunken rocks are along this coast between Hashikami Light, 7 miles NW of Yagi Ko, and Yagi Ko. These rocks include Jusanori, Wakame Ne, and Yahiro Ne, with depths of 2.4m, 5.2m, and 12.8m, respectively.

Benten Hana (40°13'N., 141°50'E.), a high wooded point, lies 8 miles SSE of Yagi Ko.

A semi-circular cedar forest on a hilltop 3.8 miles NNW of Benten Hana is conspicuous.

2.8 **Kuji Wan** (Kuzi Ko) (40°12'N., 141°50'E.) is entered between Benten Hana and Mi Saki, 5 miles SSE. The bay, which is open to the ocean swell and has a rocky bottom, is not suitable for anchorage.

The outer breakwater, which extends NNW from the shore, is marked at its head by a light shown from a round tower, 12m high.

The N breakwater extends 0.2 mile SE from a position 0.5 mile NW of the head of the outer breakwater. A light is shown at its head.

O-saku Ne and Ko-saku Ne, drying rocks lying 0.7 mile and 0.85 mile SSE, respectively, of Benten Hana, are illuminated by a light on Ushi Shima, a small cliffy islet, 63m high, close off Benten Hana.

Suwa Lower Region is a dredged port at the head of the bay. The berths in the outer harbor have depths alongside of 5.5 to 10m. The inner harbor berths have depths alongside of 4.5 to 6m. The channel to the anchorage has a least depth of 4.5m. Depths within the anchorage range from 4.5 to 6m.

Mi Saki (40°08'N., 141°53'E.), the extremity of a bluff headland rising steeply to an elevation of 181m, separates Kuji Wan from Noda Wan. Todo Iwa, 7.3m high, 0.5 mile E of Mi Saki, is the outermost rock of the rocks that front that headland.

Noda Wan lies between Mi Saki and Kuro Saki, a point about 8 miles SSE. A light is shown about 2 miles SW of Mi Saki. A light is shown from Kuro Saki. With offshore winds, local vessels anchor, in 20m, in the N part of Noda Wan.

Caution.—Extensive fixed fish nets encumber the S sides of Kuji Wan and both sides of the entrance to Noda Wan.

A submarine wave meter and its associated cable lie in the approach to Kuji Ko in the vicinity of the breakwaters.

An oil pipeline connects position 40°12"N, 141°50"E with a point on the shore about 1.2 miles NW.

2.9 **Benten Saki** (39°57'N., 141°58'E.) is a high headland faced with steep cliffs located 4 miles SSE of Ma Saki. A light is situated on Benten Saki.

Shimanokoshi (Shimanokosu) (39°55'N., 141°57'E.), situated 2 miles SSW of Benten Saki, is a small fishing harbor protected by breakwaters. A light is shown from the E breakwater.

Myojin Saki (Myojin Hana), about 9 miles SSE of Shimanokoshi, is a cape of thickly wooded precipices, 101m high, and easily recognized from the N or S; it is a good radar mark. The 5m curve lies 0.5 mile E of this point.

Ma Saki (39°45'N., 142°00'E.) is a steep pine-forested cape located 1.5 miles S of Myojin Saki. When viewed from the sea, the cape appears as an island.

Taro (Tanishi), a small breakwater-protected fishing harbor, is situated 2 miles SW of Ma Saki. A light is shown from the W breakwater at Taro.

Miyako Wan is entered between Anega Saki, 2.8 miles S of Taro, and Hei Saki, about 2.5 miles SE. The bay extends about 5 miles SSW. A light is shown in the bay. The W shore of the bay is somewhat irregular; at about the middle of it is the mouth of Hei Gawa (Hei Kawa). Its E shore is straight and cliffy. Hide Shima, 50m high, lies 0.3 mile offshore, 1 mile S of Anega Saki.

Miyako Ko (39°38'N., 141°59'E.)

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2.10 Miyako Ko lies on the W shore of Miyako Wan and is exposed to wind waves from N to NE. Fishing vessel traffic is heavy and visits of large vessels have been increasing as the active timber trade increases. The port is designated as an Open, Quarantine, Immigration, and Plant Protection Port. The harbor is built on reclaimed land and is protected by breakwaters; the E breakwater is in ruins and the light destroyed (2011).

Winds—Weather.—Because the bay is open NE, heavy winds are frequent, especially during the spring and autumn equinox. SW to W winds prevail throughout the year, with a strong NE wind blowing in winter. In the summer, a N wind blows during the day, and an onshore wind blows at night.

Depths—Limitations.—The water of the bay is generally deep, gradually shallowing from 75m in the middle of the bay entrance toward the head of the bay. The 10m curve extends to the breakwater.

Vessels up to 20,000 dwt, with a maximum length of 240m and a draft of 12m, can be accommodated.

Desaki Wharf No. 1 and Desaki Wharf No. 2 have a length of 214m, with a depth alongside of 7.3m. Desaki Wharf No. 3 is 175m long, with a depth of 9m.

Fujiwara Wharf No. 1 and Fujiwara Wharf No. 2 are 260m long, with a depth of 7.5m. Fujiwara Wharf No. 3 is 240m, with a depth of 12m. Fujiwara Wharf No. 4 is 180m long, with a depth alongside 4.5m. Fujiwara Wharf No. 5 and Fujiwara Wharf No. 6 are 130m in length, with a depth alongside both 7.5m. Fujiwara Wharf No. 7 is 180m, with a depth alongside 10m. Hitachi-hama is 120m in length, with a depth alongside 4.5m.

Kuwagasaki is 505m long, with a depth of 5m. A mooring buoy, about 1 mile S of the mouth of Hei Gawa, will accommodate a vessel of 10,000 gt, with a draft up to 9m.

Aspect.—Gas San (Gassan), on the E side of the bay, 2.3

miles SSW of Hei Saki, appears as a sharp peak from NE and SE. It is surmounted by three television towers. These towers can sometimes be seen when the coast is enveloped by fog. A tall chimney, remarkable from the NE, is 246m high and stands 1.3 miles SW of the mouth of Hei Gawa.

Pilotage.—Pilots are available, but not compulsory; arrangements can be made at the master's request. The pilot boards around the quarantine anchorage 1.5 miles N of Heisaka Light.

Regulations.—Vessels should send an ETA upon departure from the previous port and 10 days, 4 days, 2 days, and 24 hours prior to arrival.

Anchorage.—Anchorage is available ENE of the mouth of Hei Gawa, in depths of 12.8 to 16.4m.

Quarantine anchorage is situated 0.8 miles ESE of the rivers mouth. Depths at the anchorage range from 16 to 22m, with a bottom of mud and sand.

Caution.—From March to September, fish nets are laid in the vicinity of Tatega Saki, about 1 mile N of the mouth of Hei Gawa.

Miyako Ko to Kinkasan To

2.11 Between Hei Saki and Kinkasan To, 87 miles S, the irregular, mountainous shoreline is heavily indented by numerous bays and coves. In general, the coast is steep-to with deep water close inshore. Occasional islets, sunken rocks, and above-water rocks are found off the headlands and in the bays. The 200m line lies from 5 miles offshore in the N to 12 miles off in the S along this section of the coast. There are no isolated dangers more than 2.5 miles offshore, except in the vicinity of Onagawa Wan.

Hei Saki (39°39'N., 142°02'E.), the SE entrance point of Miyako Wan, is a rounded point faced with low cliffs; it appears black. Close off the point are some rocks lying above and below-water. A light is shown from the point.

Saku Ne, awash, lies 0.2 mile offshore, 5.3 miles SSE of Hei Saki, and a rock, that dries, lies 0.2 mile offshore about 1 mile farther SSE. A light is shown in position 39°36'N, 142°02'E and also in position 39°34.5'N, 142°02'E.

Todoga Saki (39°33'N., 142°05'E.), the E extremity of Honshu, is a steep-to point faced with low cliffs and backed by Todo Yama, 465m high, rising close W of the cape. From N and S, Todo Yama appears as a sharp peak; from NE and SE, four peaks in a row are visible. The lighthouse on Todoga Saki is sometimes difficult to distinguish against the background when approaching from the N.

Ne Saki (39°31'N., 142°04'E.), located 1.75 miles SSW of Todo Saki, is the S extremity of a small peninsula which is faced with cliffs. From the NE, the point is a good landmark.

2.12 **Yamada Ko** (39°28'N., 141°58'E.) is a small landlocked fishing harbor lying at the head of Yamada Wan, which is entered between Ne Saki and Konega Saki (Kone Saki), 2.25 miles S.

The town of Yamada is located on the W shore of the bay and a breakwater-protected pier is situated at Osawa in the N part of the bay, within the harbor limits of Yamada Ko.

A light is shown from Kasano Hana and lights are shown at the heads at the E and W breakwaters at Osawa Ko. The S breakwater off Yamada is marked by a light as the breakwater heads are at Orikasa and Oura.

Tides—Currents.—The tidal currents in the bay do not exceed 0.5 knot. Off the entrance to the bay, the ocean current sets S at 1 knot, but may attain a velocity up to 3 knots when strengthened by the tidal current.

Depths—Limitations.—O Ne, an isolated 5m rocky depth located 1.25 miles SE of Ne Saki, obstructs the approach to Yamada Wan. There are general depths of over 37m from the sea to inside Yamada Ko harbor limits.

There are set nets and breeding grounds at many places in the bay.

Anchorage.—Yamada Wan affords sheltered anchorage, good holding ground, mud bottom. In the spring, heavy W squalls off the mountains may set up a rough sea in the anchorage. At Osawa Gyoko, sheltered anchorage during NW winds is advised for large and average-sized craft. During E to S winds, anchorage can be taken at Oura Gyoko; at the downtown Yamada frontag, anchorage can be taken during S to NW winds.

2.13 **Konega Saki** (Kone Saki) (39°29'N., 142°03'E.), the S entrance point to Yamada Wan, is cliffy, wooded, and 119m high; it is fringed with rocks extending a short distance offshore. When the summit is enveloped in fog, this point can be identified from the E by a remarkable triangular rock, 5.2m high, lying close inshore.

Karoga Dake (Karoga Take) is a prominent hill which attains an elevation of 504m, 1.25 miles SW of Konega Saki.

Okama Saki is a steep point located about 3.5 miles S of Konega Saki.

O Shima (39°24'N., 142°00'E.), with a height of 57m, is located 0.25 mile offshore about 2.5 miles SW of Okama Saki. Benten Shima, 64m high, a prominent landmark covered with trees, is located about 1 mile NW of O Shima. Lights are shown from O Shima and Benten Shima.

Funakoshi Wan (39°23'N., 141°58'E.), open to the E, is entered between O Shima and No Shima, 1.75 miles SW. There is a bight at the S and N ends of the bay. There is good anchorage, in 36m, at the head of the bay, where Funakoshi Gyoko is situated.

Fukuura Wan, directly S of Funakoshi Wan, is protected on all sides by surrounding mountains. Clear of dangers and having depths of 15 to 70m, this harbor serves as an excellent anchorage in any season. At the head of the bay is Fukuura Gyoko, having a breakwater with a lighthouse at its outer end.

No Shima lies on a spit extending about 0.35 mile NE from No Shima Saki.

2.14 **Otsuchi Wan** (39°21'N., 141°57'E.) is entered between No Shima Saki and Ohako Saki, 2 miles SE; the bay is surrounded by mountains. The depth is over 73m between the entrance points, and the 20m line lies about 0.8 mile offshore in the head of the bay. Vessels anchor, in 14.6m, mud, good holding ground off Otsuchi, a fishing center in the NW section of the bay.

The bay supports a large number of seaweed and oyster farms situated throughout its S part.

Ohako Saki (39°21'N., 142°00'E.), the S entrance point of Otsuchi Wan, has a rock with a depth of 4.6m, located about 137m N of it. O Ne, not to be confused with a rock of the same name 10 miles northward, has a depth of 9.5m, and is located

about 2 miles E of Ohako Saki. Strong oscillatory waves, with complex tidal currents, have been reported E of Ohako Saki.

Abumi Saki, a conspicuous white cliff, is located 2 miles SSE of Ohako Saki.

Sangan Shima, a wooded island, 133m high, lies 0.6 mile S of Abumi Saki.

Ryoishi Wan (39°18'N., 141°56'E.) lies between Abumi Saki and Mada Saki, 3.75 miles SSW. The exposed bay is open to the E and is unsuitable for anchorage. Naka Ne, a drying rock, obstructs the middle of the inner part of the bay. Asa Ne, an isolated rocky depth of 2.7m, lies 1.2 miles ENE of Mada Saki.

Kamaishi Ko (39°16'N., 141°54'E.)

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2.15 Kamaishi Ko, handles grain, iron ore and coal imports, and is situated in the NW arm of two arms that lie at the head of Kamaishi Wan. Kamaishi Wan is entered between Mada Saki and O Saki, 2.25 miles SE. The port includes a fishing center at the inner harbor and is heavily congested during the fishing season (September-January). This port is protected from winds and waves, being surrounded by mountains on the S, W, and N. Waves entering the harbor during E and NE winds may affect mooring.

Winds—Weather.—Dense fog prevails from the end of May to mid-July.

Depths—Limitations.—There are depths of 33 to 79m in the approach from the sea to the quarantine anchorage E of Kama Saki.

Yakushi Dashi, a sunken rock, lies 0.2 mile offshore S of Mada Saki. A wave meter is situated approximately 0.4 mile ESE of Mada Saki; a submarine cable from the wave meter WNW to the coast. Foul ground extends up to 0.3 mile seaward along the S shore of Kamaishi Wan.

Vessels are limited to a maximum draft of 14m.

Vessels up to 160,000 dwt may berth at the 288m-long pier, which has an alongside depth of 14m. Smaller vessels may dock at berths having alongside depths of 7.5 to 11.5m.

A detached breakwater protects a reclaimed area where harbor development is taking place on the N shore of Kamaishi Ko, between Washinosu Saki and Konawa Saki, 0.4 mile W. For berthing information see the table titled **Kamaishi Ko—Berth Information.**

Aspect.—Goyo San (39°12'N., 141°44'E.), 1,341m high, rises 8 miles inland WSW of Kamaishi Ko. A westbound vessel has reported being able to recognize it from a distance of 55 miles.

Pilotage.—Pilotage is not compulsory. Pilots ordinarily board at the quarantine anchorage (39°15.4'N., 141°54.6'E.), but they are also available 1 mile NNE of O Saki Light. Pilots may be arranged for after dark and there are no restrictions on times of arrival or departure. Pilotage is provided by Kamaishi Pilot Association.

Contact Information.—See the table titled **Kamaishi—Contact Information**.

Anchorage.—There are depths of 31 to 43m at the discharging anchorage.

Kamaishi Ko—Berth Information

Berth	Length	Depth	Maximum Vessel		Remarks
			Draft	Size	
South Pier Terminal					
No. 3 Old	222m	8.7m	8.4m	37,025 dwt	Steel and grain.
No. 3 New	288m	11.0-13.4m	11.5m	135,000 dwt	Steel and grain.
No. 4 Old	122m	8.7m	12.0m	—	Steel and grain.
No. 4 New	288m	14.0m	12.0m	160,000 dwt	Steel and grain.
North Pier					
No. 1	76m	7.9m	—	5,000 gt	General cargo.
No. 2	154m	7.9m	—	5,000 gt	General cargo.
Public Wharf Terminal					
East Berth	190m	11.0m	—	18,000 dwt	Ro-ro
South Berth	130m	7.5m	—	5,000 dwt	Breakbulk, containers, and ro-ro.
South Berth (Inner)	120m	4.5m	—	700 dwt	Breakbulk and bunkers.
West Berth	130m	7.5m	—	5,000 dwt	—
Tanker Berth					
Iwate Oil Terminal	105m	9.1m	—	5,000 dwt	LPG and clean products.

Kamaishi—Contact Information	
Pilots	
Telephone	81-19-322-1868
Facsimile	81-19-324-3940
Port Authority	
Telephone	81-19-629-5913
Facsimile	81-19-629-9130
E-mail	ag0010@pref.iwate.jp

Quarantine anchorage is situated about 0.3 mile E of Kama Saki.

Vessels of less than 2,000 gt usually anchor NW of Minami Naka Ne, in 20m, mud and sand, good holding ground. Larger vessels anchor NE of Minami Naka Ne and at the quarantine anchorage.

Caution.—Numerous fish traps are often moored in the vicinity of Kamaishi Ko.

A detached breakwater, in ruins (2011), lies in the entrance to Kamaishi Wan, extending NW from the shoal area of Techigane Shima. It is surrounded by a restricted area best seen on the chart.

2.16 **O Saki** (39°15'N., 141°58'E.) is the extremity of a narrow wooded peninsula which appears black. There is a rounded hill on the peninsula, close within the point, 159m high, that is prominent. Kashiwagi Shima, 51m high, lies about 183m offshore, 0.25 mile SSW of O Saki Light. An isolated depth of 4.5m lies about 0.4 mile SE of O Saki Light. Reference should be made to the chart for the locations of numerous rocks and reefs close off O Saki.

One Saki, the N entrance point of Toni Wan, lies 2 miles SSW of O Saki.

Shikotsu Saki (39°11'N., 141°56'E.), a barren headland faced with gray cliffs, separates Toni Wan on the N from Yoshihama Wan to the S. Shoal water extends 0.5 mile ENE from the point and there is a rock islet. Hiru Shima, on this reef, has several trees on its summit and a lighthouse.

Yoshihama Wan, entered between Shikotsu Saki and Kobe Saki, 4.5 miles S, is open to the E. Anchorage is possible in Yoshihama Wan, but only in W winds.

Kobe Saki (39°06'N., 141°55'E.), a prominent high cape, is backed by Soto Yama, 445m high. Oshio Saki lies 2.25 miles SW of Kobe Saki.

Okkirai Wan is entered between Oshio Saki and Sune Saki, 1.25 miles S. Sakihama, a fishing harbor, is situated on the N shore of the bay. Okkirai Wan affords the best shelter from O Saki to Ryori Saki, but it is vulnerable to heavy swells, and local knowledge is necessary.

2.17 **Sune Saki** (39°04'N., 141°53'E.) rises sheerly from the sea in high, steep cliffs. A peak, with a height of 254m, is located 0.5 mile inland, W of the point. Ryori Wan is entered between Sune Saki and Ryori Misaki, 2.5 miles SSW. Ryori Misaki is faced with low cliffs. Naka Ne, with a depth of 8.2m, lies 0.2 mile E of Ryori Misaki; another rock, with a depth of 9.9m, lies 0.3 mile S of Naka Ne. Ryori Misaki Light is shown from a white square tower. A radar beacon transmits from a position 0.5 mile W of the light structure.

Kokuro Saki is located 2.5 miles W of Ryori Misaki. A rock, with a depth of 5.5m, lies 0.6 mile SE of the point.

Ryori (Minato Ko) (39°02'N., 141°48'E.), a small fishing harbor, lies at the head of a small bay N of Kokuro Saki.

Koori Saki, the N entrance point to Ofunato Wan, is located about 2 miles WSW of Kokuro Saki. There is a light on this point. Several rocks are charted N of a line between these two points. A ridge extends 0.6 mile SE from Koori Saki. On this ridge are reefs such as Okinoka-miojin Dashi, 5.9m deep, and Ohira Iso, rocky and 3.2m deep.

Ofunato (39°03'N., 141°44'E.)

World Port Index No. 61320

2.18 Ofunato (Ohunato), an industrial and fishing center, lies at the center, near the head of Ofunato Wan, a narrow inlet which extends inland about 4 miles in a general N direction. The approach is marked by a lighted buoy in position 39°01'N, 141°47'E. The bay is entered between Koori Saki on the N, and Goishi Saki, 2 miles SSW.

The harbor limits are those waters W of a line drawn between these two points. Breakwaters, about 1.3 miles W of the harbor limits, protect the entrance to the harbor; these breakwaters were reported destroyed (2011).

It is reported (2013) that the harbor breakwaters are undergoing restoration works.

Winds—Weather.—High wooded mountains protect the landlocked port area; however, sudden gusty squalls blow down the inland slopes and strong NW winds sometimes blow.

Depths—Limitations.—There are depths in excess of 20m in the fairway from the sea to the anchorage off the port area at the head of the bay, except at the entrance between the breakwaters, where the controlling depth is 14.6m. Between the breakwaters the channel is 200m wide.

The channel to the W of Sango Shima, in the middle of the harbor, is 28 to 39m deep, and the channel to the E of the island is 11 to 19m deep. There are depths alongside the piers from 4.5 to 9m. The main commercial wharf, lies at the NW head of the harbor; it has a length of 330m and depths of 8 to 9m along its face. Port limitations for tankers at Kamei Oil Pier are 35,000 dwt, a length of 220m, and a draft of 11m. Large tankers should moor at the mooring buoy 180m SE of the pier and unload through the available pipelines. The largest tanker ever to moor here was 51,000 dwt. There are three mooring buoys for tankers up to 15,000 dwt NW of Biwa Shima, with depths alongside of about 20m. The draft of log and coke carriers is restricted to 8m.

Pilotage.—Pilotage is not compulsory, but is advisable because of fishing obstructions in the harbor. Pilots board vessels, in daylight hours only, as follows:

1. Vessels over 5,000 gt—In position 39°00.3'N, 141°45.3'E.
2. Vessels under 5,000 gt—In position 39°00.6'N,

141°44.7'E.

Ofunato—Contact Information	
Telephone	81-19-629-5913
Facsimile	81-19-629-9130
E-mail	ag0010@pref.iwate.jp
Web site	http://www.pref.iwate.jp

Contact Information.—See the table titled **Ofunato—Contact Information**.

Regulations.—Vessels should send an ETA upon departure from the previous port and 10 days, 4 days, 2 days, and 24 hours prior to arrival.

Anchorage.—The quarantine anchorage is charted about 0.8 mile WSW of Koori Saki on the N side of the entrance range. There is anchorage off the port area, in 10.9 to 18.3m, mud, poor holding ground. Sudden squalls blowing off the mountains may cause vessels to drag anchor.

Caution.—Numerous fixed fish nets and oyster beds are situated throughout the bay.

Approaching Ofunato Wan from the E, care should be taken to avoid the ridge extending 0.5 mile SE from Koori Saki, having reefs with a depth of 5.9m and the rock, Ohiri Iso, which dries.

There is a 14.8m depth 0.5 mile SW of O Saki. A tidal wave meter is situated 1 mile NNW of Benten Yama, with a cable extending from it E to the coast. Another wave meter and lighted buoy are situated 0.3 mile SW of the Koori Saki Light, with a submarine cable extending NNW to the coast. A submarine power cable runs W from Sango Shima's W shore to the coast.

2.19 Goishi Saki (38°59'N., 141°45'E.), the S entrance point of Ofunato Wan, is fronted by a cliff. Oashi Ne, a rock with a depth of 4.6m, and Asa Ne, with a depth 5.8m, lie 0.5 mile E and ESE, respectively, of Goishi Saki. Asane Iso, a reef with above water rocks on it, extends 0.35 mile S of Goishi Saki; the reef is usually marked by breakers. A light is shown from Goishi Saki.

Kuro Saki is situated 2 miles SSW of Goishi Saki; between them, from the N to S, lie Kadonohama Wan, Tadaide, and Ono Wan. The first and last of these are exposed SE and are unsuitable for anchorage. Tadaide is a small fishing port and is only available for small craft with local knowledge.

Hirota Saki (38°56'N., 141°42'E.), the E entrance point of Hirota Wan, is located 1.25 miles SW of Kuro Saki. The point is fringed with numerous islets and above-water and sunken rocks. Tsubaki Shima, a round-topped light yellow-colored islet surmounted by dwarf trees, is 40m high; it lies near the extremity of the foul ground extending SE from Hirota Saki. There is a light on the N side of this islet.

A rock, which dries, 1m lies 0.13 mile S of Tsubaki Shima, and Okiakairoku Ne, with a depth of 9.1m, lies 0.2 mile SE of the islet.

2.20 Hirota Wan (38°58'N., 141°40'E.), entered between Hirota Saki and O Saki (Karakuwa Saki), 5 miles S, recedes about 6 miles inland in a NNW direction, terminating in a sandy beach marked by breakers. The other shores are, in general, cliffy and fringed with sunken rocks.

Tomari, a small fishing village, is situated on the E shore of the bay, 1 mile NNW of Hirota Saki. Osabe Ko, also a fishing harbor, is situated on the NW shore of the bay, near its head.

Anchorage.—Anchorage is available, in 18.3m, 1.25 miles from the head of the bay, mud and sand, good holding ground. The bay is open from the S through E and there is usually a swell off the head of the bay even with offshore winds.

Numerous fixed fish nets, oyster beds, and seaweed nurseries are situated throughout Hirota Wan.

Hakone Yama (39°01'N., 141°42'E.), 447m high, located 4.75 miles NNW of Hirota Saki, and Hinokami Yama, 875m high, rising 3 miles farther NNW, provide good landmarks to vessels making Ofunato Wan and Hirota Wan.

O Saki (38°51'N., 141°41'E.) is faced with steep cliffs. Kooki Iwa, an isolated rock 12m high, lies 137m SE of the point.

2.21 Kesennuma Wan (38°51'N., 141°38'E.) is entered between O Saki and Iwai Saki, 2.75 miles SW. The center of the bay is divided into two parts by O Shima, which is 3.25 miles long in a N to S direction, and is 1.5 miles wide near its N end. To Wan lies on the E side of O Shima and Sei Wan lies on the W side of the island.

To Wan, the E bay, leads N into Oshima Seto, the narrow channel between O Shima and the mainland. Vessels of less than 1,000 gt generally use this bay, which has a least depth in the fairway of 20.1m. An overhead cable, with a vertical clearance of 32m, spans the W end of Oshima Seto. Kara Shima, surrounded by shoal water, rises to a height of 25m, 1.5 miles WNW of O Saki. The E shore of To Wan is jagged and from each projection rocks including Naka Ne, Nakataira Ne, and Aka Iso extend 0.1 to 0.2 mile offshore. A light is shown from Naka Ne.

Sei Wan, the W bay, has a least depth of 7.3m in the buoyed fairway to the head of the bay. There is a reclaimed area at the mouth of O Gawa, about 3.5 miles within the mouth of the bay. From the narrows N of the reclaimed area, a narrow dredged channel, with a depth of 5.1m, leads into Kanaega Ura.

Anchorage.—Anchorage in Sei Wan is impossible due to the oyster beds on each side of the fairway.

Sei Wan is crossed by submarine cables and pipelines 1.5 and 2.5 miles N, respectively, of Iwai Saki.

Caution.—The fairway to Sei Wan is narrow, and very careful shiphandling is necessary. The outer limits of the oyster beds on each side of the channel are marked in places by buoys, some of which show lights.

2.22 Kesennuma Ko (38°52'N., 141°36'E.) (World Port Index No. 61325), at the mouth of O Kawa, is a Regulated, Quarantine, and Local Port lying about 3 miles N of the Sei Wan entrance. The harbor limit line extends W from Ushi Kora to the opposite shore of Sei Wan. Kesennuma Gyoko lies N of Kesennuma Ko, and lines the W side of Kanaega Ura with fish landing quays.

Winds—Weather.—Summer winds are generally S; winter winds are generally NW.

Depths—Limitations.—The least depth in the fairway through Kesennuma Ko and Kanaega Ura is 5m, but the width of the fairway narrows to 100m SW of Hachiga Saki.

The commercial berths, comprised of private dolphin berths

having alongside depths of 6m, with each having a length of 40m. The Asahi Wharf, on W side of Kesennuma Ko, has a length of 365m and a depth of 7.5m alongside.

Oyster beds lie on either side of the range line leading into Kesennuma Ko, extending up to 0.1 mile from the E shore, and up to 0.3 mile from the W shore of the bay.

An overhead cable, with a vertical clearance of about 31m, spans the narrows at Hachiga Saki; the channel width at this point is about 100m. A bridge, reported to be 30m in height, with an unknown safe vertical clearance, spans Oshima Seto in position 37°52'44"N, 141°36'22"E.

Pilotage.—Pilotage is not compulsory, but recommended. Pilots are available at Kamaiski during daylight hours only.

Anchorage.—Well-sheltered anchorage may be taken in Kanaega Ura, in depths of 5 to 9m, mud, good holding ground.

Both To Wan and Sei Wan are open to S seas and swell. Local vessels find anchorage in the coves along the E shore of To Wan, but there is no anchorage in Sei Wan, as the water outside the fairway is utilized for oyster beds.

The quarantine anchorage, a semi-circular area with a radius of about 0.3 mile, lies centered about 1.3 miles W of O Saki Light, in the entrance to To Wan.

Caution.—O Ne (38°48'N., 141°38'E.), an isolated rocky depth of 10m, obstructs the center of the approach fairway to Sei Wan; it lies 1.5 miles SE of Iwai Saki. Ashi Ne, with a depth of 4.9m, and Take Ne, with a depth of 6.7m, lie 0.85 mile WNW and 1.1 miles NW, respectively, of O Ne.

2.23 **Iwai Saki** (38°49'N., 141°36'E.), the W entrance point of Kesennuma Wan, is conspicuous. Foul ground extends 1.25 miles S of the light structure on the point. Mokko Ne (Maru Iso), with a rock on it which dries 0.9m, is the farthest S of these dangers.

Kurosaki Shima lies at the end of a rocky reef extending 0.3 mile SSE of Ryumau Saki Light. There is a depth of 10m about 0.2 mile SSE of Kurosaki Shima.

In the entrance waters to Sei Wan, between Iwai Saki and Ryumau Saki, within the 20m line, lie several rocky depths of 5.9, 8.7, 11.9, and 12.3m. Vessels should navigate this area with caution, and reference should be made to the chart.

Sueno Saki (38°44'N., 141°34'E.) lies 5.5 miles S of Iwai Saki. Koizumi Wan, an open bight, lies between these two points. Tomari Saki (Utatsu Saki), a low flat sparsely-wooded point which appears black when viewed from a distance, is located 3 miles S of Sueno Saki. A light is shown on the point.

Shizukawa, a small fishing harbor, is situated in a cove at the head of Shizukawa Wan. Local vessels anchor off the town. Shizukawa Wan, whose coast is indented by numerous small coves, is entered between Tomari Saki and Kamiwari Saki, 3.5 miles SSW.

2.24 **Osashi Saki** (38°36'N., 141°32'E.) lies 2 miles S of Kamiwari Saki. Foul ground, comprised of sunken rocks and islets, extends up to 1.5 miles offshore between these two points. Oppa Wan, entered close S of Osashi Saki, is open to the E. The coves on the S shore of the bay are suitable for anchoring small vessels, with local knowledge.

Osu Saki lies S of Oppa Wan, about 6.8 miles SSE of Osashi Saki.

Ogatsu Wan (Okachi Wan) is entered between Shirogane Saki (Shirokane Saki), which lies 2 miles S of Osu Saki, and Izu Shima (Isu Shima), which lies 2 miles farther S. Shoal water extends 0.5 mile N from Izu Shima into Ogatsu Wan, and O Nabakari (Onahari Ne), a rock, 6.7m high, lies in the fairway 0.25 mile farther NNE. Ogatsu (Okachi), a small fishing harbor, lies at the NW extremity of Ogatsu Wan.

Izu Shima (38°27'N., 141°32'E.) is a wooded island, 88m high, fringed with above-water and sunken rocks. A light stands on the S shore of this island. O Ne, a rocky depth of 6.7m, lies 2 miles offshore E of Izu Shima.

Onagawa Wan is entered between Izu Shima and Haya Saki, 2.25 miles to the S. A submarine pipeline is laid between Izu Shima and Ino Shima.

Onagawa (38°27'N., 141°27'E.)

World Port Index No. 61330

2.25 This small commercial port and fishing center is situated at the NW extremity of Onagawa Wan. The dock area lies off the town and was protected by breakwaters that projected from the N and S shores, about 1 mile E of Onagawa. These breakwaters were destroyed by the 2011 tsunami.

Winds—Weather.—The prevailing winds are from the S in summer, NW in winter, and SE during spring and autumn.

Tides—Currents.—Tidal currents may attain a rate of 1 knot in the approaches to the outer bay.

Depths—Limitations.—There are depths in excess of 27m in the channel from the sea to the breakwaters, where there is a fairway width of about 146m, with a depth of 10.5m between the heads of the breakwaters. A buoyed channel marks the channel between the ruined breakwaters. General depths off the dock area range from 5 to 20m. Vessels of 3,000 gt berth alongside.

There is a wharf, 155m long, 0.5 mile NW of the root of the S breakwater.

Anchorage.—Local coasting vessels anchor within the breakwaters. Small vessels anchor within the S arm of Onagawa Wan and are protected from S winds, but the holding ground is poor.

Caution.—Fixed fish nets fringe the shores of the bay, and the inner harbor is encumbered by oyster beds.

As a result of the 2011 tsunami, new depths and hazards in the port may exist. Vessels are advised to seek the latest information from the local authorities.

2.26 **Haya Saki** (38°24'N., 141°32'E.) is the S entrance point of Onagawa Wan. A rounded hill, 154m high, rises about 0.8 mile SW of Haya Saki. The hill is wooded and appears black; it is prominent.

Onagawa Nuclear Power Station, at which there is a chimney about 178m high, is situated about 1.8 miles W of Haya Saki. A light is shown from the breakwater head of a harbor serving the power station. Several lighted buoys are moored about 1.5 miles WNW of Haya Saki.

Enoshima Retto, a group of islets and rocks, extends 4 miles E from Haya Saki. Kasagai Shima (Kasugai Shima), 45m high, the N island, appears pointed when seen from the E and rounded from the other directions. Eno Shima, the largest island of the group, is 77m high. Foul ground extends 0.5 mile E of the island and isolated rocky depths of 2.3 and 8.2m lie 0.6 and 1.5

miles ENE, respectively, of the light structure on the island. Asha Shima, 6m high, rocky, and whitish in appearance, is the S island. Foul ground, with above-water rocks on it, extends about 0.4 mile SW from the island. Other islands and above and below-water rocks lie within this group.

Hayasaki Suido, the channel that lies between Haya Saki and Enoshima Retto, has a depth of 40m in the fairway, which has a width of 0.25 mile. The channel is used by coastal shipping.

Two submarine cables run from Haya Saki to Eno Shima. A submarine pipeline lies between Izu Shima and Eno Shima.

Yorii Saki, fronted by foul ground to a distance of about 0.3 mile, lies 0.85 mile S of Haya Saki. Samenoura (Sameura) Wan, entered SW of Yorii Saki, is exposed E, and even light onshore winds send in a heavy sea.

Kuro Saki (38°16'N., 141°32'E.) is the S extremity of Oshika Hanto. This point lies 6 miles S of Samenoura Wan. A light is shown from Kuro Saki.

Kinkasan To (38°17'N., 141°34'E.), whose S extremity lies 2.75 miles E of Kuro Saki, rises to a height of 445m. The peak of the island is conical and wooded; it has been reported to be visible at a distance of 50 miles. A light stands on the SE point of Kinkasan at Awabiare Saki. Kinkasan Seto, between Kinkasan To and the mainland, has a depth of 5m and a navigable width of 293m at its narrowest point. The channel is used by local coasting vessels.

A submarine cable is laid across Shishi Watashi. An overhead cable, with a vertical clearance of 29m, spans the channel 0.2 mile farther N.

Kinkasan To to Shioya Misaki

2.27 The 80-mile stretch of coast from Kinkasan To to Shioya Misaki includes Ishinomaki Wan and Matsushima Wan in the N part and includes numerous islands. In the 77 miles from the entrance of Matsushima Wan to Shioya Misaki, the shoreline is low and marshy with sandy beaches in the N half, and low cliffs and sandy beaches comprise the shore in the S half.

The 10m line lies 0.5 to 1 mile offshore and the 20m line 2 to 4 miles offshore. There are no isolated dangers, except in the vicinity of Unoo Saki.

Winds—Weather.—At Shioya Misaki, summer winds ranging from NE to SE usually are followed by rain; whereas, S winds that are weak contribute to good weather. A westerly will sometimes blow after a rain, but then will change direction soon after. N winter winds frequently bring snow, but rains come with Northeasterlies or Easterlies. There are many foggy days from May through September, especially during the rainy season.

Tides—Currents.—The flood current sets W and the ebb current sets E, on a line from Kinkasan To to Shioya Misaki, reversing direction at the times of H and LW. Their velocities seldom exceed 0.5 knot.

Off Shioya Misaki the flood current is to the WNW, and the ebb current is to the ESE, changing directions about the times of H and LW Their velocities are less than 0.5 knot. However, when the declination of the moon is the greatest, the tides are affected by diurnal tidal currents and directions and velocities of the currents become complicated.

2.28 Ishinomaki Wan (Isinomaki Wan) (38°20'N., 141°20'E.) lies between Kuro Saki (38°16'N., 141°32'E.) on the E, and Kayano Saki, 21 miles to the W. The E shore of the bay is irregular, with the islands Azi Shima (Aji Shima) and Tasiro Shima (Tashiro Shima) lying at the SE end of the bay. Sandy beaches line the N shore, the SW shore is mostly steep cliffs, fringed with rocks and reefs.

On the E side of Ishinomaki Wan the 10m line lies close to the coast, and on the N from 0.5 to 1 mile off. There are isolated depths of less than 10m, 1.25 miles off the W coast.

Caution.—There are numerous fish havens in the S approach to the bay. Their locations may best be seen on the chart.

2.29 Azi Shima (38°15'N., 141°29'E.), 101m high, lies 1.5 miles offshore and 1.5 miles W of Kuro Saki. The island is flat, but is a good landmark. A light is shown from the SE point of Azi Shima. Several submarine cables lie between the N shore of this island and the mainland. A submarine pipeline runs from the N coast, NE to the mainland. Miyagasane Sho, a rocky patch with a least depth of 6.8m, lies 1.5 miles SW of the island's W extremity.

Tasiro Shima rises to a height of 96m in its N part. This island lies 1.5 miles offshore about 1.5 miles NW of Azi Shima. Pine trees grow on a hill near Naginoma Saki, the SE extremity of the island. Nigishiro Saki Light is shown near the N extremity of the island. A light is shown on the NE coast between four submarine pipelines running to the mainland. Another submarine pipeline runs from the SE end of the island to the mainland.

A channel between Azi Shima and Tasiro Shima, on the SW and the mainland on the NE, provides a heavily-traveled shortcut for small vessels from Kinkasan Suido to the ports in the N part of Ishinomaki Wan.

2.30 Ayukawahama (38°18'N., 141°31'E.) is a whaling station, protected by a breakwater, situated at the head of Ayukawa Wan. Ayukawa Wan is entered 1.25 miles NW of Kuro Saki. Azi Shima and Tasiro Shima protect the harbor from offshore winds; however, in strong SE winds, waves are deflected from Azi Shima and enter the bay.

Anchorage.—Ayukawa Wan affords good anchorage for large vessels, in a depth of about 20m, sheltered by the off-lying island, except during strong SE winds, which send a heavy sea into the bay.

Kugunarihama Wan, located W of Ayukawa Wan, is protected by Azi Shima and Tasiro Shima, especially in NW winds. The bay provides good anchorage, in depths of 10 to 16m. Caution is required when anchoring to avoid the submarine cables and water pipelines.

Ohara Wan opens WSW and has three coves at its head. Usagi Shima, 34m high, in the S entrance of the bay, lies 1.25 miles NW of Kugunarihama Wan, and Kimaga Ne, which dries 0.9m, and a rocky patch, with a depth of 4.7m, lie off the N entrance of Ohara Wan, 1.75 miles NNW of Usagi Shima. Vessels over 1,000 gt, with local knowledge, may anchor in Ohara Wan, with Hitoisi Yama, a wooded sharp peak 293m high, located 2.25 miles ENE of Usagi Shima, bearing between 080° and 090°.

Caution.—Numerous oyster and seaweed cultivation areas

lie inside the bay.

2.31 Oginohama Ko (38°22'N., 141°27'E.), a fishing harbor, is the SE of four coves at the head of Oginohama Wan, which is situated N of Ohara Wan. Oginohama Wan has depths of 11 to 15m, mud bottom, and provides anchorage in all but S to W winds. There are many oyster beds within the bay and Oginohama Ko is used as an oyster cultivation area; entry to the port is difficult without local knowledge. A light is shown from a concrete tower on Kitsuneana Saki, the N entrance point of Oginohama Ko.

Watanoha (38°25'N., 141°22'E.), a fishing center protected by breakwaters, is situated at the NE end of Ishinomaki Wan, NW of Oginohama Wan.

Ishinomaki Gyoko is situated 1.5 miles W of Watanoha. The harbor, which is protected by breakwaters, has quays with depths of 6.1m alongside.

A detached breakwater extends 0.3 mile E and ESE from a position 0.2 mile SSW of the head of W breakwater. A light is shown from its E end. This breakwater sometimes covers at HW.

Three short detached breakwaters lie close off and parallel to the coast from near the root of the W breakwater to 0.2 mile W.

Ishinomaki Ko (Isinomaki Ko) (38°24'N., 141°19'E.)

World Port Index No. 61340

2.32 Ishinomaki Ko is a fishing center at the mouth of Kitakami Gawa. Breakwaters protect the channel entrance leading to the berths along the banks of the river.

A newer commercial port is situated 2 miles W of the fishing harbor. A breakwater extends about 0.9 mile SSW from the E side of the new harbor entrance leading to the turning basin and dock area. Lights are shown on each side of the entrance.

Hibarino Breakwater extends 0.9 mile SSW from the E side of the harbor entrance. A light is shown at the head of this breakwater. An area in which navigation and fishing are prohibited extends 0.5 mile SE, 1.4 miles ESE, and 0.8 mile NE of Hibarino Breakwater Light.

Three short detached breakwaters lie close off and parallel to the coast from near the breakwater on the W side of the entrance to about 0.8 mile WSW.

Another detached breakwater, about 0.3 mile long, lies on a NNE/SSW axis, 0.8 mile SE of Hibarino Breakwater head.

Winds—Weather.—Winds out of the NW prevail from September to April; the rest of the year SE winds predominate.

Tides—Currents.—Tidal currents off the harbor set NE on a rising tide and SW on a falling tide.

Depths—Limitations.—The depths in the waterway at the mouth of Kitakama Gawa are approximately 4m. The river depths fluctuate greatly after heavy precipitation. Vessels up to 1,000 gt berth within the harbor on the W bank of the river.

At the industrial area, there is a channel between the breakwaters dredged to a depth of 13m (2005). The berths in the harbor have alongside depths as deep as 13m.

Aspect.—Maki Yama, a wooded peak 219m high, located 2.25 miles NE of the mouth of Kitakami Gawa, is a good mark. The E and W breakwaters to the Kitakama Gawa entrance are good radar targets. A light is shown from each breakwater. There are various tanks and chimneys charted in the port area. The tallest chimney is painted red and white; the others are painted gray.

The Hiyori Bridge, at the mouth of the Kyu Kitakami Gawa, approximately 17m in height shows red and yellow lights. Kawaminato Bridge (38°25.2'N, 141°18.7'E), with avertical clearance of about 12m, spans the river 0.3 mile farther N.

Pilotage.—Pilotage is not compulsory, but is advisable from sunrise to sunset. Pilots embark about 2.25 miles S of Hibarino Breakwater, except in rough weather, when special arrangements will be made with the vessel concerned. Pilotage is provided by Sendai Wan Pilots; pilots board in position 38°21.7'N., 141°15.8'E. Pilots operate from 0630 to1 hour before sunset (berthing) and from 0630 to 2100 (unberthing).

Caution is required as there may be fishing nets in the vicinity of the pilot boarding position.

Contact Information.—See the table titled **Ishinomaki—Contact Information**.

Ishinomaki—Contact Information	
Pilots	
Telephone	81-22-781-7246
Facsimile	81-22-362-5519
Port Authority	
Telephone	81-24-653-7124
Facsimile	81-24-653-7130
E-mail	kousin@pref.miyagi.jp
Web site	https://www.pref.miyagi.jp/soshiki/is-kouwan

Anchorage.—A rectangular quarantine anchorage is centered 2 miles SW of the mouth of the Kitakami Gawa. Two areas in which entry is prohibited are situated between the quarantine anchorage and the head of Hibarino Breakwater. Vessels should refer to the chart, as hard materials are on some areas of the sea bottom and these areas are a suspected menace to anchoring.

Caution.—As a result of the 2011 tsunami, approximately 36 obstructions, at depths of 4.5 to 10.2m, are reported (2011) to lie in the channel and harbor area of Ishinomaki Ko.

A sunken ship lies 9.8m below the surface 1 mile SSW of the West Breakwater Light of Kitakami Gawa. Wrecks also lie 2 miles SW and 2.8 miles WSW of the West Breakwater Light, with depths of 9.8m and 12.4m, respectively.

Nobiru Wan is situated in the NW corner of Ishinomaki Wan, about 7 miles WSW of Ishinomaki Ko. The bay is entered between the mouth of Naruse Gawa and Yoroi Ne, 1.5 miles SSE.

It is reported that the breakwaters in the harbor may be submerged at high water.

2.33 Yoroi Ne (38°21'N., 141°11'E.), above-water, is the NE of the numerous rocks and shoals which fringe the E coast of Miyato Shima.

Miyato Shima (38°20'N., 141°10'E.) lies in the W part of Ishinomaki Wan and is the largest of a number of islands that

Ishinomaki Ko

lie on the NE side of the approach to Shiogama Ko. Kayano Saki is the SE extremity of the island. Ha Shima is located 0.4 mile SE of this point. This island is marked by a lighthouse and has many off-lying rocks.

Matsushima Wan (38°20'N., 141°05'E.) is entered between Kayano Saki and Hanabuchi (Hanabuti) Saki, 4.5 miles WSW. Most of the bay is shoal and the land in the vicinity is comparatively low. The bay is fronted by a group of islands and the irregular shoreline is fringed with numerous rocks, obstructed fish havens, islets, and reefs up to 1.5 miles offshore. The entrance of the bay, which opens SE, is encumbered with off-lying rocks and reefs.

Off-lying dangers.—Jinotaka Ne, Naka Ne and **Okinotaka Ne** (Okikajitaka Ne) (38°17'N., 141°09'E.) are isolated rocky depths, with least depths of 2.7m, which lie 1 mile SE of the entrance to the dredged channel. O Ne, a rocky depth of 0.9m, lies 3.5 miles offshore about 2.5 miles SSE of the dredged channel entrance. Hashimano Ne, with a least depth of 12.8m, lies 1.4 miles W of O Ne. The two islands, Enoki Shima (38°08.4'N.,141°05.5'E.) and Kudo Shima (38°18.4'N., 141°05.9'E.), cover at high water.

A ridge runs 0.8 mile to the SSE, past Ki Shima and Kuro Shima, from Karato Shima at the N side of the harbor entrance. South of the ridge lies a reef called Horakake (Horagake) Ne, with a least depth of 3.6m. A lighted buoy is situated close S of Horakake Ne. Another ridge, with an outermost depth of 7.3m, extends 0.6 mile SW from Ki Shima.

Sendai-Shiogama Ko (38°19'N., 141°02'E.)

World Port Index No. 61350

2.34 Sendai-Shiogama (Siogama), an important commercial port and fishing center, is a port of entry. The port is divided into two districts which are called the Shiogama district and the Sendai district. The Shiogama district is divided into four sections. The Sendai district is a dredged harbor situated 2.5 miles SW of Hanabuchi Saki, and has been developed as an industrial port.

Winds—Weather.—Winds blow mostly from the NW and the N between the months of September and April, with S and SE winds the rest of the year.

Tides—Currents.—Seaward of the outer district the tidal current sets NW with the rising tide and SE with the falling tide at a rate up to 1 knot. In Yogasaki Suido, the E current may attain a rate of over 2 knots, while the W current may have a rate of 2 knots.

Depths—Limitations.—Due to the proximity of Sendai-Shiogama to the epicenter of the earthquake and tsunami that occurred March 11, 2011, port authorities are communicating updates and the results of hydrographic surveys of this area as information becomes available.

The fairway, which is entered 2.5 miles WSW of Kayano Saki, has a least charted depth of 7.1m over a width of 100m, although depths of as little as 5.9m exist in the N side of the channel between Mizu Shima and a point 0.3 mile further W; it has also been reported (1997) that depths up to 3m less than charted may exist in the dredged channel. This channel, which is about 3.8 miles long,

passes through Yogasaki Suido, between Mahanasi Shima on the N and the mainland on the S, then into the inner sections of Shiogama. A prohibited area lies close W of the entrance to the channel.

In Shiogama, there are berths alongside that will accommodate a vessel up to 8.5m draft, a length of 170m, and of 18,000 dwt. Depths alongside the berths range from 4.5 to 9m.

In the Sendai district (38°15'N., 140°59'E.) there is a channel and turning basin with depths of 15 to 17m, although it has been reported that depths of up to 2m less than charted may exist in the channel; farther within the harbor the channel is dredged to depths of 9 to 14m.

The Tohuku Oil Pier will accommodate one vessel of up to 150,000 dwt with a maximum draft of 18m at the dolphin berth on the N side of the harbor,

Aspect.—Ha Shima, a flat island 40m high, located 0.5 mile SE of Kayano Saki at the E end of the harbor entrance, is conspicuous with a lighthouse on the W end. Otaka Mori, a conical peak 106m high, rises 2 miles NW of Ha Shima. Hanabuti Saki, 4.75 miles WSW of Ha Shima, is a good mark. Sukano Hana, (Sugano Hana,), a point 3 miles WNW of Ha Shima, and Tomi Yama, a conical hill 117m high, 4.5 miles NNW of Sukano Hana, serve as an entrance range for vessels approaching from the S.

The S breakwater light was destroyed (2011) and is replaced by a lighted buoy.

Pilotage.—Pilotage is not compulsory but recommended for the Oil Terminal. Pilot embarks in position 38°17.7'N., 141°10.3'E. In bad weather, the pilot boards in the vicinity of Takashima Northeast Lighted Buoy by arrangement. Vessels may arrive and depart at night.

In the Sendai district, pilots embark in the area S and E, respectively, of a line drawn 3 miles from Sendai Lighted Buoy A to the E, and a line drawn from the same buoy 3 miles to the S. For crude oil tankers, pilots embark in the quarantine anchorage W of Sendai Light.

Pilots may be contacted on VHF channels 16 and 6 1 hour before ETA. Pilots operate from 0630 to 1 hour before sunset (berthing) and from 0630 to 2100 (unberthing).

Regulations.—In the Sendai district, priority of entry and departure is given to ferries. The movement of other vessels is restricted to the time of ferry schedules.

The entry of tankers is controlled by the oil refinery under the supervision of the harbormaster.

Contact Information.—See the table titled **Sendai—Contact Information**.

Sendai—Contact Information	
Harbormaster	
Call sign	Shiogama Coast Guard Radio
VHF	VHF channels 12 and16
Telephone	81-22-363-0114
Port Authority	
Telephone	81-22-213-221
Facsimile	81-22-213-296
E-mail	kousin@pref.miyagi.lg.jp
Web site	https://www.pref.miyagi.jp/soshiki/kouwan

Anchorage.—Circular quarantine anchorages are centered 2 miles WSW of Ha Shima and 4.5 miles SSE of Hanabuchi Saki.

Anchorage is available in the outer section in a depth of 12m, sand and rock bottom. Anchorage is not suitable in inclement weather, no shelter is available, it is advisable for vessels to proceed offshore.

Caution.—Vessels in the vicinity of the quarantine anchorage should avoid the ridge extending from Ki Shima and the sunken rock, Kajikake Ne. Vessels should consult the charts for the dangers near the fairway outside Shiogama Ko. A wave height meter, marked by a lighted buoy, is situated 1.3 miles SE of the S Sendai Breakwater; a submarine cable runs from its site to the lighthouse. Another wave meter is situated 0.75 mile SW from this breakwater, with a submarine cable running from it to the shore.

2.35 Shiogama to Unoo Saki.—From Shiogama, the coast trends in a general S direction about 28 miles to Unoo Saki. This is a bow-shaped sandy beach; inland features are generally low and landmarks are rare.

The 10m line runs about 0.5 mile offshore; there are virtually no hazardous rocks except near Unoo Saki.

Ara Hama (38°02'N., 140°55'E.) is a fishing port near the mouth of the Abukuma Kawa, situated on the coast 18 miles SSW of Shiogama.

Soma Ko (37°50'N., 140°57'E.) is situated 12.5 miles S of Ara Hama and is protected by a S breakwater and a wharf breakwater. The offshore breakwater is reported (2011) to be destroyed.

No. 1 Wharf, 275m long, is situated 0.2 mile NW of the root of the S breakwater. There are depths of 4.8 to 8m alongside, and 6.3m in the approach to the wharf.

No. 2 Wharf is situated about 0.5 mile SW of the head of the S breakwater. There are depths of 5.2 to 7.6m alongside the S face of this wharf.

A land reclamation project is being carried out near No. 4 Wharf. During this period the area N of the front of No. 3 Wharf is a prohibited area.

No. 5 Wharf is situated at the N part of the harbor. This wharf handles coal imports and has two berths each 280m long. It has depths alongside of 14m and can accommodate vessels of up to 60,000 dwt and 12.6m draft. It is reported that No. 5 Wharf is open to traffic as of March 2012.

Caution.—Japanese hydrographic authorities report extensive damage to the quays and breakwaters; much of Soma Ko is in ruins (2011).

Matsukawaura Gyoko, situated in the SE part of Soma Ko, is a fishing harbor entered W of Unoo Saki; it is suitable only for small craft with local knowledge.

Unoo Saki (37°49'N., 141°00'E.), close E of Matukawaura Ko, the E end of an isthmus, is a pine-covered point faced with cliffs of red earth. Obstructions are situated 4.75 miles NE and 5.75 miles E of Unoo Saki. Fish haven obstructions are situated 13 miles NNE and 10.75 miles E of Unoo Saki. A submarine

wave meter and cable are located approximately 10 miles SSE of Unoo Saki.

2.36 Unoo Saki to Shioya Misaki.—From Unoo Saki, the coast trends 50 miles S to Shioya Misaki, with no noticeable indentations, and consists of cliffed coasts with alternate stretches of sand and rock. The coast is backed by a plateau 46 to 183m high, with a range of mountains farther inland; the coast is without prominent peaks or points.

The 10m line lies 0.5 to 1 mile from the shore; there are rocky shoals in places that lie within 1 mile of the coast.

A prominent tower, 168m high, stands on the coast, 18.8 miles S of Unoo Saki. An oil exploration platform is situated in position 37°17'49"N, 141°27'47"E. A submarine pipeline is laid from the platform to the shore in position 37°14'14"N, 141°01'00"E.

Fukuura (37°33'N., 141°02'E.) is a small fishing harbor situated 16 miles S of the Unoo Saki. Uketo, another small fishing port, lies 4 miles S of Fukuura.

Fukushima No 1 Power Station (Huku Shima Daiiti) (37°25'N., 141°02'E.), a nuclear power plant protected by breakwaters, is situated 3.8 miles S of Fukuura. Within the breakwaters is a basin dredged to 6m. There is a light shown from the breakwater and several conspicuous chimneys close to the shore.

Hisanohama Ko lies 16.5 miles S of Huku Shima Daiiti and affords anchorage for small vessels and motor-powered sailing boats during winter W winds. The E half has been dredged to a depth of 5m. These waters are not calm during SE winds.

Three offshore floating wind turbines have been established (2015) in vicinity of position 37°18.3'N, 141°15.2'E. Close NW is an associated floating power substation. All units are equipped with AIS and connected to shore via submarine power cables.

Caution.—A restricted area, designated as an Emergency Refuge Preparation Area, is established, until further notice, within the semicircular area lying within 16.2 miles of the Huku Shima Daiiti Fukushima Nuclear Power Plant (37°25.5'N., 141°02.0'E.).

Yotsukura Ko (Yotukura Ko) (37°06'N., 141°00'E.), a small fishing port divided into three parts by wharves and breakwaters, is situated 19 miles S of Hukushima Daiiti. There are six lights shown from the breakwaters. A wave meter lies 0.8 mile SE from the S breakwater and a submarine cable runs from the wave meter NW to the shore. It is dangerous to enter the harbor during N and E winds, which cause large waves.

All basins have a tendency to become silted up with sand. Fish havens are situated 1.8 miles E and 2.5 miles ESE of Yotsukura Ko.

Shioya Misaki (Sioya Misaki) (37°00'N., 140°59'E.), 7 miles S of Yotsukura Ko, is 55m high. A reef extends SE from the cape for 1.5 miles to a rocky depth of 5.4m. There is a light on this cape.

Shioya Misaki to Inubo Saki

2.37 From Shioya Misakito Inubo Saki, this 77-mile stretch of coast is bow-shaped with few indentations. The area S of Oarai Misaki is mostly a straight sandy beach backed by wooded hills.

Generally, the 20m line lies 2 miles offshore, but it is irregular and extends seaward up to 3 miles in places There are several isolated depths of less than 20m seaward of the 20m line. Deep-draft vessels should sail with caution near O Ne, N of Inubo Saki.

Caution.—Cold and warm currents meet in the area 60 to 110 miles offshore, between Shioya Misaki and Inubo Saki, and generate whirlpools. Drifting wood, seaweed, and schools of fish are found here and may be mistaken for rocks or reefs.

2.38 Shioya Misaki to Oarai Misaki.—From Shioya Misaki to Otu (Otsu) Misaki, 13 miles SW, the coast is straight, except for Mi Saki, which extends out to form the E side of Onahama Wan.

Ena Ko (36°58'N., 140°58'E.), a small fishing harbor, is situated close SSW of Shioya Misaki and protected by breakwaters.

Two outer detached breakwaters lie 0.3 mile seaward of the harbor. A light is shown on the S head of the N of these breakwaters. A third detached breakwater lies nearly 183m ESE of this light. A fourth detached breakwater, 40m long, is situated 0.3 mile SE of the same light. Special traffic rules are in force in these two fishing harbors. Vessel should navigate anchor along this coast carefully, as many shoals are outside the 10m curve.

Depths—Limitations.—The shores of the basins are lined with quays. There are general depths of 3 to 6m, and a number of mooring buoys have been laid in each basin.

Guzubo, with a least depth of 1.6m over rock, lies 0.4 miles SE of Kasso Misaki (Gasso Misaki). Karakai Dasi, with a least depth of 6.5m over rock, lies 0.8 miles S of Kasso Misaki.

Onahama Wan (36°55'N., 140°52'E.), consisting of white cliffs on the shore, is located between Mi Saki and Ohama Hana, 4 miles SW. Onahama Ko lies in the NE part of the bay. Conspicuous yellow cliffs line the shore in the vicinity of Mi Saki. West of the harbor area, from Has Saki to Ohama Hana, the coast is backed by white cliffs.

Caution.—Fishing nets extend from 0.1 to 0.4 mile SE of Mi Saki from March to January. A number of fish havens have been established in the approaches to Onahama Ko.

Onahama Ko (36°56'N., 140°54'E.)

World Port Index No. 61355

2.39 Onahama Ko, an open port, is an important commercial harbor and fishing center.

Winds—Weather.—Prevailing winds in the area are W through N in winter, N during the spring and fall, and S in summer.

Locally, NE through SE winds in summer predict rain and S winds predict good weather. In winter, snow with a NW wind often changes to rain with the wind shifting to NE through E.

Frequent fogs begin in May; the foggiest month is July, with an average of ten days; there is a subsequent drop by September. Fogs here normally form offshore at night, and enter the harbor on a weak E to S wind by morning, dissipating with the rise of the sun and a N wind.

Tides—Currents.—Seaward of the breakwater the tidal currents set clockwise to the S with the rising tide and counter-

clockwise to the N with a falling tide; the rate of flow is 0.5 knot. The directional change occurs at about the times of the HW and LW. Within the breakwaters the currents are negligible. The maximum tidal range is 2.6m. The range of the tide is about 1.4m.

Depths—Limitations—The port is protected by a breakwater 7,910m in length with the opening to the S. The berths in Onahama Ko are protected by a network of breakwaters totaling over 11,200m in length.

The draft limit in the entrance channel is 9.7m to the port, 13.5m to the tanker sea berth, and 12.3m to Pier No. 7. The 20m curve lies off the head of the E breakwater. The depths alongside range from 2 to 14m.

Onahama Ko—Berth Information

Berth	Length	Depth Alongside	Maximum Vessel		Remarks
			Draft	Size	
Wharf No. 2					
No. 3	130m	7.5m	7.0m	5,000 dwt	General cargo.
No. 4	130m	7.5m	7.0m	5,000 dwt	General cargo.
No. 5	94m	4.5m	4.0m	1,000 dwt	General cargo.
No. 6	94m	4.5m	4.0m	1,000 dwt	General cargo.
Wharf No. 3					
No. 1	175m	10.0m	9.7m	12,000 dwt	General cargo and cement.
No. 2	175m	10.0m	9.7m	12,000 dwt	General cargo and cement.
No. 3	175m	10.0m	9.7m	12,000 dwt	Bulk and general cargo.
No. 4	175m	10.0m	9.7m	12,000 dwt	Bulk and general cargo.
No. 5	73m	4.5m	—	1,000 dwt	Bulk and general cargo.
No. 6	73m	4.5m	—	1,000 dwt	Bulk and general cargo.
No. 7	73m	4.5m	—	1,000 dwt	Bulk and general cargo.
Wharf No. 4					
No. 1	90m	4.5m	4.0m	1,000 dwt	General cargo.
No. 2	200m	10.0m	9.7m	12,000 dwt	Liquid cargo, dry cargo, and cement.
No. 3	200m	10.0m	9.5m	12,000 dwt	Tanker berth (liquids).
No. 4	100m	6.0m	5.5m	3,000 dwt	Tanker berth (liquids).
No. 5	100m	6.0m	5.5m	3,000 dwt	Tanker berth.
No. 6	100m	6.0m	5.5m	3,000 dwt	General cargo.
Wharf No. 5					
No. 1	240m	12.0m	—	30,000 dwt	Coal.
Wharf No. 6					
No. 1	280m	14.0m	—	55,000 dwt	Coal.
No. 2	130m	7.5m	7.0m	5,000 dwt	General cargo.
No. 3	130m	7.5m	7.0m	5,000 dwt	General cargo.
Wharf No. 7					
No. 1	270m	13.0m	11.3m	40,000 dwt	Coal.
No. 2	270m	13.0m	11.3m	40,000 dwt	Coal.
No. 3	185m	10.0m	9.7m	12,000 dwt	General cargo.
No. 4	185m	10.0m	9.7m	12,000 dwt	General cargo.
No. 5	130m	7.5m	7.0m	5,000 dwt	General cargo.

Onahama Ko—Berth Information					
Berth	Length	Depth Alongside	Maximum Vessel		Remarks
			Draft	Size	
International Trade Terminal					
Quay	370m	20.0m	—	90,794dwt	Coal.
Fujiwara Wharf					
No. 1	185m	10.0m	9.7m	12,000 dwt	Timber.
No. 2	240m	12.0m	11.0m	30,000 dwt	Timber.
No. 3	185m	10.0m	9.7m	12,000 dwt	Timber.
No. 4	130m	7.5m	7.0m	5,000 dwt	Timber.
Ohtsurugi Wharf					
No. 1	130m	7.5m	7.0m	5,000 dwt	Containers.
No. 2	130m	7.5m	7.0m	5,000 dwt	General cargo.
No. 3	185m	10.0m	9.7m	12,000 dwt	Containers.
No. 4	185m	10.0m	9.7m	12,000 dwt	Containers.
No. 5	130m	7.5m	7.0m	5,000 dwt	Tanker berth (liquids).
No. 6	130m	7.5m	7.0m	5,000 dwt	Tanker berth (liquids).
No. 7	130m	7.5m	7.0m	5,000 dwt	Tanker berth (liquids).
No. 8	130m	7.5m	7.0m	5,000 dwt	Tanker berth (liquids).
Tanker Berths					
Onahama Sekiyu Terminal					
Onahama Sekiyu Sea	—	15.0m	13.5m	110,000 dwt	Crude oil. Maximum loa of 270m. Maximum beam of 45.0m.
No.1	63m	7.5m	—	—	Clean petroleum products.
No. 2	54m	7.5m	—	—	Clean petroleum products.
No. 3 (North)	30m	7.5m	—	—	Clean petroleum products.

Onahama Sekiyu Sea Berth, a dolphin berth for tankers up to 70,000 dwt, is situated on the N side of No. 2 W breakwater. A light is shown and a horn fog signal is sounded from the center dolphin; an auxiliary light is shown on the dolphin at each end of the berth. There is a depth of 15m alongside. A submarine pipeline is laid from the center dolphin to the shore in the vicinity of an oil refinery, 0.8 mile W. A submarine cable runs from the sea berth to the shore at the root of Misaki Breakwater.

Many other berths are available in the port; see the table titled **Onahama Ko—Berth Information** for details.

Pilotage.—Pilotage is not compulsory, but can be requested through ships agents.

Pilots board in the following positions:

a. 36°52'35"N, 140°53'54"E—Tankers.

b. 36°53'32"N, 140°53'26"E—Cargo vessels.

Regulations.—Entry into the port takes place only during daylight hours. Unberthing is at the option of the pilot.

Vessels not equipped with spark screens on their smoke-stacks, or carrying open flame, or with inadequate fire fighting equipment are prohibited (except by special permission of the harbormaster) from anchoring within 33m of tankers carrying hazardous flammable cargo.

Contact Information.—See the table titled **Onahama—Contact Information**.

Onahama—Contact Information	
Pilots	
Telephone	81-24-654-6653
Facsimile	81-24-653-3273
E-mail	ag0010@pref.iwate.jp
Port Authority	
Telephone	81-24-653-7124
Facsimile	81-24-653-7130

Anchorage.—The quarantine anchorage, with depths of 25 to 29m, is centered S of the Offing Breakwater in position

36°54'20"N, 140°53'39"E and has a radius of about 475m, as best seen on the chart. Anchorage can also be taken close outside the No. 1 West breakwater, in depths of 14 to 22m.

Anchoring is prohibited within an area about 0.5 mile SSW of the S end of the No. 1 West breakwater.

Caution.—Turikurai Iso, a rock with a depth of 7.4m, is located 0.7 mile SW of the light on the head of the W breakwater. Enomori Iso, with a least depth of 16.9m, lies 2.2 miles E of Mi Saki. Fish haven obstructions lie 0.5 mile E of Enomori Iso. Fishing reefs lie 0.3 mile N and 0.5 mile NE of Enomori Iso. A wave meter, marked by a lighted buoy, is on the bottom 1 miles SSE of the Mi Saki Breakwater Light; a submarine cable runs from this meter to the light. Another fish haven, constructed of concrete blocks, lies 1.5 miles SE of the Onahama Ko No. 1 West Breakwater South Light.

2.40 Hirakata Ko (35°51'N., 140°48'E.), a small fishing harbor, is situated 6 miles SW of Onahama Ko. It is suitable only for small vessels with local knowledge, as the approach is encumbered with numerous dangers with depths of 2m or less. The harbor is protected by breakwaters. A light is shown at the head of the E breakwater. Vessels with local knowledge may obtain anchorage off Hirakata Ko, in a depth of 20m, mud and sand, with the head of the S breakwater bearing 219°, distant 0.9 mile.

Caution.—Fixed fishing nets are laid between 2 and 3.25 miles ENE of Hirakata Ko, between March and January.

2.41 Otu Misaki (Otsu Misaki) (36°50'N., 140°48'E.) is a steep point, 40m high, located 1.75 miles SSE of Hirakata Ko. On a plateau about 0.8 mile W of it is a conspicuous grove of pine trees.

Otu (Otsu) Ko, a small harbor protected by breakwaters, is situated 0.5 mile W of Otu Misaki. There are three basins within Otu Ko. The W basin shelters quays having lengths of 150m, with alongside depths of 6m on the N side and 4m on the E side of the basin. Depths in the center and E basins are less; mooring buoys occupy the center of these two basins.

From Otu Misaki, the coast trends in a SSW direction 11 miles to Kawajiri Saki (Kawaziri Saki), a flat point 20m high, with a few pine trees on it.

A shoal, with a depth of 9.4m, is located 1.5 miles offshore, 2.5 miles S of the light structure on Kawajiri Saki. A rock, which uncovers, lies 4 miles NNE of Kawajiri Saki. A fish haven obstruction lies 2 miles SE of this same point. Ose Ko, a small fishing harbor enclosed by breakwaters built on the fringing reef, is situated 5.3 miles SSW of Kawajiri Saki. Lights are shown from this harbor.

Hitachi Ko (Hitati Ko) (36°30'N., 140°38'E.)

World Port Index No. 61356

2.42 Hitachi Ko is an open port protected from the E and S by breakwaters. Kuji Gyoko (Kuji Ko), a Kuji Ko fishing port, is enclosed within the breakwater, in the N extremity of the harbor. Momiya Kawa discharges into the harbor and Kuzi Kawa (Kuzi Kawi) flows out between two breakwaters into the S part of the harbor limits.

Winds—Weather.—Northeast and SE winds prevail in the spring, while the summer winds are mainly from the S or NE.

Depths—Limitations.—The entrance to the harbor is from the SSE and is entered between the E and S breakwaters. The 10m curve extends within the harbor entrance; there is a width of 0.13 mile between the 10m line at the entrance between the breakwaters. The draft limitation in the channel is 8.5m. The depths alongside the wharves range from 3.5 to 12m. The maximum draft permissible alongside the wharf is 9.5m, and 30,000 dwt. The **Hitachi LNG Terminal** (36°29'N., 140°38'E.) is a recently-completed (2016) LNG reception berth extending SE from the No. 5 Wharf breakwater. There are reported depths of 14m alongside.

A harbor has been constructed N of Kuji Ko. There are depths of at least 10m W of the breakwater head, and 7.5 to 10m alongside Suwasita Quay on the S side of the reclaimed land. Reclamation continues W of the breakwaters.

Aspect.—A power station stands on the coast 5 miles N of Iso Saki. Its chimney is marked by obstruction lights, and attains a height of 140m. Another chimney, which attains a height of 90m, stands close S. A framework observation tower, close W of the power station, is also marked by an obstruction light. There are two radio towers, 54m high, situated on the N side of the mouth of the Momiya Kawa, and there are numerous tanks situated about 0.4 mile NE of the radio towers. Hitachi Light is shown from a white concrete tower on Kobochi Hana, 1 mile NE of the wharves. Lights are shown from the breakwaters.

Pilotage.—Pilotage is not compulsory; however, pilots are available and board at position 36°28'13"N, 140°39'11"E between sunrise and sunset. Vessels should arrange pilotage if needed through their agent.

Contact Information.—See the table titled **Hitachi—Contact Information**.

Anchorage.—A quarantine anchorage, semicircular in shape, bound on the SE by the harbor limit, has a radius of about 0.2 mile. The depths in the anchorage range from 9.6 to 15m. There is an area prohibited to anchorage on the W side of the E breakwater.

Hitachi—Contact Information	
Pilots	
Telephone	81-299-825-515
Facsimile	81-299-826-205
Port Authority	
Telephone	81-29-301-4536
Facsimile	81-29-301-4583

Caution.—Onne Iso, which dries 1.6m, is located about 0.4 mile E of the N extremity of the E breakwater.

A fishing harbor, protected by breakwaters, is situated 1.3 miles S of Hitachi Ko. A light is shown at the head of the N breakwater. Beacons, in line bearing 330°, lead between the heads of the breakwaters into the harbor, which has general depths of 6m.

2.43 Hitachi-Naka Ko (36°25'N., 140°37'E.) lies approximately 5 miles S of Hitachi Ko breakwater. The port is protect-

ed by a 2.5-mile long detached breakwater. There is another detached breakwater, marked by a light, which shelters the N wharf area and outer trade quay.

Depths—Limitations.—There are more than 40 berths available, with depths of 5.5 to 18m. Vessels up to 130,000 dwt can be accommodated. Quays on the N and S wharf areas have been completed; there is a central area which remains under construction.

Hitachi-Naka Ko—Berth Information			
Quay	**Length**	**Depth**	**Maximum Vessel Size**
North Wharf			
A	300m	14.5m	50,000 dwt
B	230m	12.5m	30,000 dwt
C	170m	10.0m	10,000 dwt
Bulk	382m	18.0m	130,000dwt
D	130m	7.5m	5,000 dwt
E	130m	7.5m	5,000 dwt
F	130m	7.5m	5,000 dwt
G	100m	5.5m	2,000 dwt
H	100m	5.5m	2,000 dwt
I	100m	5.5m	2,000 dwt
J	100m	5.5m	2,000 dwt
K	100m	6.5-7.0m	2,000 dwt
Center Wharf			
A	130m	6.0-7.0m	5,000 dwt
B	250m	8.5-9.0m	6,500 dwt
South Wharf			
A	130m	6.5m	5,000 dwt
B	130m	4.6m	5,000 dwt
C	90m	3.0m	2,000 dwt
D	90m	3.0m	2,000 dwt
E	90m	5.5m	2,000 dwt
F	90m	5.5m	2,000 dwt
G	90m	5.5m	2,000 dwt

Iso Saki (36°23'N., 140°38'E.), a low sandy cape with a number of pine trees on it, is located 7 miles S of Hitachi Ko; the cape is fringed with reefs. A light is shown from a round concrete tower, 14m high, on Iso Saki. A lighted buoy is moored 1.5 miles ENE of Iso Saki. Two lighted buoys are moored 3.5 and 4.5 miles N, respectively, of Iso Saki and mark the ends of two submarine water pipelines extending from the shore WSW.

Nakaminato Ko (36°20'N., 140°36'E.) is a fishing harbor in the mouth of Naka Kawa and is situated about 3 miles SSW of Iso Saki. The breakwaters to Nakaminato Ko are covered at HW. The harbor consists of a series of quayed basins, with depths up to 3m. A wave meter, lying 3 miles offshore, is 3.2 miles SSE of the harbor.

Kashima Ko (35°56'N., 140°42'E.)

World Port Index No. 61357

2.44 Kashima Ko is a coastal harbor, protected by breakwaters, situated 25 miles SSE of Nakaminato Ko; it is an open port. The area between the breakwaters is called the outer port, and the dredged area inland is called the inner port.

This artificial port, the largest single port in Japan, with over 9 miles of wharves serves a new industrial zone E of Tokyo.

Kashima Home Page
http://www.kku.co.jp/eng/index.html

Depths—Limitations.—There are depths of 19 to 30m in the approach from the sea to the quarantine anchorage. The channel is entered on a range line that has been dredged to a depth of 24m (1979) for a distance of 1.5 miles over a width of 494m. The depths decrease to 22m and then to 19m in the inner harbor. In the N and S fairways there are depths of 10 to 13m. There are depths at the berths from 5 to 22m.

The crude oil pier on the W side of the S breakwater will accommodate a vessel up to 340m in length and 19m draft. Other berths have no length limitations, but are limited by draft and tonnage. South Public Wharf has eight berths with depths of 7.5 to 10m alongside.

Three overhead cables are present in the inner part of the harbor; they have vertical clearances of 45m, 47m, and 48m.

Aspect.—On the S side of the harbor there is a chimney, 234m high, situated 0.8 mile SW of the root of the S breakwater. Two chimneys, about 205m high, are situated close E of the above chimney. Three conspicuous radar towers are situated 2.3 miles NW of the head of the N breakwater.

Pilotage.—Pilotage is compulsory for vessels over 50,000 gt. Pilots are available between 0645 and 1600 in the summer and 0645 and 1430 in winter off the S breakwater for oil, chemical, and LPG tankers. For sailing, pilots are available from 0600 to 1700 in summer and 0630 to 1600 in winter. The pilot boards within a circle of radius 1.5 miles centered on position 36°00'N, 140°46'E, about 3.8 miles NE of the light on the S breakwater. All movements at the port are controlled from the signal station near the NW of the harbor entrance.

If weather conditions make boarding vessels of less than 10,000 tons difficult, then with the agreement of the ship's master, the pilot vessel may display flags UH and guide the vessel into the harbor, where the pilot will board.

Regulations.—Vessels of 15,000 gt and over (tankers of 1,000 gt and over) should send a notice of ETA at the pilot boarding area to the harbormaster not later than 1200 on the day before arrival, through the agent. Vessels should maintain a continuous listening watch of VHF channel 16 from 1 hour before arrival. Vessels at anchor should inform the Port Radio via VHF of their exact time of arrival and position (as a bearing and distance from the S breakwater light). The ETD should also be sent in advance to the harbormaster.

Inubo Saki Light

Vessels not equipped with a spark screen, using open fires, or with inadequate fire controlling equipment are prohibited from approaching within 30m of facilities or vessels involved in handling petroleum products within the port.

Signals.—There is a signal station on the N side of the harbor, 0.7 mile SW of the head of the N breakwater. The traffic control signals are given in the table titled **Kashima Ko—Signals.** The signals described in this table apply to any vessel intending to enter or depart from the fairway leading from the harbor limit into the port area.

Vessels of with a length of 190m or greater and tankers of 1,000 gt or over must report their ETA off the entrance to Kashima Fairway before noon of the preceding day, and their ETD. Any change in ETA must be promptly reported to the Captain of the Port.

A vessel is required to display, disposed vertically, the following flags of the International Code to indicate the position of the wharf to which it is proceeding:

1. Second substitute CN—Central Fairway, N side.
2. Second substitute CS—Central Fairway, S side.
3. Second substitute NW—North Fairway, W side.
4. Second substitute NE—North Fairway, E side.
5. Second substitute SW—South Fairway, W side.
6. Second substitute SE—South Fairway, E side.

Vessels equipped with AIS shall indicate the corresponding letters of each destination to match the signal flags used.

Contact Information.—See the table titled **Kashima—Contact Information**.

Anchorage.—The quarantine anchorage, rectangular in shape, is situated in the N extremity of the harbor limit, 1.8 miles NNW of the head of the S breakwater. The recommended anchorage for large vessels is 2.75 miles NE of the head of the S breakwater, in depths from 21 to 26m. Vessels should stay clear of the approach to the entrance channel.

Kashima—Contact Information	
Call sign	Ibaraki Port Radio
VHF	VHF channels 12, 14, and 16
Telephone	81-29-982-7438
Port Authority	
Telephone	81-29-301-4536
Facsimile	81-29-301-4538
E-mail	kowen5@pref.ibaraki.lg.jp
Harbormaster	
Call sign	Kashima Harbor Coast Guard Radio
VHF	VHF channels 12 and 16
Telephone	81-29-992-2601

Caution.—In rough weather, waves may break over the S breakwater, rendering it invisible to shipboard radar. An overhead cable runs from the NW end of the Kashima Ammonia and Urea Company quay to the SW. The height of the lowest cable is 37m. Fish haven obstructions are situated 5 miles N and 7.6 miles NNW, 2.4 miles and 1.8 miles offshore, respectively, of Kasimo Ko.

Great care is required when entering or leaving the harbor between May and the end of September due to fixed net fishing operations.

From Kashima Ko, the coast trends in a SSE direction for a distance of 13 miles to Tone Gawa (Kawa). O Ne, with a depth of 17m, lies 5.5 miles NE of the mouth of Tone Gawa.

Sunken wrecks, dangerous to navigation, lie 9.1 miles N, 3.6 miles NE, and 4.4 miles NE of the Tone Kawa entrance.

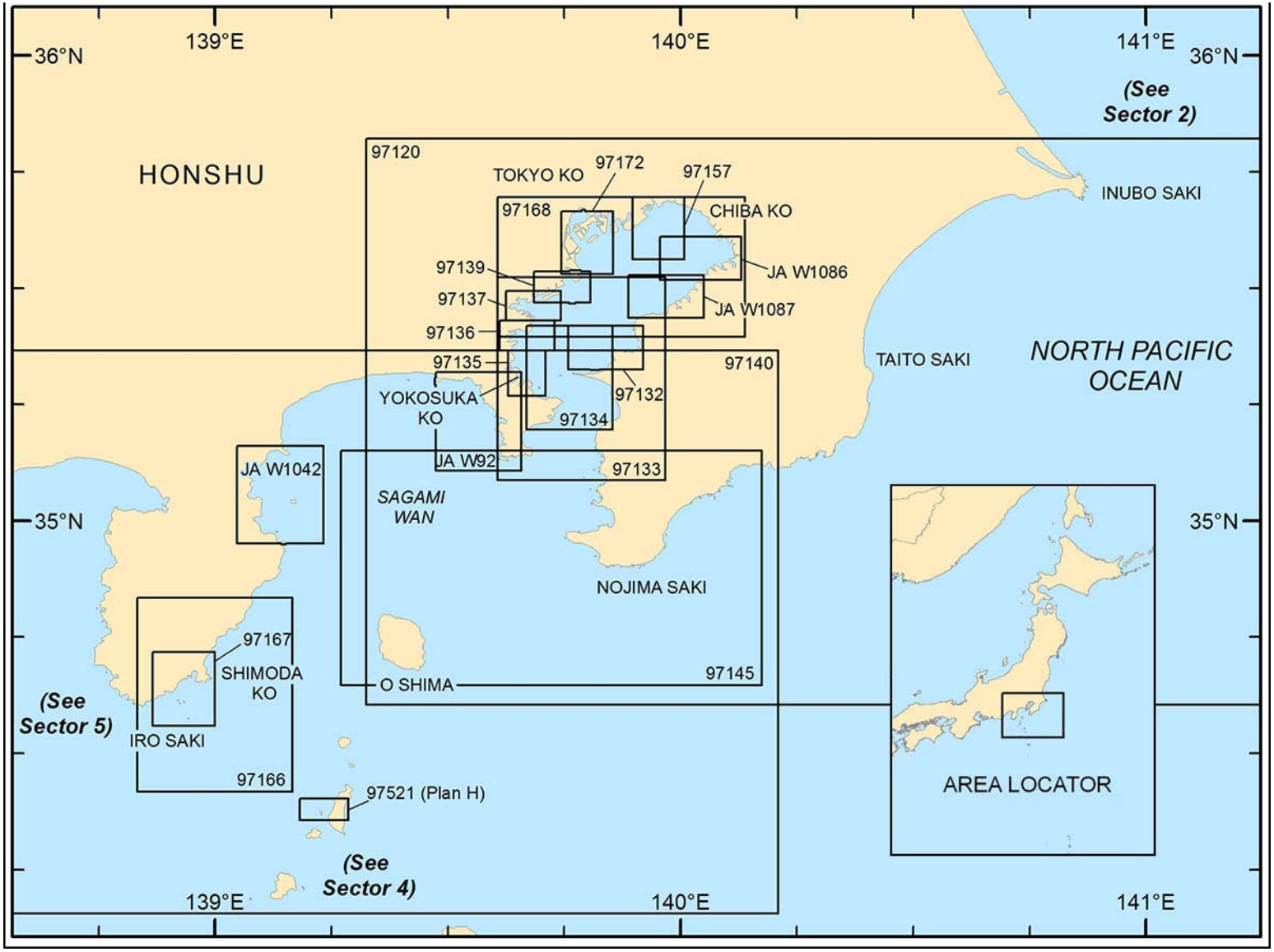
2.45 Choshi Ko (Tyosi Ko) (35°44'N., 140°51'E.) (World Port Index No. 61360), a fishing port, is situated inside the mouth of the Tone Gawa. Breakwaters protect the channel leading into the river. A power transmission cable, with a vertical clearance of 26m, spans the mouth of the river. The Choshi Ohashi Bridge spans the Tone Gawa approximately 1.5 miles from the mouth with vertical clearance of 11m.

A breakwater, marked on its N end by a light, is situated on the S side of the approach to Tone Gawa. A training wall extends in a NE direction toward the mouth of the river and is separated from the breakwater by an opening about 114m wide. There are several boat harbors in this vicinity. There are several dangers within the 10m curve off this river entrance within 1.3 miles of the shore.

Inubo Saki (35°42'N., 140°52'E.), a prominent high point at the E end of Choshi Hanto, which forms the S shore of Tone Gawa, is fringed with reefs and above-water and sunken rocks, up to 0.4 mile offshore. Inubo Saki Light is shown from a round white tower. The E side of Choshi Hanto is a sandy beach; the W side consists of a 20 to 40m high red earth-covered dark cliff.

Atago Yama, close W of the point, is 74m high and covered with trees; it is conspicuous.

Kashima Ko—Signals		
Kashima Signal Station	**Kashima Central Signal Station**	**Meaning**
A flashing white light every 2 seconds.	Lighted flashing letter “I”	Vessels may enter. Vessels of 70m loa or greater, excluding vessels less than1,000 gt, intending to depart, must stop and wait. Vessels of under 1,000 gt or less than 70m loa may depart.
A flashing red light every 2 seconds.	Lighted flashing letter “O”	Vessels may depart. Vessels of 70m loa or greater, excluding vessels less than 1,000 gt, intending to enter, must wait outside the fairway, keeping clear of vessels leaving. Vessels of under 1,000 gt or less than 70m loa may enter.
An alternating flashing red and white light every 3 seconds.	Lighted flashing letter “F”	Tankers of 1,000 gt or over and other vessels of 190m loa or greater, intending to enter, must wait outside the fairway, keeping clear of vessels leaving. Tankers of 1,000 gt or over and other vessels of 190m loa or greater, intending to depart, must stop and wait. Tankers of under 1,000 gt and other vessels less than 190m loa may enter or depart.
A flashing light, three red and three white flashes every 6 seconds.	Lighted letter “X”	No vessel shall enter or depart without directions from the Captain of the Port.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **3** — CHART INFORMATION

SECTOR 3

SOUTHEAST COAST OF HONSHU—INUBO SAKI TO IRO SAKI

Plan.—The sector describes the SE coast of Honshu from Inubo Saki in a SW direction to Iro Saki including Sagami Nada, Sagami Wan, and Tokyo Wan. The island of O Shima lies almost in the middle of the entrance to Sagami Nada, and although a member of the Izu Shichito group, it is described in this sector.

General Remarks

3.1 From Inubo Saki, the coast trends SW for about 120 miles to Iro Saki. Between Inubo Saki and Noshima Saki, the NE half of this stretch, consisting of two bights, has no pronounced indentations, but between Noshima Saki and Iro Saki, about 55 miles WSW, lies the entrance to Sagami Nada. This extensive bay, with Tokyo Wan, its inner arm, penetrates the Honshu mainland in a N direction for a distance of almost 60 miles.

Caution.—Vessels making the coast, between Inubo Saki and Noshima Saki from the E, must exercise great care as the complex current system and the prevalence of fog, especially in the summer, render this section particularly hazardous. Continuous soundings and frequent readings of the sea temperature may afford warnings. During the summer months, a swell usually causes heavy breakers on this coast.

Due to the earthquakes that occurred on 11 March 2011, offshore of the Tohoku region in Japan, and the resultant tsunami, variation of the coastline and seafloor must be considered and caution exercised. Wrecks and obstructions may be displaced from previously charted positions and new obstructions experienced along the E coast of Honshu and in the harbors. Breakwaters may be altered in position and length and many aids to navigation destroyed. The charts of these areas have been significantly affected and will be updated as surveys and time allow.

Inubo Saki to Katsuura Wan

3.2 From Inubo Saki the coast trends SSW for 44 miles to Katsuura Wan. The middle of this stretch, for a distance of 27 miles, is composed of a flat sandy beach known as Kujujuri Hama (Kuzyukuri Hama). The coast on either side of the beach is considerably more rugged.

The land backing this coast consists mainly of low hills. It has been reported that the mountain located about 3 miles N of Katsuura Wan gives good radar returns up to 40 miles when approaching this coast.

The 20m curve lies nearly 8 miles from shore in the vicinity of Kujujuri Hama, but is less than 1 mile from shore to the S of Toriyama Hana. There are no depths under 10m beyond 2 miles from the shore.

Winds—Weather.—From spring through autumn, a NE wind blows offshore while a strong N wind blows near the shore in the vicinity of Katsuura Ko. This is caused by the NE wind being deflected to a N wind by the mountains of the lower Boso Hanto.

Tides—Currents.—The Kuroshio flows close offshore S of Katsuura Ko, becoming a strong NE flowing current; N of Katsuura Ko the current directions become unstable, with the velocity never going over 1 knot.

From Inubo Saki, the coast trends S for 1 mile to Nagasaki Hana; the water between these two points is foul and a small islet lies 0.25 mile SE of Nagasaki Hana.

Togawa Ko (35°42'N., 140°51'E.), a small fishing village, is situated about 0.8 mile W of Nagasaki Hana.

Inuwaka Hana, with a breakwater close W with a light on it, lies about 0.3 mile W of Togawa Ko.

Naarai Ko (35°42'N., 140°51'E.), a small fishing harbor N of Inuwaka Hana, provides refuge when weather and sea conditions make it impractical to enter Choshi Ko.

Byobuga Ura, a cliffy red coast, extends 5 miles WSW from a position 1.5 miles NW of Naarai Ko. A light is situated on a point at the W extremity of this cliff.

There are several fish haven obstructions and wrecks dangerous to navigation beyond the 10m and 20m curves along Kujujuri Hama; vessels should navigate with caution. Fish havens are situated 2 miles S, 2.1 miles SSE, 6 miles SE, 8.4 miles SSE, and 10.5 miles SW of the light on Byobuga Ura. Sunken wrecks lie 3.5 miles SSE, 7 miles SE, 5.7 miles SSE, 12.6 miles S, and 12.6 and 16 miles SSW of this light.

3.3 **Taito Saki** (35°18'N., 140°25'E.) lies at the S end of Kujujuri Hana. This prominent wooded point has a white and red bluff on its N side and a vertical white chalk cliff on its S side, 69m high. A light is displayed from an octagonal concrete tower, 8.2m high, situated on the point. Fish haven obstructions lie 8.4 and 12 miles NE of Taito Saki Light.

An irregularly-shaped area, about 4.5 miles in extent from E to W, lies with its center about 7 miles ESE of the lighthouse on Taito Saki; this area has been wire dragged to a depth of 9m in the W part and 10m elsewhere. There are other areas in the vicinity that have been wire dragged; their positions may be seen on the chart.

Hatiman Saki, 3.5 miles S of Taito Saki, is composed of reddish-yellow cliffs 30m high. A light is situated on the point and lights are also situated on the rocky area that extends about 0.5 mile N of Hatiman Saki.

Toriyama Hana (35°11'N., 140°22'E.) is located 4.75 miles SSW of Hatiman Saki; there is a white monument on the point rising to a height of 79m. When seen from the SW, Toriyana Hana appears round and is easy to distinguish, but from the E it greatly resembles Hachiman Saki, on the E side of Katsuura Ko entrance. Vessels approaching from the E should bear this in mind.

There are shoals lying within 0.8 mile SSW and 1 mile E of Toriyama Hana. The sea breaks heavily on these shoals with S and E winds.

Hachiman Saki (Hatiman Saki) (35°08'N., 140°19'E.), the E

entrance point of Katsuura Ko, is a black, wooded point 50m high, located 5 miles SW of Toriyama Hana. Three dangerous rocks are charted outside the 10m curve, 1 mile E of Hachiman Saki, and a 4.1m patch is charted close S of the E rock. There is a lighthouse on this point.

3.4 **Katsuura Ko** (35°08'N., 140°18'E.) is a small harbor protected by breakwaters situated on the E side of Katsuura Wan. In the harbor are depths of about 4m. A lighted tower stands at the head of each of the W and S breakwaters. The harbor limit is bound on the S by a line extending from Hachiman Point to a point 1 mile WNW. Small vessels may anchor here, in depths of 6.5 to 9.5m. The holding ground is not good and anchoring is not possible when strong SW winds occur.

Vessels passing Katsuura Wan should keep at least 3 miles offshore, as the depths are irregular and the bottom is rocky.

Katsuura Wan to Emino Saki

3.5 From Katsuura Wan, the coast trends in a SW direction 25 miles to Noshima Saki (Nozima Saki), then continues in a NW direction 8 miles to Suno Saki.

For a distance of 12 miles WSW of Katsuura Wan, the coast is steep and much indented, consisting for the most part of continuous whitish cliffs. From this point, the coast consists of sandy beaches and a much less indented shoreline to Suno Saki. The mountains which back this shore are under 400m high.

Myoken Yama (35°10'N., 140°09'E.), located 8 miles W of Katsuura Wan, rises to a height of 418m and is the highest point on Boso Hanto. The tall dark cedars make this a good mark, and inbound vessels spot this point first. Takatsuka Yama (Takatuka Yama), 214m high, located 3.25 miles NE of Noshima Saki, is a wooded peak which is a good mark from the offing.

The 20m curve lies from 0.2 mile to 2 miles offshore along this coast. There are dangers and shoal patches close outside this curve which are charted.

Winds—Weather.—In summer, relatively weak SE winds dominate and blow across the Kuroshio and the temperatures become extremely high. During the winter period of the Northwest Monsoon, the climate is generally mild, due to the influence of the Kuroshio.

Tides—Currents.—The Kuroshio flows at a rate of 1 to 3 knots toward the NE, 20 miles off the coast between Toriyama Hana and Noshima Saki. South of Katsuura Ko, the Kuroshio flows much closer to shore, becoming a strong NE current.

Between Toriyama Hana and Noshima Saki, the tidal flood currents set SW, while ebb currents set NE less than 1 mile from shore. When the tidal currents and ocean currents meet, the rate will exceed 3 knots.

3.6 From the W entrance point of Katsuura Wan to Emino Hana, about 12 miles distant WSW, the coast is steep and much indented, consisting for the most part of continuous whitish-colored cliffs.

Uchiura Wan (35°07'N., 140°12'E.), located about 5 miles WSW of Katsuura Wan, has numerous shoals and gradually shallows from the 25m curve to the shore. There are rock ledges on the E and W side of the bay, with the E half of the bay being especially rocky. Small vessels, with local knowledge, can anchor, in 5.5 to 28m, sand. However, heavy SW winds bring waves into the bay.

Kamogawa, a small port sheltered by islets and a series of breakwaters, is situated about 4.5 miles WSW of Uchiura Wan. There are N and E entrances to the harbor.

Emino Hana (Yoshiurano Hana) (35°03'N., 140°04'E.), 3 miles SW of Kamogawa, is fringed by a rocky ledge. A hill, 93m high, lies close within the point. This densely-wooded hill is conspicuous from the NE and SW.

Emino Saki to Suno Saki

3.7 From Emino Hana to Kottono Hana, about 8.5 miles SW, the coast recedes in a gentle curve of sandy beach. The coast in the vicinity of Kottono Hana is fringed by foul ground and a vessel should not approach within 0.5 mile of it; tide rips frequently occur off the point. It has been reported that Kottono Hana is a good radar target up to 40 miles.

Between Kottono Hana and Noshima Saki, 4.5 miles SW, the coast consists of a series of rocky and sandy beaches backed by low hills.

A 1.4m patch lies close inside the 20m curve, 1.5 miles ESE of Noshima Saki. A 4.6m rocky patch lies outside the 20m curve, 0.4 mile SE of the 1.4m depth, and an isolated 12m rocky patch lies 0.5 mile farther SE.

Nojima Saki (Nozima Saki) (Noshima Saki) (34°54'N., 139°54'E.), a long flat cape, extends about 0.3 mile S. A light is situated on the point and is shown from an octagonal concrete tower, 29m high. The light structure was reported to be a good radar target from 18 miles.

A signal station is situated on Noshima Saki at the lighthouse.

3.8 From Noshima Saki, the coast trends WNW for about 3.3 miles to Dottsuno Hana and then NW for about 5 miles to Suno Saki. This coastline consists of sand beaches and rocky shores backed by low hills.

The 20m curve lies 0.3 mile S of Noshima Saki, about 1.8 miles SW of Dottsuno Hana, and closes to 0.25 mile off a point 0.75 mile S of Suno Saki. There are no charted dangers outside the 20m curve. However, overfalls occur in some seasons in an area which extends from 2.5 to 5.75 miles SW of Dottsuno Hana.

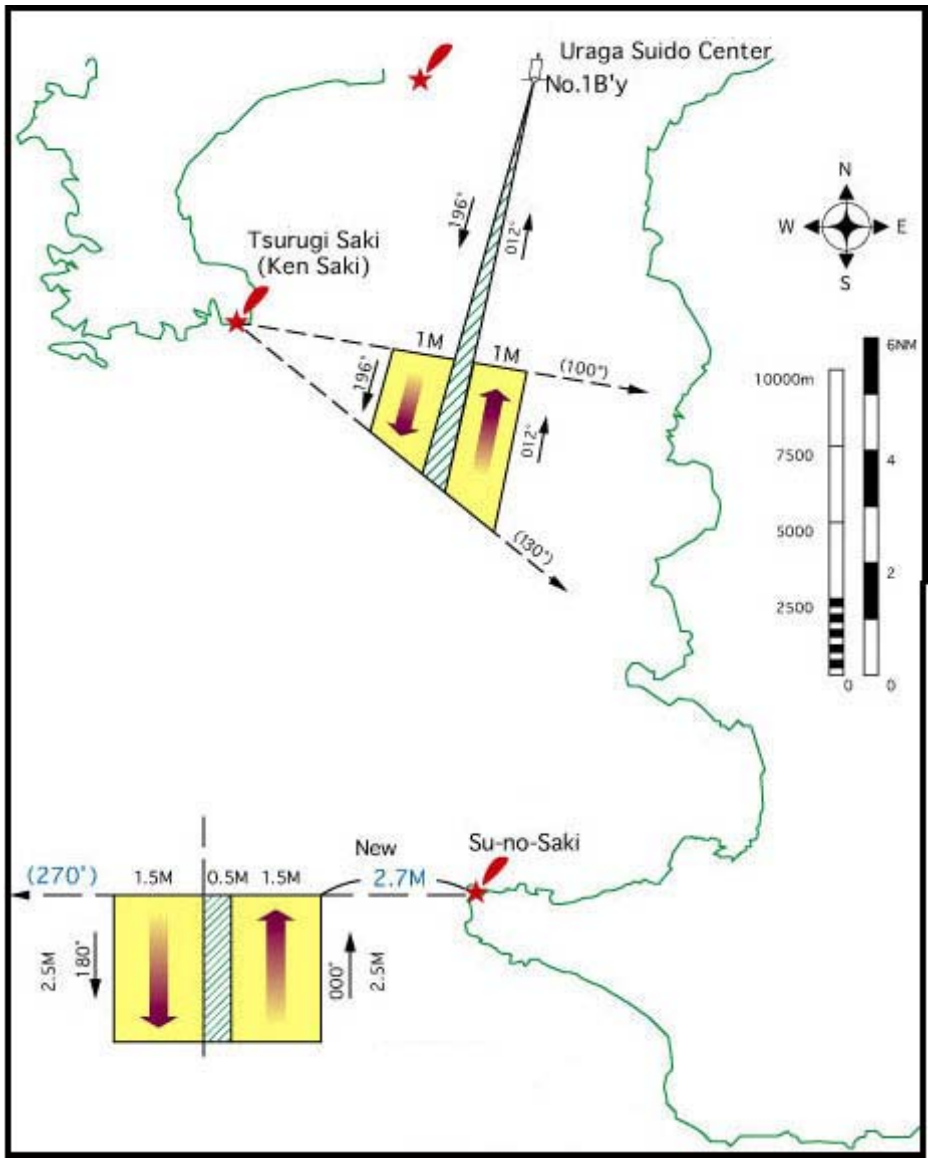
Oniga Se (34°54'N., 139°49'E.), with a depth of 4.1m, lies near the extremity of a reef extending about 1.3 miles SW of Dottsuno Hana. The least depth over the reef, less than 1.9m, lies about 0.3 mile NE of Oniga Se.

Suno Saki (34°58'N., 139°46'E.)(Su-no-Saki) rises to an elevation of 35m and appears from the S or N as a row of small hills.

O Yama, the highest hill in the vicinity, lies 1.25 miles SE of Suno Saki and is 193m high and conical. A lighthouse stands on Suno Saki.

Tides—Currents.—The current 1.5 miles SW of Dottsuno Hana sets regularly between the E and SE, with a velocity of 2 to 4 knots, but at times, this current runs in a reverse direction for a week or more at a time.

In a position 1.5 miles W of Suno Saki, the flood current has a maximum rate of 1.5 knots and sets NW, while the ebb current has a maximum rate of 2.2 knots and sets S. The currents



Courtesy of Japan Captains Association

Suno Saki and Tsurugi Saki—Voluntary Traffic Separation Schemes

reverse about 1 hour after maximum flood and maximum ebb. Further, in this vicinity, a strong onshore tide occasionally occurs from the W producing overfalls in an area close NW of Suno Saki. Vessels should navigate with care in the vicinity of Suno Saki, as the strong E currents may change to W currents in some seasons.

Caution.—A voluntary traffic separation scheme has been established by the Japan Captains' Association W of Suno Saki. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation. Further information can be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Suno Saki to Tokyo Wan

3.9 Kohage Dashi (Kahage Dashi), a detached rocky patch with a depth of 5.8m, lies about 0.8 mile NW of Suno Saki.

Sagami Nada (35°14'N., 139°30'E.), is an extensive bay which, with Tokyo Wan, deeply indents the SE coast of Honshu. It lies between two peninsulas, the Boso Hanto on the E and the Izu Hanto on the W, with its entrance between their S extremities, Noshima Saki and Iro Saki, about 55 miles WSW. O Shima lies almost in the middle of the entrance and the channels on either side are wide and deep.

A peninsula named Miura Hanto projects from the head of Sagami Nada; that part of the bay to the W of this projection is known as Sagami Wan. Uraga Suido leads off the E side of Sagami Nada and into Tokyo Wan, passing between the E side of the Miura Hanto and the W side of the Boso Hanto.

Winds—Weather.—Doyo Nami is the name given a wave phenomenon which occurs in Sagami Nada at about the time of the greatest heat of summer. This phenomenon lasts for several days, and its effects are felt as far as Uraga Suido. Typhoons, which normally form far to the S of Japan, send out in all directions a long swell which becomes higher as it approaches the shallow coastal waters and causes great waves to break on the shore. Doyo Nami can be expected during the typhoon season particularly in August and September. A sign of its approach is the gathering of a dense bank of clouds high up to the E of O Shima. As it nears the coast, its size and velocity increase. It is reported that a 3m wave in the offing will increase in height to more than 6.1m in the proximity of the coast, and that the strength of the wind does not materially affect this characteristic. There is a relation between the acceleration of force and the duration of this phenomenon; if the acceleration is rapid the duration is shortened, and if the acceleration is gradual the duration tends to be lengthened. After the subsidence of this phenomenon, it is reported that light S winds and a calm sea prevail. Vessels expecting to encounter this disturbance should maintain a good offing.

3.10 O Shima (34°44'N., 139°24'E.), the largest and northernmost of the Izu Shichito, lies in about the middle of the entrance to Sagami Nada, in a position almost 20 miles SW of Suno Saki. The N and E sides of the island are steep and rocky, but the S and W sides have some sandy beaches. Habu Ko, a small landlocked inlet, indents the SE end of the island; mooring buoys lie in the inlet. Okada Ko, a small harbor, lies about 1 mile SE of the N extremity of the island.

Tides—Currents.—The effect of the current in the vicinity of O Shima is greatly modified by the tidal currents. The E Kuroshio impinges on the island in the vicinity of Semba Saki, the SW extremity of the island, and divides, with one branch flowing N along the W coast and the other flowing E along the S coast. The N branch flows NE past Chiga Saki, the island's NW extremity, at a rate of about 3 knots; tide rips occur here. The S branch flows E past Habu Ko, at a rate of 3 knots, but during spring tides in the summer, a resultant W set has been observed during the flood. Tide rips occur off this SE point. Off the E side of O Shima, the flood sets N and the ebb sets S at respective rates of 0.5 and 1.5 knots.

Aspect.—O Shima (Mihara Yama) is volcanic; its summit is an active volcano which continuously emits smoke. A light is situated at Kazahaya Saki on the N coast. The island was reported to be a good radar target from 26 miles.

Caution.—A voluntary traffic separation scheme has been established by the Japan Captains' Association NW of O Shima. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation. An additional recommended route is centered on a line joining the following positions:

a. 34° 48.0′N, 139° 17.0′E.
b. 34° 42.2′N, 139° 10.0′E.

Kazahaya Saki Light

Virtual aids to navigation (V-AIS) have been established to indicate this line. Vessels are requested to use the starboard side of the central line described above.

Further information can be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Tokyo Wan

3.11 Tokyo Wan is an open bay entered between Suno Saki and Ken Saki (Tsurugi Saki), 10.5 miles NNW. It trends in a general N direction for about 14 miles to the narrows between Futtsu Saki and Kannon Saki; then it curves NE for about 25 miles. The coast immediately adjacent to Tokyo Wan is low, but to the N and NW are high mountains, which afford some protection against wind from the NW quadrant. The S portion of the bay is called Uraga Suido; its middle and N portions are the locales of the major ports of Tokyo, Yokohama, Yokosuka, Tiba Ko (Chiba Ko), and Kisarazu Ko.

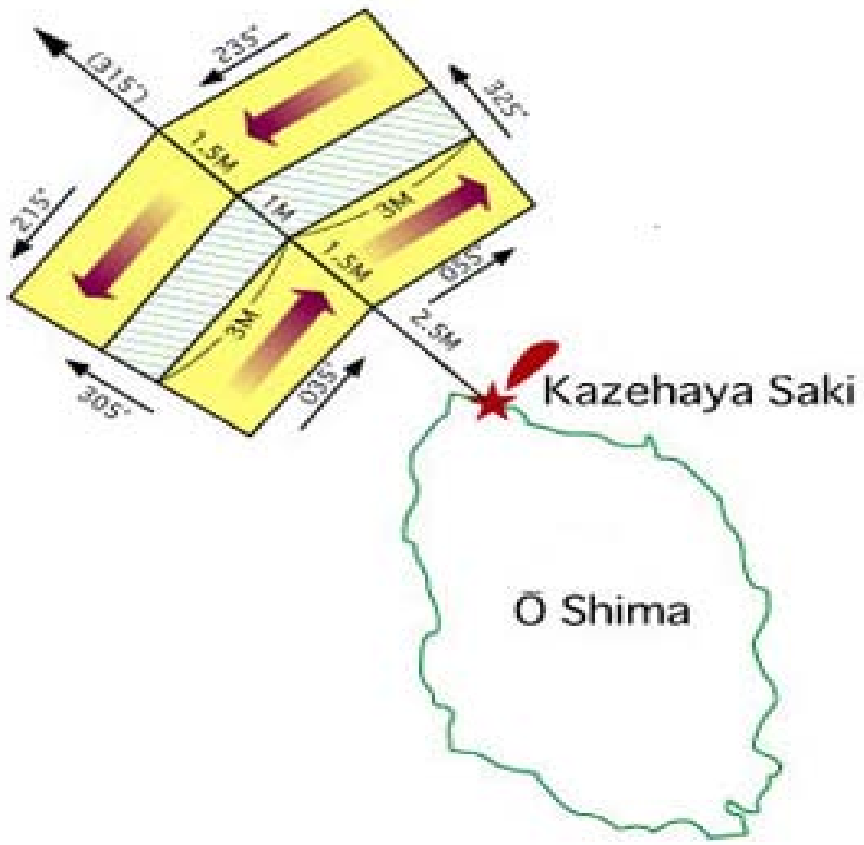
Winds—Weather

In Tokyo Wan, fog is most frequent in the months of June, July, and August. In fine weather fog, usually sets in from midnight to early morning and lifts as the sun rises high, but there are exceptions. Fog is comparatively frequent in the vicinities of Kannon Saki, Suno Saki, and Joga Shima, but the visibility is rarely less than 0.1 mile.

Fine weather is prevalent during the winter, with dry N or NW winds and occasional snowfall.

Tides—Currents

The tidal currents in Tokyo Wan are weak and irregular and are usually stronger on the W side than on the E. In the narrows between Futtsu Saki and Kannon Saki, the flood sets NW and then follows the trend of the shore to Yokohama; the ebb sets in the opposite direction. At springs, a drift of 1 to 1.5 knots is experienced.



Courtesy of Japan Captains Association

O Shima—Voluntary Traffic Separation Scheme

Depths—Limitations

The depths through Uraga Suido vary from over 200 to 37m in the narrows. In the inner part of the bay depths of more than 37m prevail on the W side for a few miles, and over the central part the depths range from 18.3 to 33m, but depths of less than 18.3m extend for almost 10 miles from the head.

Aspect

Tokyo Skytree, a 634m high radio tower, stands N of Tokyo Ko in position 35°42'36"N, 139°48'39"E.

Pilotage

Pilotage is compulsory for vessels of 10,000 gt or more, and is recommended for all vessels whose master has no experience in navigating Tokyo Wan. Pilot boards 2 to 3 miles S of Lighted Buoy No. 1 (35°10.5'N., 139°46.7'E.).

Requests for pilotage should be made 24 hours, 6 hours, and 3 hours in advance.

Uraga Chanel Pilots—Contact Information	
VHF	VHF channels 12, 16, and 68
Telephone	81-45-650-3180
Facsimile	81-45-663-4811
E-mail	qa-pilot@tokyobay-pilot.jp

Regulations

Special reporting requirements are in effect for “Huge Vessels” (defined as vessels with a length of 200m and over), vessels of 25,000 gt and over with liquefied natural gas on board, vessels of 160m in length and over, and vessels towing with a combined length of 200m and over.

Tokyo Wan—Reporting Lines		
Name of Reporting Lines	**Abbreviation**	**Description**
Urago Suido Traffic Route **S**outh	US	A line bearing 270° from Hamkanaya Ko Breakwater Light to the coast.

Tokyo Wan—Reporting Lines		
Name of Reporting Lines	**Abbreviation**	**Description**
Urago Suido Traffic Route **W**est	UW	A line connecting Yokosuka Ko Northeast Breakwater Light to the N end of Saru Shima.
Urago Suido Traffic Route **N**orth	UN	A line bearing 270° from Lighted Buoy B at Nakanose in Tokyo Wan to the coast.
Off Honmoku (**H**onmoku **E**ast)	HE	A line bearing 090° and extending 8,400m from Homoku Signal Station.
Off Kawasaki-Ogishima (**K**awasaki **E**ast)	KE	A line bearing 090° and extending 9,000m from Tonen Ogishima East Sea Berth Light.
Tokyo Wan North (**B**ay **N**orth)	BN	A line bearing 270° from Chiba Light to the Coast.
Off Chiba (**T**iba **W**est)	TW	A line bearing 225° and extending 15,900m from Chiba Light.
Kisarazu Passage	KW	A line bearing 210° from Kisarazu Ko Lighted Buoy No. 5 through Lighted Buoy No. 6 to the boundary line.

Huge vessels shall report to Tokyo Wan Vessel Traffic Service Center the following information by noon local time, one day in advance of arrival to the Traffic Route:

1. Name, gt, and loa.
2. The sections of the traffic routes to be navigated as well as the time entering and exiting these routes.
3. Call sign.
4. Method for communicating with Japan Coast Guard in the event a vessel is not equipped with VHF.
5. Port of destination.
6. Draft for Huge Vessels.
7. The type and amount of dangerous cargo being carried, if any.
8. For towing vessels, information about the tow and total length of tow and towing vessel.

Vessels may make their pre-entry report to Tokyo MARTIS by telephone, facsimile, or VHF (see paragraph 3.12). Vessels may also contact Yokohama Coast Guard Radio via VHF.

Vessels of 300 gt and over carrying gunpowder, vessels of 1,000 gt and over carrying inflammable liquid or high pressure gas in bulk, and vessels of 300 gt and over carrying 200 or more tons of organic peroxide must report the following information 3 hours prior to entering the Traffic Route.

1. Name, gt, and loa.
2. The sections of the traffic routes to be navigated as well as the time entering and exiting these routes.
3. Call sign.
4. Method for communicating with Japan Coast Guard in the event a vessel is not equipped with VHF.
5. Port of destination.
6. Any dangerous goods on board.

Steering and Sailing Rules in Tokyo Wan

The following additional regulations apply to vessels transiting Tokyo Wan:

1. A vessel navigating in Tokyo Wan should not use an automatic pilot.
2. Sailing rules in the vicinity of each entrance and exit of the traffic routes; refer to accompanying illustration.
   a. A vessel navigating in the vicinity of the N exit of Naka-no-Se Traffic Route leaving Kisarazu Ko should pass Kisarazu Ko Lighted Buoy (35°24.9'N., 139°47.2'E.) on its port side.
   b. A southbound vessel, including vessels from Tokyo, Chiba or their vicinity, approaching the area W of Naka-no-Se should keep Tokyo Wan Naka-no-Se Western Light Buoy 3, Lighted Buoy 2, and Lighted Buoy 1 on its port side. A vessel intending to anchor W of Naka-no-se should keep at least 1,000m from a line joining Lighted Buoy 3, Lighted Buoy 2, and Lighted Buoy 1.
   c. A southbound vessel leaving Uraga Suido Traffic Route should not take such action as greatly altering its course which might impede the passage of a vessel entering the traffic route.
   d. A vessel entering Uraga Suido Traffic Route from the open sea, after passing through the Ken Saki, should navigate in the middle part of the entrance of Tokyo Wan so as to avoid a crossing situation with a southbound vessel in the vicinity of the entrance of the route.

Note.—The use of Naka-no-Se Traffic Route is not mandatory for vessels having drafts of 20m and over.

3. Restriction on Overtaking.—Huge vessels (defined as vessels of 200m and over), or other particular types of vessels in the traffic route should not overtake a vessel of 500 gt or more, except when there are unavoidable reasons.
4. Restrictions on Speed.—A vessel shall not navigate at a speed exceeding 12 knots in the traffic routes. Vessels may exceed 12 knots only when crossing a traffic route. Outside the traffic routes, vessels should not navigate at a high speed.
5. A vessel of 50,000 gt or more carrying dangerous cargo, or a vessel of 25,000 gt or more carrying liquefied gas, is prohibited from entering the traffic routes from sunset until 1 hour before sunrise.
6. Vessels towing with a combined length of 200m and over, Huge vessels, vessels of 50,000 gt and over with dangerous cargo (and vessels of 25,000 gt and over with liquefied gas), may not enter traffic routes when the visibility is less than 2,000m but more than 1,000m. These vessels must await permission from the Traffic Service Center to proceed.

When the visibility is less than 1,000m vessels of 160m and over, vessels of 10,000 gt and towing vessels with a combined length of 200m and over may not enter traffic routes until granted permission by the Traffic Service Center.

7. A vessel (other than a huge vessel) navigating so as to

involve risk of collision with a huge vessel navigating Uraga Suido Traffic Route and intending to enter Naka-no-Se Traffic Route, shall keep out of the way of the huge vessel.

8. Huge vessels navigating Uraga Suido Traffic Route shall keep out of the way of huge vessels intending to enter the Naka-no-Se Traffic Route.

9. Provision of Emergency Fire Wires.—A vessel carrying dangerous cargo specified in the Maritime Traffic Safety Law should provide, on board, the following emergency fire wires and auxiliary ropes, on her bow and stern.

a. Fire wires, with an eye in the end, strong enough to tow the vessel and long enough to reach the water.

b. Auxiliary ropes, with an eye in the end, strong enough to lead the fire wires to the water surface, hanging down by the board, as close to the water surface as practicable, without impeding safe navigation.

10. The owner or operator of tankers of 220,000 dwt or more carrying dangerous cargo into Tokyo Wan for the first time should first submit "The Written Pledge for Safety Measures" to the Maritime Safety Agency and fulfill its requirements. These same requirements apply also to liquefied gas tankers of 25,000 gt or larger, entering Japanese waters for the first time.

Vessels of more than 150 gt carrying hazardous and noxious substances, in liquid form, as defined in MARPOL 73/78 Annex II, and calling at ports or terminals within Tokyo Wan. Ise Wan, and the Naikai, must comply with regulations effective April 1, 2008.

Vessels may be instructed by the captain of the port to evacuate the port in the event of abnormal weather or conditions such as typhoons or maritime accidents.

Other Regulations in Effect

When entering a port.—Vessels which will travel on a traffic control passage designated above after transiting the Uraga Suido Traffic Route without stopping at another port or stopping at anchorage.

When leaving a port.—Vessels which will travel on the Uraga Suido Traffic Route after transiting a traffic control passage designated above without stopping at another port or stopping at anchorage.

Notification of entry and departure from ports in Tokyo Wan should be done using the form available at http://www6.kaiho.mlit.go.jp/tokyowan.

Navigation rules for small vessels (Chiba Port).—Navigation rules for small vessels apply at Chiba Port in the same way as at the Keihin Port. Because Chiba Port is designated as a specified port with extremely congested marine traffic, vessels with a gross tonnage of 500 tons or less (small vessels) must give way to vessels with a gross tonnage exceeding 500 tons. Vessels with a gross tonnage exceeding 500 tons traveling within Chiba Port must hoist numeral pennant 1 of the international maritime signal flags.

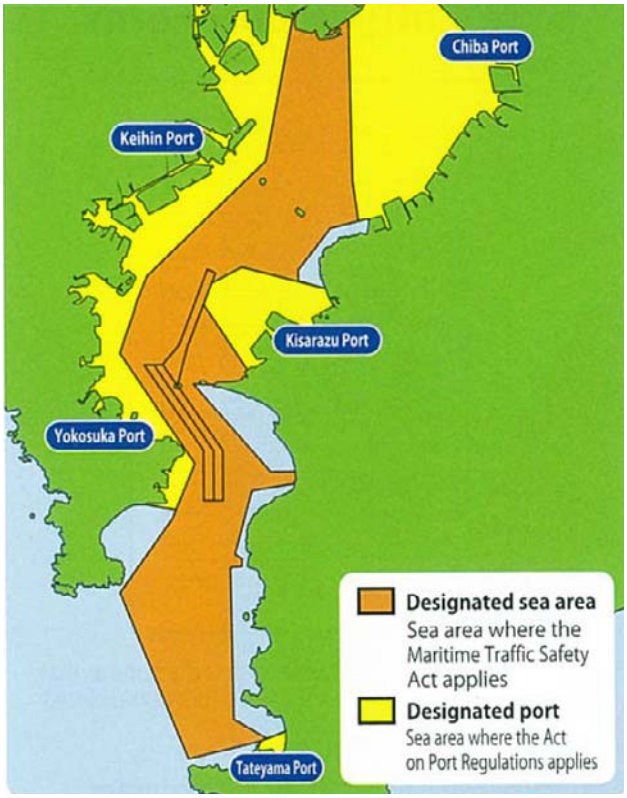
Instructions for entry time.—When necessary and in order to prevent danger, a vessel intending to travel on the Keihin Port and Chiba Port traffic control passages via the Yokohama Passage, Tsurumi Passage, Kawasaki Passage, Keihin Canal, Tokyo West Passage, Tokyo East Passage, Chiba Passage, and Ichihara Passage may be instructed to change the passage entry time, position of their vessel to provide warning of the course, or take other action.

In case of emergency/disaster.—In case of a tsunami, a large scale hazardous substance leak, a fire occurring at a large tanker, or other incidents that have a wide area of effect within Tokyo Wan, and there is a risk to the maritime traffic within Tokyo Wan, the commandant of the Japan Coast Guard shall broadcast that an emergency has occurred. If VHF channel 16 is crowded when calling Tokyo Wan Vessel Traffic Service Center, mariners may call using VHF channel 13.

Obligation to listen to information.—In order to support safe maritime passage in the event of an emergency, ships are required to listen to information provided by the Japan Coast Guard related to emergencies or similar matters.

The following vessels are required to maintain a listening watch during time of emergencies:

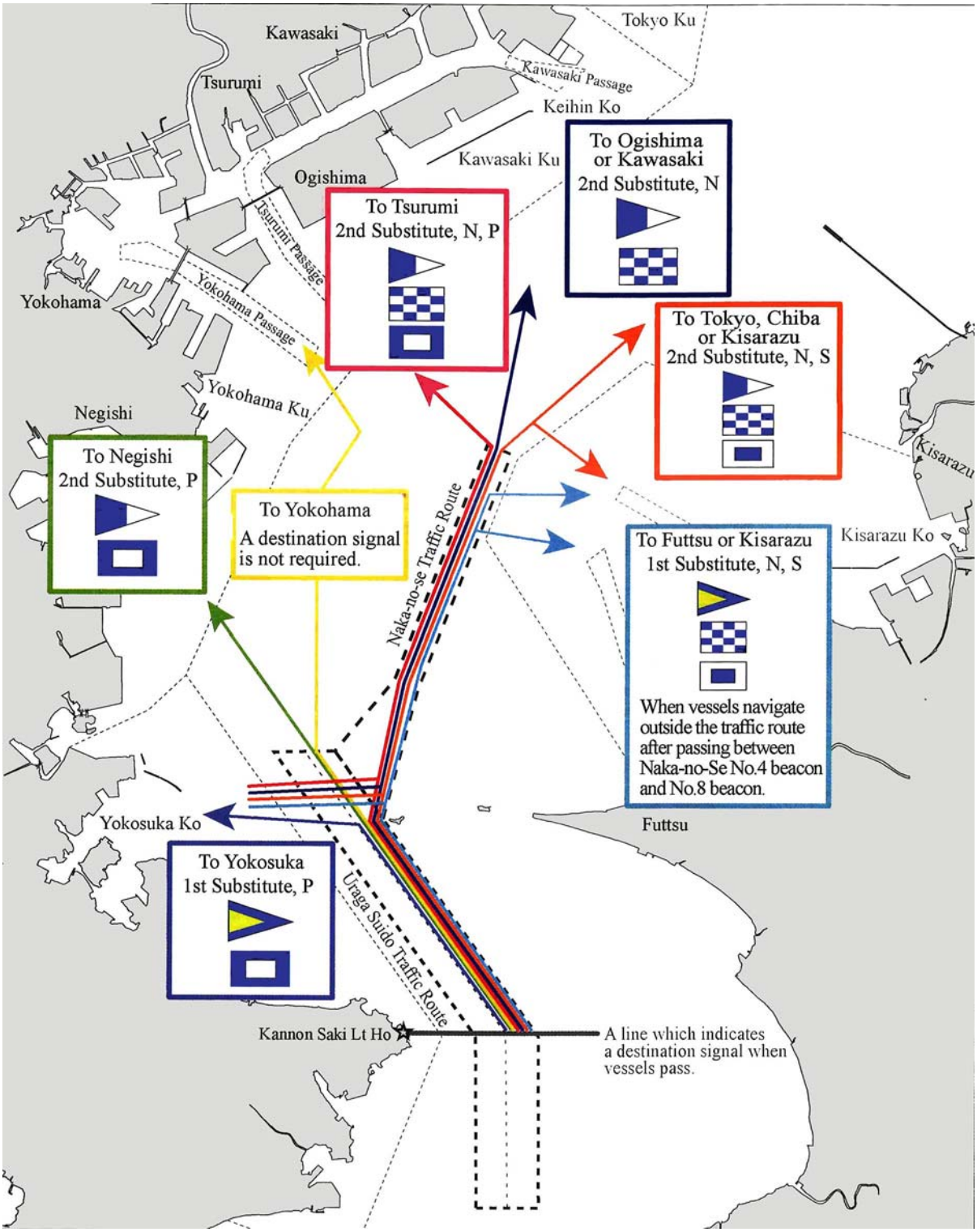
1. Vessels with length of 50m or more.
2. Vessels in subject sea areas (see chartlet titled **Tokyo Wan Port Areas**).
3. All vessels in Tokyo Wan including Keihin Port, Chiba Port, Kisarazu Port, Yokosuka Port, and Tateyama Port.



Tokyo Wan Port Areas (in yellow)

Restrictions on navigation and other restrictions in case of emergency.—In order to prevent danger to maritime traffic in the event of an emergency, measures including restricting entry to the Tokyo Bay, restricting passage, orders to depart, and orders to relocate may be enacted.

Emergency evacuation anchorage.—A priority evacuation anchorage area for large-size vessels in case of emergency or disaster are designated in red on the chartlet titled **Tokyo Wan Emergency Anchorage**. In the event of an emergency, the sea



Tokyo Wan—Destination Flag Signals

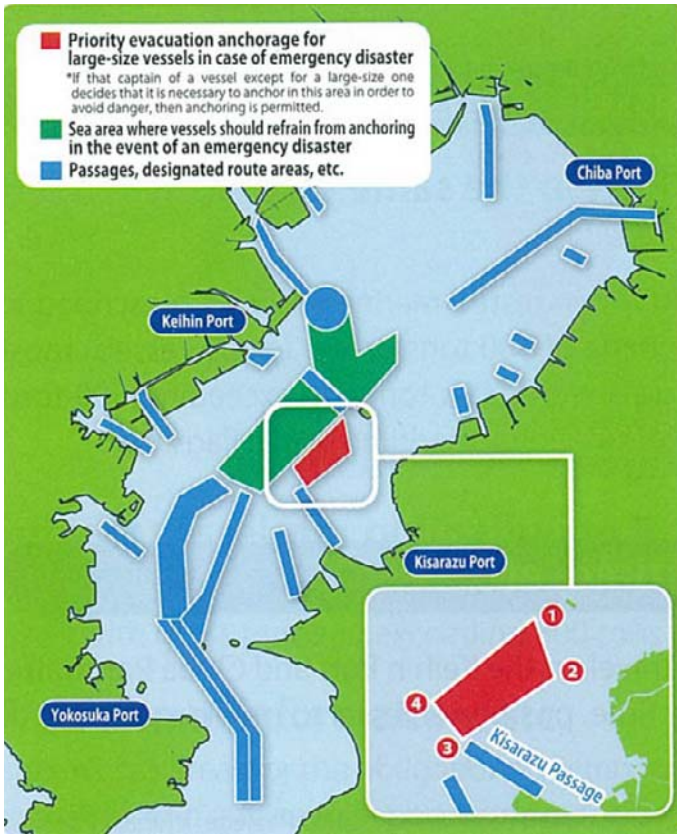
off of Kisarazu shall be a priority evacuation anchorage for large-size vessels. Because it is designated as a priority evacuation anchorage for large-size vessels (ships requiring tugboat assistance or onboard harbor pilot), the cooperation of other ships in avoiding this sea area is requested. In addition, in order to ensure a traffic lane for evacuating ships, you are requested to refrain from anchoring in nearby passages or designated route areas. Additionally, in the event of an emergency due to a

major tsunami warning or similar reasons, please leave the bay if it is at all possible.

The emergency anchorage is bounded by lines the following points:

a. 35°27'25"N, 139°51'14"E.
b. 35°25'39"N, 139°52'00"E
c. 35°23'54"N, 139°48'42"E.
d. 35°25'03"N, 139°47'40"E.

Use of AIS.—Vessels equipped with AIS and underway in Uraga Suido Traffic Route or Naka-no-Se Traffic Route shall transmit the proper AIS code to indicate their route and destination. These AIS codes can be found on the Tokyo MARTIS web site.



Tokyo Wan Emergency Anchorage (in red)

Vessel Traffic Service

For information on the Tokyo Wan Traffic Service Center (Tokyo MARTIS), see paragraph 3.12.

Signals

Vessels should indicate their destination in Tokyo Wan by displaying the flags as shown in the chartlet titled **Tokyo Wan—Destination Flag Signals**.

Huge vessels and vessels carrying dangerous cargo shall display the following signals:

1. Huge vessels shall show, by day, two black cylindrical shapes, 0.6m by 1.2m in size, displayed vertically 1.5m apart, and by night, a green all-round light, flashing at a frequency of 180 to 200 times per minute, visible at a distance of at least 2 miles, in addition to the conventional lights.
2. Vessels carrying dangerous cargo shall show, by day, the International Code of Signals Flags First Substitute over Bravo; by night, a red all-round light flashing at a frequency of 120 to 140 times per minute, visible at a distance of at least 2 miles, in addition to the conventional lights.

Tokyo Wan Traffic Service Center (Tokyo MARTIS)

3.12 Vessels must maintain continuous contact with Tokyo Wan Traffic Service Center on VHF channels 16 and 13 while navigating in the traffic routes, approaches to the traffic routes and in the adjacent sea area.

Navigation for the following ports is coordinated through Tokyo Wan Traffic Service (Tokyo MARTIS):

1. Chiba, including Funabashi.
2. Kawasaki.
3. Kisarazu.
4. Tokyo.
5. Yokohama.
6. Yokosuka.

Additional information is available at the Tokyo MARTIS web site.

Tokyo MARTIS
http://www6.kaiho.mlit.go.jp/tokyowan

Vessels of 50m or more in length, excluding vessels which are equipped with and operating AIS, and vessels of 100 gt or more having a carrying capacity of 30 persons or more, inclusive of crew, passengers, and other members onboard, should report to Tokyo Wan Traffic Service Center (Tokyo MARTIS) on VHF channel 16 or by telephone when crossing the following position reporting lines, the limits of which are best seen on the appropriate chart:

1. The reporting line for vessels leaving Tokyo West Passage, Tokyo East Passage, Chiba Passage, and Funabashi Fairway.
2. The reporting line for vessels leaving Ichihara Passage, Anegasaki Passage and Sodegaura Fairway.
3. The reporting line for vessels leaving Kawasaki Passage and Ogishima East Fairway.
4. The reporting line for vessels leaving Yokohama, Tsurumi Passage and Ogishima Fairway.

The following information should be included in the report:

1. Vessel's name and call sign.
2. Abbreviation of Reporting Line and time of crossing.
3. Present position.
4. Destination of vessel.
5. Draft and loa.

Outbound vessels or vessels shifting in Tokyo Wan should be governed as described above.

Designated Sea Area Notification Zone

Tokyo Wan Vessel Traffic Service includes a **Designated Sea Area Entry Notification Zone**, as well as requirements concerning notification, listening, and emergency or disaster.

In order to identify vessels located in designated sea areas in the event of an emergency, Subject Vessels entering a designated sea area are required to notify the Tokyo Wan Vessel Traffic Service Center of their entry by VHF radiotelephone or other means.

Subject Vessels are defined, as follows:

1. Vessels of 50m or more in length.
2. Vessels of 100 gross tons or more.
3. Vessels with 30 or more persons aboard (vessels operating AIS are exempt).

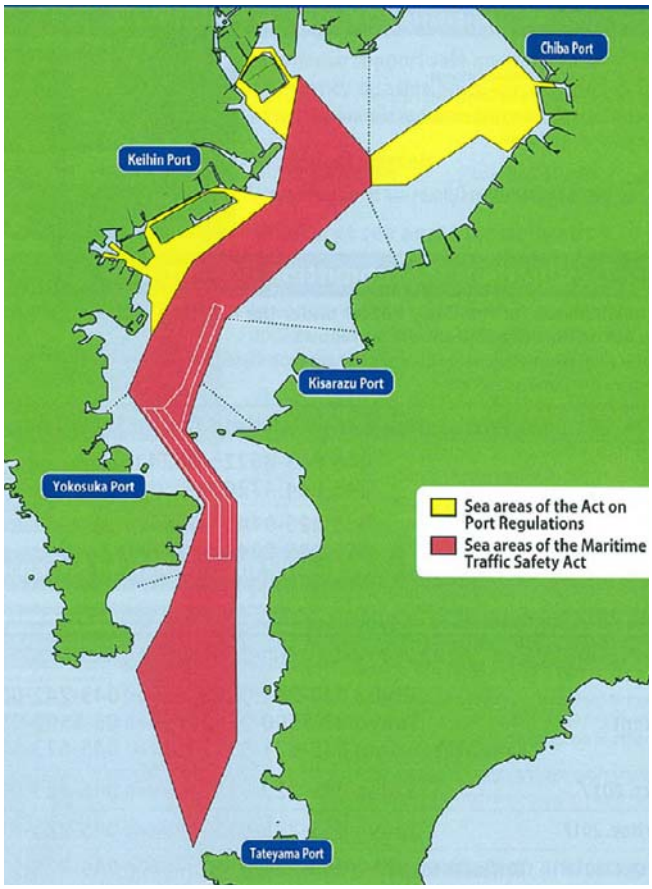
Tokyo Wan Designated Sea Areas

The following information should be included in the notification:

1. Name of vessel.
2. Call sign.
3. Position of vessel at time of notification.
4. Destination port (quay, anchorage).
5. Vessel's loa.
6. Draft.

The notification should be sent, as follows:

1. When entering the bay (passing the Tsurugizaki-Sunosaki Line).
   a. Near a recognized landmark of each port.
   b. Latitude and longitude may be reported if there is no nearby recognized landmark,
2. When entering or before entering a Designated Sea Area:
3. When leaving port. (See the chartlet titled **Tokyo Wan Designated Sea Areas**).



Tokyo Wan Listening Areas

The sea areas where vessels traveling within Tokyo Wan are required to listen to information from the Tokyo Wan Vessel Traffic Service Center by VHF radiotelephone are designated as yellow in the chartlet titled **Tokyo Wan Listening Areas**. Tokyo Wan Vessel Traffic Service Center provides information and advice to support safe maritime traffic.

Vessels in these areas are required to maintain a listening-watch for reports from the Tokyo Wan Vessel Traffic Service Center if they are:

1. Overall length of 50m or more and are in the Maritime Traffic Safety Act areas designated as red in the chartlet titled **Tokyo Wan Listening Areas**.
2. Gross tonnage exceeding 500 tons within sea areas where The Act on Port Regulations applies, designated as yellow in the chartlet titled **Tokyo Wan Listening Areas**.

Tokyo Wan Vessel Traffic requires entry reports by 1200 of the day prior to the day of entry. This requirement may be waived if the following conditions are met:

1. When the vessel has submitted a Pre-Entry Report listing with the following information:
   a. Name of port mooring facility,

b. ETA,

2. When the vessel has transmitted the Pre-Entry Report by 1200 of the day prior to entering the Uraga Suido Traffic Route.

Notification Procedures

The call sign for all VHF radio telephones used for notification and other purposes on VHF channels is TOKYO MARTIS. The VHF channels used by the Tokyo Wan Vessel Traffic Service Center are VHF channels 12, 13, 14, 16, 22, and 69.

For inquiries regarding the traffic control passages and surrounding sea areas, after the call and response, add the following at the start when reporting:

1. CHIBA for the Chiba Passage and lchihara Passage.
2. TOKYO for the Tokyo West Passage and Tokyo East Passage.
3. KAWASAKI for the Kawasaki Passage, Tsurumi Passage, and Keihin Canal.
4. YOKOHAMA for the Yokohama Passage.

Note.—The call signs KONAI HOAN and HARBOR RADAR have been discontinued.

Pre-Entry Reports—Contact Information	
Uraga Suido Traffic Route	
Telephone	45-225-9140
	45-225-9141
Facsimile	45-225-9142
Web site	http://www.naccs.jp
Tokyo Wan	
Telephone	45-225-9150 (Chiba)
	3-5500-0769 (Tokyo)
	45-225-9152 (Kawasaki/Yokohama)
Facsimile	45-225-9153 (Chiba)
	3-5500-0595 (Tokyo)
	45-225-9155 (Kawasaki/Yokohama)
Web site	http://www.naccs.jp

Further information can be obtained from the Navigation Safety Division, Maritime Traffic Department, 3rd Regional Coast Guard Headquarters, 5-57 Kitanaka-dori, Naka-ku, Yokohama-shi, Kanagawa-ken 231-8818 (telephone: 45-2-11-1118).

Tokyo MARTIS—Contact Information	
VHF	VHF channels 12, 13, 14, 16, 22, 66, and 69
Telephone	81-46-843-8622
	81-46-843-8623
	81-46-843-8624
Facsimile	81-46-844-4720

Tokyo Wan Vessel Traffic Service Center broadcasts information on the schedule of Huge Vessels, the present conditions of weather, and other relevant information. These broadcasts are made in English from 15 minutes to 30 minutes every hour on radiotelephone frequency 2019 kHz.

Taibu Saki Wan to Kurihama Wan

3.13 Between Taibu Saki and Myogane Saki, about 7 miles N, the coast is indented and shows three lights. Between Myogane Saki and Futtsu Saki (Huttu Saki), about 9.5 miles farther N, the coast recedes to form a comparatively large shallow bay. A blunt point named Isone Misaki projects from the head of the bay.

Uraga Suido (35°05'N., 139°45'E.) leads off the E side of Sagami Nada into the inner part of Tokyo Wan. From the middle of its entrance between Suno Saki and Ken Saki, it trends in a general N direction for about 14 miles; its N limit lies between Kannon Saki on the W and Futtsu Saki, about 4 miles NNE.

Winds—Weather.—Fog is frequent during May, June, and July.

Tides—Currents.—In Uraga Suido, the tidal currents set generally N on the flood and S on the ebb; they are greatly affected by the wind.

Depths—Limitations.—With the exception of Yebi Ne, a rocky patch with a depth of 11.9m, and Yoshino Se, a rocky patch with a least depth of 16.8m, which lie 1.75 and 2.5 miles SE, respectively, of Ken Saki, the fairway is deep and clear.

3.14 **Tateyama Wan** (35°00'N., 139°48'E.) (World Port Index No. 61370) is an open bay, entered between Suno Saki and Taibu Saki, 4.5 miles NE, which affords good protection against winds from the SE quadrant. Tateyama Ko is in the SE section of the bay and Funakata Ko in the NE section.

Winds—Weather.—Prevailing winds are from the S in the summer and from the NW in winter.

Tides—Currents.—The mean range of the tide in the N part of the bay is 0.8m, and the spring range is 1.1m.

Depths—Limitations.—The depths in the middle of the entrance to Tateyama Wan shoal quickly to the 10m curve, 0.3 to 0.5 mile off the beach at its head. Shira Ne, a dangerous rock, lies outside the 10m curve, 0.45 mile SSW of Taibu Saki. Okina Shima, surmounted by a light, lies close off the S shore of Tateyama Wan, 3.5 miles ENE of Suno Saki. Shoals, with a least depth of 4.2m, lie about 0.5 mile N of this island.

Kohage Dashi, about 1 mile NW of Suno Saki, has a least depth of 5.9m. Vessels should navigate with caution in this area as tide rips occur off of Suno Saki.

There is a cargo wharf on the SE shore of the port, with a length of 190m and depths alongside of 3 to 4m; on the W side of the cargo wharf is a pier 130m long with a depth alongside 5.5m. Tateyama Pier, on the NE side of the cargo wharf, is a 230m long wooden pier having a depth alongside of 3.5m.

Aspect.—Taibu Saki, the N entrance point of Tateyama Wan, is covered with a dense growth of pines; from a distance it appears black and is easy to identify.

Tateyama Air Base, a heliport and associated short airfield, is built on reclaimed land in the S part of the bay. An aero light is shown from a metal framework tower at Tateyama Air Base.

Okino Shima is prominent, wooded, and surmounted by a lighted tower.

Signals.—Storm signals are displayed at the head of Tateyama Ko.

Anchorage.—The recommended anchorage lies about 1 mile ENE of Okino Shima, in a depth of 17m, mud. The anchorage is sheltered from N, E, and SW winds. During strong W winds, high waves and rough seas are experienced, and the anchorage is untenable. Due to the prevailing wind from the NW, use of the port in winter is considered hazardous.

Caution.—Mariners are advised when approaching Tateyama Wan to observe the two lines of fixed fishing nets, which extend 1 mile N from a position on the S shore of Tateyama Wan 1.5 miles E of Suno Saki. Fish havens are also prevalent throughout the approach.

Tomiura Wan lies between Daibusano Hana and Namuya Saki, 1.75 miles NNE. It is encumbered with reefs and rocks and a light is shown within.

3.15 Uki Shima (35°06'N., 139°49'E.), 48m high, with steep cliffs lies 4 miles N of Daibisano Hana.

Depths—Limitations.—Portions of this coast are fringed with off-lying dangers to a distance of 1.5 miles. The 10m curve lies 0.1 mile off Myogane Saki and about 2 miles off Isone Misaki.

A rectangular area, 3 miles long in a N and S direction and about 1.25 miles wide, centered about 4.5 miles N of Myogane Saki, has been wire dragged to various depths, with the least depth being 8.2m.

Aspect.—Tomi San, a wooden hill with two peaks, the S and higher of which is 350m high and prominent, lies 3.75 miles ESE of Uki Shima. It does not appear twin-peaked from the S.

Nokogiri Yama, 330m high, rises 1.25 miles ENE of Myogane Saki. This hill has a sawtooth profile, but resembles a helmet when viewed from the W. A conspicuous white monument, illuminated at night, stands on an eminence about 1 mile ESE of Isone Misaki.

Anchorage.—An open bay S of Futtsu Saki has depths of 5 to 10m; it provides good temporary anchorage when the wind is not too strong.

There are numerous lava beds and set nets in this area.

Caution.—An abandoned submerged wave meter lies approximately 2 miles NW of Myogane Saki; a submarine cable runs from this obstruction SE to the shore.

3.16 Tsurugi Saki (Ken Saki) (Turugi) (35°08'N., 139°41'E.) is the SE extremity of Miura Hanto, and is the W entrance point to Uraga Suido.

The coastline between Ken Saki and Kannon Saki, 8 miles N, is indented by Kaneda Wan, in the S portion, and by Kurihama and Uraga inlets, in the N portion. There are many peaks along this coast as well as continuous stretches of low hills.

Except near Kannon Saki, the water along this coast is shallow, and detached rocks and sunken reefs are numerous.

Kaneda Wan is formed by an open bight that indents the coast for about 2 miles. It is entered between Ame Saki, which is about 1 mile N of Ken Saki, and Senda Saki, which lies about 3.8 miles NNE. The 10m curve lies about 0.8 mile offshore. There are numerous dangers in Kaneda Wan, especially in the N part, where they extend as much as 0.8 mile offshore. The outermost danger is Kakari Ne, with a depth of 5.5m, lying 2 miles NNE of Ame Saki. A lighted tower stands close offshore, about 0.7 mile WNW; lighted piles stand close offshore 0.5 mile WNW and 1.5 miles NW of Ame Saki.

Anchorage can be taken in the SW part of the bay, in depths of 8 to 18m, sand, good holding ground. There are several fixed fishing nets, that are in place year-round, near the center of the bay; care must be exercised when entering and anchoring.

Caution.—The Doyo Nami enters the bay with destructive force and vessels should not anchor here if this phenomenon is anticipated. Many shallow, rocky depths lie up to 2.5 miles E and SE of Turugi Saki; vessels should refer to the chart for this area.

A voluntary traffic separation scheme has been established by the Japan Captains' Association ESE of Ken Saki (Tsurugi) (Turugi). The traffic scheme should be adhered to as far as practicable in the interest of safe navigation. Further information can be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Asika Shima (35°13'N., 139°44'E.), located 4.5 miles NE of Ame Saki, is formed of two black rocks. A light is shown from a black round tower on the W rock of Ashika Shima, and there is a white observation tower on the E rock. A lighted buoy is moored 0.1 mile ESE of Kasa Shima, which dries 0.9m, situated near the SE end of the shoal. A wave meter, connected to Asika Shima by a submarine cable, is moored about 160m S of the rocks.

Kurihama Wan (35°13'N., 139°43'E.)

3.17 Kurihama Wan is a bay open to the ESE, which is entered between Senda Saki and Otuka Hana, about 1 mile to the NE; it is an open bight and indents the coast for about 0.7 mile. The port consists of a harbor protected by reclamation and breakwaters on its S side. It provides anchoring and berthing facilities for mostly fishing and ferry vessels.

The Tokyo Electric Power station is located at the S entrance to the bay.

Kurihama Wan lies within the harbor limits of Yokosuka Ko and is known as District No. 7.

Winds—Weather.—The wind is primarily SW in summer and NE in winter. The harbor is relatively calm, even during the NE winds of the winter season; however, when E to SW winds are strong during a typhoon, it is not safe to remain in port and all vessels are evacuated. Especially during a SW wind, waves approaching from the SE enter the harbor at right angles to the depth curves, when care must be exercised.

Tides—Currents.—The flood current sets NE and the ebb current sets SW, NW of Asika Shima. The NE flow reaches maximum velocity 2.5 hours after LW; the SW flow reaches maximum velocity 2.5 hours after HW. The velocity during spring tides averages 0.5 to 0.6 knot.

Depths—Limitations.—Otuka Ne, with a depth of 3m, lies about 0.1 mile SSE of Otuka Hana, in the entrance to the bay and is marked close SSE by a lighted buoy. The main mooring facilities range in depth from 2.5 to 9m. A vessel, with a length of 220m, and a draft of 5.2m can berth alongside.

Aspect.—A gray monument commemorating Commodore Perry, who landed here in 1853, stands at the head of the bay. There are three chimneys situated 0.65 mile SSE of the monument; the tallest of these chimneys is 204m high. There are two chimneys,

0.15 mile farther S, that are about 183m high.

Pilotage.—Pilots are available 24 hours. The pilot boarding station is situated 0.5 mile NNE of Ashika Shima.

Anchorage.—There is good anchorage 0.2 mile E of the NE end of the inner breakwater, in a depth of 8m, sand. Inside the harbor the holding ground is generally poor.

At the time of a typhoon, the anchorage is dangerous and vessels must seek shelter elsewhere.

Caution.—When tankers carrying dangerous cargo are moored at Quay C and Quay D at the electric power plant, general shipping must not approach within 50m of them.

Uraga Ko (35°14'N., 139°43'E.)

World Port Index No. 61410

3.18 Uraga Ko is entered about 1.5 miles SW of Kannon Saki, and is located close NNE of Kurihama Wan. It consists of an inner and outer harbor. The inner harbor penetrates about 0.6 mile and is surrounded by a rim of hills, 50 to 80m high. Most of the shores of the inner as well as part of the outer harbor are occupied by shipways, docks, workshops, and quays of a heavy industries company.

Uraga Ko lies within the harbor limits; it is a part of Yokosuka Ko and is known as District No. 6.

Winds—Weather.—North winds in the winter and S winds in the summer are characteristic. The harbor is calm, except when the winds are SE to SW. Even when there is a strong NE wind in District No. 1 or District No. 3 of Yokosuka Ko, there is only a breeze present in this district.

Tides—Currents.—The mean range of tide is 0.9m, and the spring range is 1.2m. The tidal currents are weak, with the maximum velocity of less than 0.3 knot reached about 4 hours after HW and LW. The flood current sets N and the ebb current sets S.

Depths—Limitations.—Depths in the fairway range from 15m in the entrance to 5.9m at the head of the bay. There is a private mooring buoy for use by vessels of 10,000 gt.

There are two drydocks available for repairs, with capacities of 9,000 gt and 12,500 gt.

Aspect.—Myojin Yama, a thickly-wooded hill 71m high, is located N of the inner harbor entrance. Three radio towers, marked by red obstruction lights, stand on Toriga Saki.

Anchorage.—Vessels over 2,000 gt should anchor about 0.8 mile E of Tomyo Saki, on the S side of the entrance, in a depth of 25m, sand. Vessels under 2,000 gt may anchor about 0.3 mile NNE of Tomyo Saki, in 13m, sand and mud, good holding ground. Vessels should anchor so as not to obstruct large vessels entering or leaving the inner harbor.

These anchorages may be untenable during strong E to S winds.

3.19 **Kannon Saki** (35°15'N., 139°45'E.) is a steep conspicuous bluff, 72m high, densely covered with trees, which lies 1.5 miles NE of Uraga Ko. It lies on the SW side of Uraga Suido, at the entrance to the inner part of Tokyo Wan. A light is shown from an octagonal concrete tower, 56m high, situated on Kannon Saki.

The **Tokyo Wan Traffic Service Center** is situated about 0.2 mile NW of Kannon Saki Light. The purpose of the center is to provide vessels with information, to control traffic routes, and to ensure the safe navigation of vessels leaving or entering Tokyo Wan. The center consists of a two-story building surmounted by a lookout tower. Additional information on the Service Center can be found in Section 3.11.

Caution.—The fairway in the vicinity of Daini Kaiho (Fort No. 2) and the ruins of Daisan Kaiho (Fort No. 3), is heavily congested, making radar identification difficult. Vessels have grounded by confusing Daini Kaiho for Daiiti Kaiho (Fort No. 1), mistaking Daiiti Kaiho for Futtsu Harbor, or the inability to identify Daisan Kaiho. Care should also be taken particularly in the vicinity of Daisan Kaiho (Fort No. 3), due to the dangerous shoal areas surrounding the former fort. Entering, leaving, or crossing the route in the section between Buoy No. 4 and Buoy No. 5 is prohibited.

3.20 **West side of Tokyo Wan.—**The narrows between Kannon Saki and Daini Kaiho, about 3.3 miles N, constricts the N part of Uraga Suido and forms the inner part of Tokyo Wan. The least width in the narrows, between the 20m curve is about 2 miles.

The W shore of the bay extends about 1 mile NW of Kannon Saki to Hatayama Saki. Most of this coast is fronted by a seawall, which makes it conspicuous. From Hatayama Saki, the coast extends in a bight about 3.5 miles WNW to the peninsula which forms the E side of Yokosuka Ko. The bight thus formed contains numerous dangers which lie up to 1.5 miles offshore.

Sara Shima lies in this bight about 0.75 mile offshore.

Yokosuka Ko (35°17'N., 139°40'E.)

World Port Index No. 61400

3.21 Yokosuka Ko is a designated Special Port, Open Port, Quarantine Port, and Port of Entry. The port is a naval base, as well as a building and repair facility and comprises the bays of Nagaura Ko, Yokosuka Ko, and Otsu Wan.

This port complex is divided into seven port districts, No. 1 through No. 7. The island of Azuma Hanto lies between Nagaura Ko and Yokosuka Ko. Most of the facilities in Yokosuka Ko are for the use of the U.S. Navy. District No. 1 through District No. 4 include the dockyard of Yokosuka Ko, Nagaura, the inner approaches to Yokosuka Ko, and the outer approaches, respectively. Kurihama Wan, Uraga Ko, and Otsu Wan are also included within the harbor limits of Yokosuka Ko and lie, respectively, in District No. 5, District No. 6, and District No.7.

Tides—Currents.—The spring rise of the tide of Yokosuka Wan is 1.7m, the neaps rise 1.3m.

Depths—Limitations.—The depths vary from 12 to 15m in the passages and from 15 to 36m in the anchorages. The maximum permissible draft for a vessel at Nagaura Ko Pier is 9.6m, with a length of 180m, and 18,000 dwt. The mooring buoys in this section will accommodate a vessel up to 40,000 dwt, with a maximum draft of 11.7m, and a maximum length of 200m.

New Port (Yokosuka Shinko) will accommodate a vessel 200m long, draft of 10m, and 15,000 dwt.

Five berths, with depths of 7 to 11m alongside, lie on reclaimed land 1.5 miles WSW of Northeast Breakwater Light.

Hakozaki Terminal serves as a Fleet Industrial Supply Center (FISC). Tankers of up to 51,000 dwt can be accommodated. There are two fuel wharves, with a combined berthing length

of 288m, that handle petroleum products. Fuel Wharf 244 can accommodate vessels up to 180m in length with a maximum draft of 10m; a deep draft of 10.9m can be accommodated at high tide. Fuel Wharf 246 can accommodate vessels up to 200m in length with a maximum draft of 10.4m; a deep draft of 11.3m can be accommodated at high tide.

Aspect.—A hill, with a flagstaff and signal station on its summit, rises near the SW part of Azuma Hanto. The towers on the S entrance point of Kurihama Wan (35°12.5'N., 139°43.2'E.) are conspicuous. Kananzaki Light (35°15.5'N., 139°44.5'E.) provides a good navigational mark. A racon is situated at Fort No. 2 (35°18.7'N., 139°44.6'E.).

Pilotage.—Pilotage is compulsory for vessels exceeding 300 gt. Pilots will embark about 1.5 miles E of Northeast Breakwater Light or off Kurihama Wan. In rough weather, the pilots board inside Northeast Breakwater Light or off Kurihama Wan.

Outbound vessels or a vessel shifting berths in Tokyo Bay are requested to advise the ship's ETD 24 hours and 6 hours before departure. Any change in ETD should be immediately reported. However, the pilotage service for vessels arriving and leaving New Port Wharf and Nagaura Pier in Yokosuka Harbor are subject to the following conditions:

1. At New Port Wharf No. 1, New Port Wharf No. 2, and Nagaura Pier, arriving vessels may pass Yokosuka Lighted Buoy No. 1 until 30 minutes before sunset. Departing vessels may leave the quay until 30 minutes before sunset.

   No pilot is available when wind velocity is 19.5 knots or more.

2. At Nagaura Pier, arriving vessels, if berthing alongside, head out, may pass the breakwater entrance until 30 minutes before sunset. If berthing alongside, head in, the vessel may pass the breakwater entrance until sunset. Departing vessels, if berthed alongside, head out, may leave the quay until 2200. If berthed alongside, head in, the vessel may leave the quay until 30 minutes before sunset.

Regulations.—Vessels approaching Yokosuka using the Uraga Suido Route must pass the center No. 5 Lighted Buoy prior to crossing the southbound side of the traffic route.

Signals.—Signals are displayed from the signal station on Azuma Hanto. Another station is at the Harbor Office at the head of Yokosuka Wan. Local storm signals are displayed at the Navy Yard and from the signal station on Hoha To.

Contact Information.—See the table titled **Yokosuka—Contact Information**.

Yokosuka—Contact Information	
Port	
Call Sign	Yokosuka Port Radio
VHF	VHF channels 11, 12, 14, 16, 18, 20, and 22
Telephone	81-468-4103-69
Pilots	
Telephone	81-456-5031-83
Facsimile	81-456-6212-60
Web site	https://www.tokyobay-pilot.jp
Port Authority	
Telephone	81-468-2284-36
Facsimile	81-468-2632-10
E-mail	pg-ph@city.yokosuka.kanagawa.jp
Web site	https://www.city.yokosuka.kanagawa.jp/6610/minato/index.html

Hakozaki Terminal can be contacted on VHF channel 10.

Anchorage.—Yokosuka Ko is reported to be a good typhoon anchorage.

The quarantine anchorage lies NNE of the NE breakwater. The quarantine station is situated at Nagahama, 2 miles NW of the anchorage.

Vessels carrying dangerous cargo also anchor in the quarantine anchorage.

A Prohibited Anchorage Area extends 1.5 miles E and 2 miles SE of Kannon Saki.

Caution.—In addition to the regular aids in this area, numerous buoys for naval use are moored about the harbor, and other lights are situated on piers, landing stages, etc. An obstructed fish haven lies about 4 miles E of Kurihama Wan. Another fish haven lies nearly 2 miles NE.

Dangerous wrecks lie in the approaches to Yokosuka Ko, about 1.3 miles SE of Okino Ne and 2.3 miles SE, as indicated on the chart.

It has been reported (1997) a foul ground lies 0.6 mile E of the pilot boarding station.

Okino Ne, with a least depth of 5.5m, lies in the NE part of the quarantine anchorage and is marked close S by a lighted buoy.

A submarine cable is laid between a position about 0.5 mile SW of Northeast Breakwater Light and the shore SW.

3.22 Koshiba Saki (Kosiba Saki) (35°21'N., 139°39'E.) marks the N limit of Yokosuka Ko and the coast trends N for about 1.8 miles to Konosu Bana, the S limit of Yokohama Ko. The waters SW of Koshiba Saki are within a prohibited area; reference should be made to the chart.

Koshiba Sea Berth mooring buoy lies off reclaimed land fronting Koshiba Saki, 2.25 miles NNW of Northeast Breakwater Light (35°19'N., 139°41'E.). Anchorage is prohibited within 0.2 mile of the bay.

Keihin Ko occupies the NW portion of Tokyo Wan; it includes Yokohama Ko, Kawasaki Ko, Tokyo Ko, and the water areas immediately adjacent to the intervening coast. The three districts of the port will be described separately.

Keihin Ko is a designated Special Port, Open Port, Quarantine Port, and a Port of Entry.

Regulations for Turumi Fairway, Kawasaki Fairway, and Keihin Canal.—Vessels of over 1,000 gt, intending to navigate the Turumi Fairway or the Kawasaki Fairway and enter Kawasaki District No. 1 or Yokohama District No. 4, must notify the harbormaster by noon of the day prior to the planned date of arrival. Similarly, vessels over 1,000 gt, intending to shift berths within Kawasaki District No. 1 or Yokohama District No. 4 (except when shifting berths within waters other than the Keihin Canal), or intending to navigate the Turumi (Tsurumi) Fair-

Yokohama Ko—Kanazawa Timber Pier

way or the Kawasaki Fairway after getting underway from berths in Kawasaki District No. 1 or Yokohama District No. 4, must notify the harbormaster by noon of the day prior to the planned date of getting underway. Any vessel that changes its schedule, after having reported the above information to the harbormaster, is required to notify the harbormaster immediately of any such change in schedule.

Yokohama Ko (35°27'N., 139°35'E.)

World Port Index No. 61390

3.23 Yokohama Ko, a great port, has complete facilities for the accommodation of large vessels. The principal wharves and other port installations are situated in a bight that indents the coast between the NE end of the reclaimed land N of Negisi, and the artificial island protecting Kawasaki Ko, about 3 miles N.

The port is divided into five sections, as follows:

1. Section No. 1 lies within the E and N breakwaters.
2. Section No. 2 lies S of the inner part of Yokohama Fairway.
3. Section No. 3 lies N of the inner part of Yokohama Fairway.
4. Section No. 4 lies N of Ogishima, between lines drawn NNW near the middle of the island and a line drawn WNW from the W extremity of the island to the opposite shore.
5. Section No. 5 lies on either side of the outer part of Yokohama Fairway and includes Negisi Wan.

Yokohama Port Web Site
http://www.yokohamaport.co.jp

Winds—Weather.—Winds are N in the winter and SSW in summer. Dense fog is reported to average 30 to 50 days a year.

Tides—Currents.—The mean range of the tide at Yokohama Ko is 1.1m; the spring range is 1.4m.

The tidal currents in Yokohama Ko are weak. Outside the breakwaters, the currents set NNW and SSE with the rising and falling tides, respectively. Between the N and E breakwaters, the current sets WNW with the rising tide. With strong S winds, there is a rise of about 0.3m sea level.

Depths—Limitations.—The draft limitation in Yokohama channel is 12m. Vessels with a maximum draft of 11.6m, when entering through the channel, must wait for the tide. The Yokohama Bay Bridge, with a vertical clearance of 56m at mid-span, crossed Yokohama Channel from Jetty A to Daikoku Wharf.

The general depths alongside the piers in Section No. 1 range from 7.3 to 12m.

In Section No. 2, depths range from 9.4m to dredged depths of up to 16m. Daikoku Wharf, 1 mile N of Honmoku Pier, has

Yokohama Ko

a container terminal on its N side, passenger berths on its N and E sides, and public quays on the SE and SW sides. The container terminal has three berths, between 240 and 350m long, with dredged depths alongside of 12 to 15m; vessels of up to 57,500 dwt can be accommodated.

Section No. 2 contains is the container terminal at Honmoku Wharf, which has berths up to 400m long and depths alongside of 15m; vessels up to 100,000 dwt can be accommodated.

A bridge, with a vertical clearance of 17m, spans the channel between Sekiyu Pier and the N side of Daikoku Wharf.

A prohibited area lies about 0.3 mile NW of Daikoku Breakwater Light.

Section No. 3 contains numerous berths for container vessels. Vessels can berth here in depths of 7.9 to 12.0m.

Section No. 4 contains some wharves with depths of 5.8 to 9.1m alongside; other berths have depths of 8.5 to 10.4m alongside. There is a detached oil pier, with dolphins off each end, which has a depth of 11.9m.

In Section No. 5 the wharf extends 0.2m SE from shore; an additional four jetties, with depths of 5.0 to 6.4m alongside, extend from the wharf.

The Minami Honmoku container terminal, also situated within Section No. 5 has two berths, each 350m in length with depths alongside of 16m and can accommodate vessels up to 105,000 dwt. A third berth, 400m in length with depths alongside of 18m has recently been completed. This berth can accommodate vessels up to 158,000 dwt.

Osanbashi Passenger Terminal (35°27'N., 139°39'E.) has a total of four berths; Berths A and B have a combined length of 450m with an alongside depth of 12m; Berths C and D have a combined length of 450m with alongside depths of 10 to 11m.

Land reclamation works are currently being carried out in Yokohama Port for enlargement of the container terminal at the Minami Honmoku container terminal.

Yokohama Sea Berth Lighted Mooring Buoy is moored in about 21m of water, about 1 mile SE of the S extremity of Ogishima. This berth is designed to accommodate vessels with a draft up to 19.5m and a capacity of over 200,000 dwt. The buoy moorings extend up to 0.15 mile from the buoy.

Yokohama—Berth Information

Berth	Length	Depth	Vessel Size	Remarks
Yamashita Pier				
No. 1	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 2	200m	12.0m	20,000 dwt	General cargo and breakbulk.
No. 3	220m	12.0m	25,000 dwt	General cargo and breakbulk.
No. 4	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 5	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 6	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 7	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 8	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 9	180m	10.0m	15,000 dwt	General cargo and breakbulk.
No. 10	180m	10.0m	15,000 dwt	General cargo and breakbulk.
Osanbashi Passenger Terminal				
A	240m	12.0m	30,000 gt	Passengers.
B	240m	12.0m	30,000 gt	Passengers.
C	350m	11.0m	30,000 gt	Passengers.
D	130m	10.0m	30,000 gt	Passengers.
Shinko Pier				
No. 2	52m	9.0m	20,000 dwt	Passengers.

Yokohama—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
No. 3	52m	9.0m	25,000 dwt	Passengers.
No. 5	202m	8.4m	15,000 dwt	Passengers.
No. 8	192m	8.4m	15,000 dwt	Closed.
No. 9	201m	10.0m	15,000 dwt	Passengers.
Yamanouchi Pier				
Yamanouchi Quay	130m	7.5m	5,000 dwt	—
Detamachi Pier				
A	135m	7.5m	5,000 dwt	General cargo.
B	135m	7.5m	5,000 dwt	General cargo.
C	123m	7.5m	5,000 dwt	General cargo.
D	123m	7.5m	5,000 dwt	General cargo.
APM Terminals				
MC-1	350m	16.0m	105,000 dwt	Containers.
MC-2	350m	16.0m	105,000 dwt	Containers.
MC-3	480m	18.0m	122,405dwt	Containers, bunkers, and reefers.
MC-4	400m	18.0m	—	Containers (under construction).
Honmoku Pier				
A-1	200m	10.0m	15,000 dwt	Breakbulk and general cargo.
A-2	200m	10.0m	15,000 dwt	Breakbulk and general cargo.
A-3	200m	10.0m	15,000 dwt	General cargo.
A-4	345m	—	—	General cargo.
A-7	250m	13.0m	—	Containers (closed).
A-8	250m	13.0m	25,000 dwt	Containers.
B-1	200m	10.0m	15,000 dwt	Breakbulk.
B-2	200m	10.0m	15,000 dwt	Breakbulk.
B-3	200m	10.0m	15,000 dwt	Breakbulk.
B-4	200m	10.0m	15,000 dwt	Breakbulk.
B-5	200m	10.0m	15,000 dwt	Breakbulk.
BC-1	390m	15.0m	60,000 dwt	—
D-1	200m	11.0m	15,000 dwt	Containers (closed).
D-2	200m	11.0m	15,000 dwt	Containers.
D-3	220m	11.0m	15,000 dwt	Containers.
D-4	300m	14.0m	40,000 dwt	Containers.
D-5	300m	15.0m	60,000 dwt	Containers.
No. 1	185m	10.0m	12,500 dwt	General cargo.
No. 2	145m	9.0m	5,000 dwt	General cargo.
Nissan Wharf 1-2	360m	10.0m	17,000 dwt	Vehicles.
K Line Yokohama Container Terminal				
A-5	300m	13.0m	35,000 dwt	Containers (closed).

Yokohama—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
A-6	300m	13.0m	35,000 dwt	Containers (closed).
Honmoku BC2 Container Terminal				
C-5	200m	13.0m	15,000 dwt	Containers.
C-6	200m	13.0m	15,000 dwt	Containers.
C-7	200m	13.0m	15,000 dwt	Containers.
C-8	200m	13.0m	15,000 dwt	Containers.
C-9	200m	13.0m	15,000 dwt	Containers.
Nippon Express	390m	10.0m	30,000 dwt	Containers.
Mizuho Pier (North Dock)				
A	153m	9.0m	10,000 dwt	Sand and gravel.
B	156m	9.0m	10,000 dwt	Sand and gravel.
C	190m	10.0m	20,000 dwt	Sand and gravel.
D	190m	10.0m	20,000 dwt	Sand and gravel.
E	190m	10.0m	20,000 dwt	Sand and gravel.
F	190m	10.0m	20,000 dwt	Sand and gravel.
G	190m	10.0m	20,000 dwt	Sand and gravel.
Suzushige No. 1	300m	12.0m	40,000 dwt	General cargo.
Suzushige No. 2	200m	10.0m	20,000 dwt	General cargo.
Suzushige No. 3	426m	8.0m	10,000 dwt	General cargo.
Daikoku Pier				
L-1	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-2	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-3	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-4	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-5	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-6	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-7	200m	10.0m	15,000 dwt	Cruise vessels, breakbulk, and containers.
L-8	255m	10.0m	15,000 dwt	Breakbulk and containers.
P-1	130m	7.5m	5,000 dwt	General cargo.
P-2	130m	7.5m	5,000 dwt	General cargo.
P-3	130m	7.5m	5,000 dwt	General cargo.
P-4	130m	7.5m	5,000 dwt	General cargo.
T-1	240m	12.0m	30,000 dwt	Containers.
T-2	240m	12.0m	30,000 dwt	Containers.
T-3	185m	10.0m	15,000 dwt	General cargo.
T-4	185m	10.0m	15,000 dwt	General cargo.
T-5	185m	10.0m	15,000 dwt	General cargo.
T-6	185m	10.0m	15,000 dwt	General cargo.
T-7	185m	10.0m	15,000 dwt	General cargo.

Yokohama—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
T-8	185m	10.0m	15,000 dwt	General cargo.
T-9	260m	12.0m	30,000 dwt	Containers.
C-1	300m	12.0m	35,000 dwt	Containers.
C-2	300m	—	35,000 dwt	Containers.
C-3	350m	15.0m	54,500 dwt	Containers.
Kanazawa Timber				
Timber Pier	230m	10.0m	15,000 dwt	Timber products.
NYK Yokohama Container Terminal (NYYT)				
C-4	350m	15.0m	57,500 dwt	Containers
NKKK Corp Ohgishima Wharf				
A	250m	10.0m	3,000 dwt	Steel products.
B	266m	10.0m	20,000 dwt	Steel products.
C	267m	12.5m	30,000 dwt	Steel products.
D	250m	12.5m	30,000 dwt	Steel products.
Nippon Mills Co.				
Nippon Flour Mills	140m	9.0m	20,000 dwt	Grain.
Kokusai Bulk Terminal				
A-B	282m	17.5m	150,000 dwt	Salt, silica, and grain.
Nisshin Oillio Ltd.				
Isogo Bulk Pier	32m	12.5m	55,000 dwt	Soybeans and grain. Maximum loa of 160m with dolphins.
Toyota Motor				
No. 2	146m	9.5m	12,000 dwt	Vehicles.
No. 3	159m	12.5m	50,000 dwt	Vehicles.
Yamanouchi Pier				
Yamanouchi Pier Quay	130m	7.5m	—	Closed.
Multipurpose Berths				
Suzue and Asahi Kigyo Wharf	16m	11.0m	23,000 dwt	Alcohol and cement. Maximum loa of185m with dolphins.
Tanker Berths				
Working Anchorage				
Anchorage N4	—	—	—	Chemicals. Maximum loa of 200m. (Either the mother ship or daughter ship must be a domestic vessel).
Exxon Mobil				
Mobil Sekiyu Co. Pier	49m	10.0m	30,000 dwt	Clean and dirty products. Maximum loa of 240m. Maximum draft of 9.9m. Maximum beam of 27.5m.
Showa Shell Yokohama				
Showa Shell Sekiyu	338m	12.0m	70,000 dwt	Supertankers. Crude oil. Maximum draft of 10.8m. Maximum loa of 240m.

Yokohama—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
Showa Shell Sea Berth	93m	10.8m	33,000 dwt	Petroleum products. Maximum loa of 170.8m. Maximum draft of 9.0m.
Daito Trading Terminal				
No. 2	28m	6.0m	1,970 dwt	Crude products.
No. 3	80m	12.2m	95,000 dwt	Crude prod.ucts. Maximum loa of 248m
Nippon Vopak Yokohama				
Nippon Vopak Jetty	13m	8.6m	20,000 dwt	Dirty products. Maximum loa of 170m.
Nippon Petroleum Refining				
Jetty A	20m	12.0m	81,283 dwt	Dirty products. Maximum loa of 247.9m.
Tokyo Gas Negishi LNG Terminal				
Toyko Gas Negishi	53m	14.0m	72,758dwt	LNG. Maximum loa of 297.5m. Maximum draft of 12.6m.
Tokyo Gas Ohgishima LNG Terminal				
Toyko Gas Ohgishima	67m	14.0m	71,642 dwt	LNG. Maximum loa of 289m. Maximum beam of 49.0m. Maximum draft of 12.7m.
Nippon Petroleum Refining (Negishi)				
Jetty A (East)	20m	12.0m	178,351 dwt	Dirty products. Maximum loa of 300m. Maximum draft of 15.3m.
Jetty A (West	26m	17.0m	264,173 dwt	Dirty products. Maximum loa of 343m. Maximum draft of 15.4m.
Jetty B	19m	14.0m	81,280 dwt	Clean products. Maximum loa of 247.9m. Maximum draft of 12.7m. Maximum beam of 42m.
Ogishima Oil Terminal				
Keihin Yokohama SBM	—	21.0m	265,000 dwt	Crude. Maximum beam of 60.0m. Maximum draft of 19.7m.

Tokyo Gas Ogishima LNG Berth, 0.2 mile from the SW corner of Ogishima, consists of a central platform with adjacent mooring dolphins marked with lights. Depths alongside are approximately 15 to 16m.

Toden Ogishima LNG Berth, 1.25 miles NNE of Tokyo Gas Ogishima LNG Berth, consists of a central platform flanked by dolphins extending 183m NNE and SSW. Lights are exhibited from the platform and from the outer dolphins. A catwalk connects the platform to the N shore. There is a depth of about 17m at the berth. A quarantine anchorage lies close SW. For further Berthing information see the table Titled **Yokohama—Berth Information**.

Aspect.—The Yokohama observation tower, 104m high, shows a light and stands nearly 2 miles W of Honmoku Breakwater. There are several chimneys on Ogishima that are conspicuous. The chimneys NE of the West Fairway also provide good landmarks for obtaining a position. Honmoku signal station and radar tower stands approximately 0.3 mile E of the root of Honmoku Breakwater.

Pilotage.—Pilotage is compulsory for berthing all vessels over 3,000 gt and also for all oil tankers, LPG carriers, or vessels of at least 300 gt carrying dangerous cargo. Pilots should be requested 24 hours in advance. Pilots board, as follows:

1. Tsurumi Fairway—In position 35°26.7'N, 139°45.3'E.
2. Yokohama Fairway and Nissan Honmoku Wharf District—In position 35°25.2'N, 139°42.8'E.
3. Negishi Fairway and Area No. 5—In position 35°22.2'N, 139°41.8'E.

Vessels are requested to advise Yokohama port radio of the ship's ETD 30 minutes and immediately before departure. Ships are not berthed at night and must clear quarantine prior to sunset. Mooring should be completed before 2200. Pilotage is provided by Tokyo Wan District Pilot Association.

Tokyo Pilots—Contact Information	
Telephone	81-45-6503180
Facsimile	81-45-663-4811
Web site	http://www.tokyobay-pilot.jp

Regulations.—Vessels entering, to which berths have been allotted, should display the specially notified signal, as follows,

from the time that they are near the harbor until they are secured at the berth. Designation flags should be verified with the pilot, as the instructions and applicable moorings are subject to change.

For other regulations pertaining to this area, refer to Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia, and Maritime Traffic Safety Law.

Vessels using the Kawasaki Fairway and the Tsurumi Fairway should report the following to Shiohama Control by VHF or AIS:

1. Information relating to (and the status of) maritime accidents which may adversely affect vessel navigation.
2. Information relating to the limiting of vessel traffic.
3. Information regarding the status of fairway markers.
4. The status of any construction works or operations restricting vessel passage.
5. Other matters relating to the safe navigation of vessel traffic.

Vessels which require tugboat assistance should confirm their thruster conditions.

All vessels should maintain a continuous listening watch on VHF channel 16.

Signals.—The signals contained in the tables titled **Keihin Port—Tokyo Quarter—Signals**, **Keihin Port—Yokohama Quarter—Signals, Chiba Port—Signals,** and **Keihin Port—Kawasaki Quarter—Signals** are for the intended destination and route of vessels entering the port.

Substitute refers to the indicated international code of signals flag. The order the flags are listed in refers to the location of the flags from top to bottom.

The AIS signal refers to the destination which must be displayed via the vessel's AIS, if fitted.

Traffic controls for Yokohama Passage and Turumi (Tsurumi) Passage are made at signal stations on Honmoku Wharf, Naiko, Daikoku, and Turumi.

Signal letters and meaning for Turumi Passage and Yokohama Passage are, as follows:

1. Flashing I—Entering signal.
2. Flashing O—Leaving signal.
3. Flashing X—Warning signal.
4. Fixed X—Prohibition signal. (For Yokohama Passage only.)
5. Flashing F—Free signal.
6. Alternating flashing XI or OF—Preliminary signal for changeover.

Contact Information.—See the table titled **Keihin—Contact Information**.

Yokohama Port Radio may be contacted on VHF channels 11, 12, 14, 16, 18, 20, and 22.

Hakozaki Terminal can be contacted on VHF channel 10.

Keihin—Contact Information	
Port Radio	
VHF	VHF channels 11, 12, 14, 16, 18, and 20
Port Authority	
Telephone	81-456-717188
Facsimile	81-456-717310
E-mail	portoubo@city.yokohama.jp
Keihin Radio	
Call sign	Shiohama Control
VHF	VHF channels 13, 14, and 16
Telephone	81-45-2259132
	81-45-2259134
	81-45-2259135
MMSI	004310302
	004310303
	004310304

Keihin Port—Tokyo Quarter—Signals		
Signal Flags to Display	**Meaning of Signal**	**AIS Signal**
2nd substitute, flag Lima	Proceeding to berths on the W or N side of 15 Go Chi or M10, M11 dolphin berth.	>JP TYO L
2nd substitute, flag Mike	Proceeding to 10 Go Chi, 11 Go Chi Bldg Materials Wharf, Tatsumi Wharf berth M1 to M5 or 12 Go Chi log handling pond.	>JP TYO M
2nd substitute, flag Victor	Proceeding to 10 Go Chi or Odaiba Liner Wharf.	>JP TYO V
2nd substitute, flag Hotel	Proceeding to mooring facilities N of a line joining Harumi Signal Station and the S extremity of Shibaura Wharf.	>JP TYO H
2nd substitute, flag Tango	Proceeding to mooring facilities E of a line joining Harumi Signal Station and the NW extremity of Toyosu Wharf.	>JP TYO T
2nd substitute, flag Alpha	Proceeding to Ariake Wharf or piers for the government in Odaiba.	>JP TYO A
2nd substitute, flag Sierra	Proceeding to Shinagawa Wharf.	>JP TYO S

Keihin Port—Tokyo Quarter—Signals		
Signal Flags to Display	**Meaning of Signal**	**AIS Signal**
2nd substitute, flag Romeo	Proceeding to government piers in 13 Go Chi or Aomi Container Wharf.	>JP TYO R
2nd substitute, flag Oscar	Proceeding to Tokyo Electric Power Co., Oi Steam Power Station pier, Oi Container Wharf, Oi Marine Products Wharf, Oi Food Wharf, or mooring facilities W of a line joining the S extremity of Oi Food Wharf and the N extremity of Oi Wharf No. 2.	>JP TYO O
2nd substitute, flag Charlie	Proceeding to mooring facilities in the central breakwater-inside reclaimed land.	>JP TYO C

Keihin Port—Yokohama Quarter—Signals		
Signal Flags to Display	**Meaning of Signal**	**AIS Signal**
1st substitute, flag Echo	Proceeding to E entrance of Keihin Unga and navigating through Keihin Canal.	—
1st substitute, flag Whiskey	Proceeding to W entrance of Keihin Unga and navigating through Keihin Canal.	—
2nd substitute, flags Hotel and Mike	Proceeding to berth S of a line joining Yokohama Honmoku breakwater light and Yokohama outer breakwater S light.	<JP YOK HM
2nd substitute, flag Yankee	Proceeding to berth S of a line joining Yokohama outer breakwater S light to N extremity of Yokohama E breakwater.	>JP YOK Y
2nd substitute, flags Oscar and Sierra	Proceeding to berth W of a line joining the N extremity of the Yokohama E breakwater to Yokohama N breakwater light.	>JP YOK OS
2nd substitute, flag Delta	Proceeding to berth N of a line joining Yokohama N breakwater light to Yokohama Daikoku wharf Hunadamari breakwater light.	>JP YOK D
2nd substitute, flags Delta and Sierra	Proceeding to berth Daikoku wharf N of a line joining Yokohama N breakwater light to Yokohama Daikoku breakwater W light.	>JP YOK DS
2nd substitute, flags Delta and Echo	Proceeding to berth W of a line joining Yokohama Diakoku breakwater E light to NE extremity of Diakoku wharf.	>JP YOK DE
2nd substitute, flags Delta and November	Proceeding to berth W of a line joining NE extremity of Diakoku wharf in Section 3 and the SE extremity of Suehiro Cho 1-Chome.	>JP YOK DN
2nd substitute, flags Sierra and Hotel	Proceeding to berth N of a line joining the SE extremity of Suehiro-Cho 1-Chome and the SW extremity of Suehiro-Cho 2-Chome in Section 4.	>JP YOK SH
2nd substitute, flag Kilo	Proceeding to Kihinn Works NKK Corporation berths within Section 3.	>JP YOK K
2nd substitute, flags Alpha and Zulu	Proceeding to Anzen-Cho 2-Chome S berths in Section 4.	>JP YOK AZ
2nd substitute, flags Oscar and November	Proceeding to berths on the N side of Ogishima in Section 4.	>JP YOK ON
2nd substitute, flags Alpha and Uniform	Proceeding to Asahi Unga.	>JP YOK AU
2nd substitute, flags Sierra and Uniform	Proceeding to Sakai Unga.	>JP YOK SU

Keihin Port—Kawasaki Quarter—Signals		
Signal Flags to Display	**Meaning of Signal**	**AIS Signal**
1st substitute, flag Echo	Proceeding to E entrance of Keihin Canal and navigating through Keihin Unga.	—
1st substitute, flag Whiskey	Proceeding to W entrance of Keihin Canal and navigating through Keihin Unga.	—
2nd substitute, flags Sierra and Uniform	Proceeding to Sakai Unga.	>JP KWS SU
2nd substitute, flags Tango and Uniform	Proceeding to Tanabe Unga.	>JP KWS TU
2nd substitute, flags India and Uniform	Proceeding to Ikegami Unga.	>JP KWS IU
2nd substitute, flags Sierra and Golf	Proceeding to berths in Shiohama Unga.	>JP KWS SG
2nd substitute, flags Delta and Uniform	Proceeding to berths in Daishi Unga.	>JP KWS DU
2nd substitute, flags Oscar and Kilo	Proceeding to Quays on the S side of Okawa Cho in Section 1.	>JP KWS OK
2nd substitute, flags Oscar and Tango	Proceeding to Quays on the S side of Ogi Cho in Section 1.	>JP KWS OT
2nd substitute, flags Mike and Echo	Proceeding to Quays on the S side of Mizue-Cho in Section 1.	>JP KWS ME
2nd substitute, flags Tango and Delta	Proceeding to Quays on the S side of Chidori-Cho in Section 1.	>JP KWS TD
2nd substitute, flags Uniform and Sierra	Proceeding to Quays along the Keihin Canal in Ukishima-Cho in Section 1.	>JP KWS US
2nd substitute, flags Hotel and Oscar	Proceeding to Higashi-Ogishima Quay on the Keihin Unga side in Section 1.	>JP KWS HO
2nd substitute, flags Oscar and Golf	Proceeding to quays on the N side of Ogishima in Section 1.	>JP KWS OG

Chiba Port—Signals		
Signal Flags to Display	**Meaning of Signal**	**AIS Signal**
2nd substitute, 1st substitute	Proceeding to mooring facilities N of a line joining the SE extremity of Central Wharf in Chiba Ko Section 1 and the SW extremity of Dezu Wharf.	>JP CHB 1
2nd substitute, 3rd substitute	Proceeding to the mooring facilities in Chiba Ko Section 3.	>JP CHB 3

Chiba Port—Signals		
Signal Flags to Display	**Meaning of Signal**	**AIS Signal**
2nd substitute, flags Foxtrot and Sierra	Proceeding from Funabashi Central Wharf S Quay and NE Quay to M Quay.	>JP CHB FS
2nd substitute, flags Foxtrot and November	Proceeding to mooring facilities W of a line joining the NE extremity of Funabashi Central Wharf N Quay and Hinode Loch in Katsunan Ko.	>JP CHB FN
2nd substitute, flags India and Whiskey	Proceeding to mooring facilities W of a line joining a point bearing 340.5° and 580m from a point bearing 056° and 1,210m from Chiba Ko Katsunan Ichikawa Light.	>JP CHB IW
2nd substitute, flags India and Echo	Proceeding to mooring facilities N of a line joining a point bearing 072° and 510m from a point bearing 073° and 1,820m from Chiba Ko Katsunan Ichikawa Light.	>JP CHB IE

Shinagawa Pier from NE

Anchorage.—Quarantine anchorages, which serve both Yokohama and Kawasaki, are situated in Section III, to seaward of Daikoku Breakwater, and in Section II, approximately 0.8 mile WSW of Tonen-Ogishima Sea Berth. If a vessel must wait for a berth, it may anchor in the quarantine anchorage or as near as safety permits.

Berths for vessels exceeding 500 gt, intending to stay 72 hours or longer in the quarantine anchorage, will be allocated by the harbormaster through the shipping companies concerned. Anchoring in the vicinity of such allocated berths by other vessels is prohibited. Ships anchoring in the area W of Naka No Se should avoid anchoring within 1 mile of a line connecting Lighted Buoy B, Lighted Buoy C, and Lighted Buoy D.

Anchorage is prohibited in Yokohama Fairway, Kanagawa Fairway, and Tsurumi Fairway. Anchorage is also prohibited in the area indicated on the chart between the outer harbor limit and the entrances to Yokohama Fairway and Tsurumi Fairway.

Caution.—Vessels should navigate with caution when entering Tokyo Bay, N of Kannon Saki, in the vicinity of the forts. Numerous groundings have occurred here due to not identifying the forts correctly, even in favorable weather with local knowledge and radar.

Navigation is prohibited within an area with a radius of 366m centered on position 35°21'37″N, 139°39'33″E when the area is in use by U.S. vessels.

Depths of 1.0 to 3.5m less than charted were reported (2007) to lie in the vicinity of position 35°23.1'N, 139°37.8'E.

Kawasaki Ko (35°30'N., 139°46'E.)

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3.24 Kawasaki Ko lies adjacent to Yokohama Ko. It consists of a number of basins leading N from Keihin Unga and also includes the mouth of Tama Kawa at the NE end of the harbor area. The port is entered through Turumi Passage or Kawasaki Passage.

Kawasaki Ko is divided into two areas, as follows:

1. Area No. 1 lies NW of Ogishima and Higashi-Ogishima, and N of Kawasaki Fairway.

2. Area No. 2 lies between Ogishima and Higashi-Ogishima, and the seaward harbor limit.

Depths—Limitations.—The draft limitation for vessels in transit of Kawasaki Channel is 12m, and 11.7m for those vessels utilizing Turumi Passage. The Turumi-Tubasa Bridge, with a vertical clearance of 49m, crosses Turumi Passage between Daikoku Wharf and Yokohama.

In Section 1, near the middle of the NW side of Ogi Shima, there is a wharf with depths of 12.5 to 12.8m alongside. On the N side of Keihin Unga, and in the channel and basins leading N, there are numerous piers and wharves with depths up to 12.9m alongside.

Kawasaki—Berth Information

Berth	Length	Depth	Vessel Size	Remarks
Dry Cargo Terminals (Chidori-Cho)				
No. 1	120m	7.3m	3,000 dwt	Limestone, sand, and scrap metal.
No. 2	170m	9.0m	10,000 dwt	Limestone, sand, and scrap metal.
No. 3	190m	10.0m	15,000 dwt	Limestone, sand, and scrap metal.
No. 4	220m	10.0m	15,000 dwt	Limestone, sand, and scrap metal.
No. 5	211m	10.0m	15,000 dwt	Limestone, sand, and scrap metal.
No. 6	209m	10.0m	15,000 dwt	Limestone, sand, and scrap metal.
No. 7	180m	10.0m	15,000 dwt	Limestone, sand, and scrap metal.
Daido Steel Terminal				
Daido Berth	28m	6.0m	1,500 dwt	Iron ore and steel products.
Daiichi				
Cargo Berth	160m	9.0m	—	Steel products.
Cement Berth	162m	—	10,750 dwt	Cement.
Fuji Electric Terminal				
Yamanouchi Quay	197m	6.0m	2,000 dwt	—
Higashi-Ogishima				
No. 1	185m	10.0m	15,000 dwt	—
No. 2	187m	10.0m	15,000 dwt	—
No. 3	240m	12.0m	30,000 dwt	Breakbulk.
No. 4	240m	12.0m	30,000 dwt	—
No. 5	240m	12.0m	30,000 dwt	PCC.
No. 6	240m	12.0m	30,000 dwt	PCC.
No. 7	240m	12.0m	30,000 dwt	PCC.
No. 8	240m	12.0m	—	PCC.
No. 9	240m	12.0m	30,000 dwt	PCC.
No. 21	130m	7.5m	5,000 dwt	PCC.
No. 22	130m	7.5m	5,000 dwt	PCC.
No. 23	130m	7.5m	5,000 dwt	PCC.
No. 24	130m	7.5m	5,000 dwt	PCC.
No. 25	130m	7.5m	5,000 dwt	PCC.
No. 26	130m	7.5m	5,000 dwt	PCC.
No. 27	130m	7.5m	5,000 dwt	PCC.
No. 28	130m	7.5m	5,000 dwt	PCC.
No. 29	130m	7.5m	5,000 dwt	PCC.

Kawasaki—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
No. 30	130m	7.5m	5,000 dwt	PCC.
No. 31	130m	7.5m	5,000 dwt	PCC.
JFE Steel				
Raw Materials E-A	360m	22.0m	200,000 dwt	Iron ore.
Raw Materials E-B	240m	18.0m	10,000 dwt	Coal.
Raw Materials E-C	170m	13.5m	68,000 dwt	Iron ore and coal.
JR East Kawasaki Thermal Power Plant Terminal				
Kawasaki Pier	115m	7.0m	3,000 dwt	Closed.
Kawasaki Container Terminal				
KC1	—	14.0m	50,000 dwt	Containers. Maximum loa of 380m.
KC2	—	14.0m	50,000 dwt	Containers. Maximum loa of 380m.
Mitsui Wharf				
Cement Dolphin	68m	9.0m	10,000 dwt	Cement.
South Wharf	186m	12.0m	60,000 dwt	Coal.
West Wharf	378m	10.0m	30,000 dwt	Coal.
Nippon Express Terminal				
Express Berth	124m	6.0m	1,500 dwt	—
Nisshin Four Milling				
Wharf	—	12.0m	50,000 dwt	Aggregates.
Onoken Terminal				
North Berth	128m	8.0m	5,000 dwt	Steel.
South Berth	91m	6.0m	—	—
Taiheiyo Cement Terminal				
Cement	—	8.0m	7,000 dwt	Cement.
Nippon Sanso Wharf				
Wharf	191m	5.0m	1,000 dwt	—
Toyo Futo Terminal				
Quay	296m	9.5m	10,000 dwt	Breakbulk.
Parallel Pier	389m	12.0m	20,000 dwt	Aggregates.
Berth	56m	5.5m	499 dwt	Sand.
Tanker Terminals				
Asahi Kasei Chemicals Terminal				
No. 1	—	5.1m	1,900 dwt	Chemicals and LPG.
No. 2	—	5.5m	2,000 dwt	Chemicals and LPG.
No. 3	—	5.0m	1,200 dwt	Chemicals.
East Ohgishima Oil Terminal (EOT)				
No. 0	90m	9.1m	5,786 dwt	Clean products. Maximum loa of 114.7m. Maximum beam of 16.5m.
No. 1	90m	8.2m	5,786 dwt	Crude.

Kawasaki—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
No. 2	44m	7.5m	3,998 dwt	Crude.
No. 3	65m	9.2m	1,515 dwt	Crude.
Idemitsu Kosan				
No. 1	22m	8.6m	20,000 dwt	Chemicals.
No. 3	11m	5.0m	1,000 dwt	Chemicals.
Jx Nikko-Niseki (Shin Nihon Sekiyu Seisei Ukishima Honsan)				
JXE Chidori	—	7.0m	3,000 dwt	Chemicals.
JXE Ukishima Hon	35m	12.0m	69,900 dwt	Gas. Maximum loa of 245m. Maximum beam of 40.0m.
NKKK Corp Ohgishima Wharf				
JXE Ukishima No. 1	22m	5.0m	—	Chemicals
JXE Ukishima No. 2	28m	5.0m	1,300 dwt	Chemicals
JXE Ukishima No. 3	101m	6.0m	1,300 dwt	Chemicals
JXE Ukishima No. 4	29m	5.0m	1,300 dwt	Chemicals.
JXE Ukishima No. 5	27m	6.0m	1,500 dwt	Chemicals,
JXE Ukishima No. 6	14m	7.9m	5,000 dwt	Chemicals and LPG. Maximum loa of 33m including dolphins.
JXE Ukishima No. 7	23m	6.0m	1,300 dwt	Dirty products.
JXE Ukishima No. 10	29m	6.0m	2,000 dwt	Clean products and LPG.
Kawasaki Kasei Chemicals				
Chidori Dolphin	10m	9.8m	10,000 dwt	Chemicals. Maximum loa of 54m including dolphins.
Mc Terminal				
A-192 Pier	115m	10.8m	42,100 dwt	Chemicals and LPG. Maximum loa of 189m. Maximum beam of 33.0m.
Nippon Oil Ohgimachi				
No. 1	66m	12.0m	73,000 dwt	Aviation fuel and crude. Maximum loa of 249m. Maximum beam of 42.6m.
No. 2	99m	7.5m	3,000 dwt	Clean products. (Closed)
Nippon Vopak				
Kawasaki	68m	11.4m	30,600 dwt	Chemicals. Maximum loa of 170m. Maximum beam of 25.9m.
Ohgishuma Oil Terminal				
No. 1	100m	7.5m	5,000 dwt	Dirty products.
No. 2	90m	7.5m	3,000 dwt	Dirty products.
No. 3	60m	5.0m	1,000 dwt	Dirty products.
Showa Denko KK Terminal				
No. 1	40m	5.4m	800 dwt	Clean products. (closed)
No. 2	39m	5.4m	1,000 dwt	Chemicals.
No. 4	45m	7.4m	—	Chemicals and LPG.
No. 5	139m	7.4m	3,000 dwt	Chemicals.

Kawasaki—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
Showa Denko KK Terminal (Chidori)				
North Berth	33m	6.0m	3,000 dwt	Chemicals.
South Berth	45m	—	—	LPG.
TOA Japan Energy Terminal				
Jetty	33m	—	53,520 dwt	LPG. Maximum loa of 245m. Maximum beam of 40.0m.
TOA Oil Mizue Terminal				
Keihin Kawasaki SBM	—	26.0m	315,000 dwt	Crude. Maximum loa of 348m. Maximum draft of 21.0m.
No. 4	35m	5.4m	5,000 dwt	Crude.
No. 5	35m	5.4m	2,000 dwt	Crude.
Sanbashi No. 1	—	11.0m	5,000 dwt	Crude.
Sanbashi No. 2	95m	11.0m	46,000 dwt	Crude.
Sanbashi No. 3	31m	11.0m	5,000 dwt	Crude.
Toden General 400 Terminal				
No. 41	31m	7.3m	2,000 dwt	Dirty products.
No. 42	87m	7.5m	5,000 dwt	Clean products.
No. 43	37m	7.0m	3,000 dwt	Dirty products.
No. 44	47m	8.0m	7,500 dwt	Dirty products.
No. 45	30m	5.0m	1,000 dwt	LPG.
No. 46	25m	4.7m	500 dwt	Clean products.
No. 47	37m	—	—	Clean products.
No. 48	20m	—	—	Clean products.
No. 49	20m	—	—	Clean products.
Ohgishima Sea Berth KS-E	492m	26.0m	265,000 dwt	Crude. Maximum loa of 348m. Maximum beam of 60.0m.
Ohgishima Sea Berth KS-W	370m	15.0m	113,022 dwt	Crude. Maximum loa of 249m. Maximum beam of 44.0m.
Tokyo Electric Power				
Ohgishima LNG	450m	14.0m	76,110 dwt	LNG. Maximum draft of 297.5m. Maximum draft of 12.0m. Maximum beam of 48.1m.
Tokyo Yuso				
No. 1	97m	12.0m	60,000 dwt	Chemicals. Maximum beam of 208m.
No. 2	38m	5.6m	2,000 dwt	Dirty products.
Tonen General 100 Terminal				
No. 1-171	209m	12.0m	5,000 dwt	Dirty products.
No. 150-A-1	71m	12.0m	65,000 dwt	Dirty products. Maximum loa of 230m. Maximum beam of 38.4m.
No. 150-A-2	39m	8.0m	5,000 dwt	Dirty products.
No. 150-A-3	30m	8.0m	2,000 dwt	Dirty products.

Kawasaki—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
No. 150-B-1	30m	6.5m	2,500 dwt	Dirty products.
No. 150-B-2	31m	—	2,000 dwt	Dirty products. (closed)
No. 150-B-4	25m	6.0m	300 dwt	Dirty products.
No. 150-B-5	25m	6.0m	300 dwt	Dirty products.
Tonen General 200 Terminal				
No. 1	89m	12.0m	68,000 dwt	Clean products. Maximum loa of 224.9m. Maximum beam of 37.8m.
No. 2	140m	8.0m	5,000 dwt	Clean products.
No. 3	142m	8.0m	5,000 dwt	Clean products.
No. 4	34m	6.0m	1,500 dwt	CCP.
No. 5	32m	6.0m	1,000 dwt	Clean products.
Nos. 6 and 7	55m	5.0m	1,000 dwt	Clean products.

An approach channel, dredged to 21m and marked by lighted buoys, leads to Nippon Kokan Wharf on the E side of Ogishima; the two outermost channel buoys lie between Yokohama Sea Berth and Kawasaki Sea Berth. Range lights, shown from metal posts and in line bearing 331°, lead towards Nippon Kokan Wharf. Quays on the SE side of Higashi-Ogishima are also approached by this channel. Depths alongside Nippon Kokan Wharf are 7.5 to 22m. Higashi-Ogishima Wharf, NE of Ogishima, has nine berths, with alongside depths of 10 to 12m.

In Section 2, there are three berths on the E end of Ogishima that are approached on a range bearing 331°. These berths have charted depths of 8.2 to 23m alongside. Toden LNG Berth, with depths of 17.2 to 17.7m alongside, extends S from Ogishima.

Toden-Ogishima Sea Berth lies 0.5 mile S of Kawasaki Passage. This berth has depths of 26m alongside and will accommodate a vessel as large as 315,000 dwt and a draft of 20.5m.

Kawasaki Sea Berth, which lies 0.8 mile SSW of the above sea berth, is a buoy moored in a depth of 30m. The maximum safe draft at the berth is 20.5m for a vessel with a maximum of 315,000 dwt. The buoy moorings extend up to 0.15 mile from the buoy.

Several submarine cables and pipelines are laid across Keihin Unga and the channels leading N of it; some landing places are marked by beacons. Two tunnels also cross Keihin Unga. Overhead cables cross some of the channels N of Keihin Unga; the least vertical clearance is about 38m.

There are two dry docks on the N side of Keihin Unga, where repairs for vessels of up to 60,000 gt may be undertaken.

Pilotage.—Pilotage is compulsory in Kawasaki Ko for berthing any vessels over 3,000 gt and for all oil tankers of any size, LPG carriers, or vessels of at least 300 gt carrying dangerous cargo. Pilots should be requested 24 hours in advance. Pilots are available 24 hours. Outbound vessels or vessels shifting berths are requested to advise the ship's ETD 24 hours and 6 hours before departure. Any change of ETD should be reported whenever it occurs.

Pilots board, as follows:

1. Kawasaki Fairway—In position 35°28.7'N, 139°48.3'E (Large vessels are boarded within a circle with a radius of 1 mile centered on a position 2.5 miles SSE of Lighted Buoy No. 1.)
2. Ogi Shima No. 2 Fairway—Within a circle with a radius of 1 mile centered on a position 1 mile ESE of Lighted Buoy No. 1.

Regulations.—See paragraph 3.24 for position and destination reporting regulations required in Kawasaki Ko.

Signals.—Traffic controls for Kawasaki Passage and Turumi Passage are made from signal stations situated on Turumi, Tanabe, Ikegami, Mizue, Siohama, Daisi, and Kawasaki.

Signal letters and their meaning for Turumi Passage and Kawasaki Passage are, as follows:

1. Flashing I—Entering signal.
2. Flashing O—Leaving signal.
3. Flashing X—Warning signal.
4. Fixed X—Prohibition signal.

The signals contained in the table titled **Keihin Port—Kawasaki Quarter—Signals** (see paragraph 3.23) are for the intended destination and route of vessels entering the port.

Contact Information.—See the table titled **Kawasaki—Contact Information**.

Kawasaki—Contact Information	
Tokyo Pilots	
Telephone	81-44-266-877
Facsimile	81-44-266-877
Port Authority	
Telephone	81-44-200-1972
Facsimile	81-44-200-3981
E-mail	58yuuti@city.kawasaki.jp

Anchorage.—A quarantine anchorage, which serves both Yokohama Ko and Kawasaki Ko, is situated SE of Yokohama breakwater, to seaward of Daikoku Breakwater. If a vessel

must wait for a berth, it may anchor in the quarantine anchor or as near as prudent. A quarantine anchorage has been designated in a circular area, with a 300m radius centered at a position about 0.5 mile SW of Ogishima Sea Berth.

Anchorage is prohibited in the fairways and the area marked on the chart.

Anchoring is also prohibited in the vicinity of pipelines and cables.

Caution.—A dangerous wreck lies 1 mile NE of Toden-Ogishima Sea Berth.

Tokyo Ko (35°40'N., 139°45'E.)

World Port Index No. 61380

3.25 Tokyo Ko, in the NW part of Tokyo Wan, lies at the mouth of the Sumida Kawa and occupies that part of Keihin Ko not included in the port of Kawasaki and Yokohama. Tokyo Ko is divided into four districts. District No. 1 and District No. 2 lie well within the mouth of the Sumida Kawa. District No. 3 and District No. 4 include the outer harbor NE and SW, respectively, of Tokyo Fairway. The principal piers and wharves lie in District No. 2.

Tides—Currents.—The mean range of the tide at Tokyo Ko is 1.1m, and the spring range is 1.4m.

Within the harbor, the tidal currents follow the direction of the channel. At the entrance to District No. 2, the flood and ebb currents reach their maximum rate of about 0.8 knot, 2 to 2.5 hours before HW and LW. A rate of 2.5 knots has been experienced off the docks and the first line of mooring buoys.

Depths—Limitations.—Access to Tokyo Inner Harbor is through Tokyo West Passage, entered 0.5 mile SW of Tokyo Light and dredged to a depth of 16m. The channel then continues N, with a least charted depth of 11m. District No. 2 lies N of the dredged fairway and contains Shibaura Quay, Hinode Pier, Takeshiba Pier and, Harumi Wharf to the NE, and Toyosu Wharf to the SE. Depths alongside range from 5.4 to 10.4m. There are several mooring buoys in this area. District No. 1 lies N of District No. 2; reclamation and construction are underway in this area

Tokyo East Passage (Tokyo Passage No. 3) lies between the NE end of the Middle Breakwater and the East Breakwater. This channel leads to three basins and is dredged to a depth of 12m. Channel No. 2, dredged to 10m, also leads to these basins from Tokyo West Passage; it is marked by lighted buoys and has a least charted depth of 9m. The Tokyo Gate Bridge, with a vertical clearance of 52m, crosses Tokyo East Passage close inside the breakwaters between Wakasu and Central Breakwater Outer reclaimed land.

Tokyo—Berth Information

Berth	Length	Depth	Vessel Size	Remarks
Takeshiba Terminal				
N	155m	7.5m	5,000 dwt	Agricultural and general cargo.
O	155m	7.5m	5,000 dwt	Agricultural and general cargo.
P	155m	7.5m	5,000 dwt	Agricultural and general cargo.
Akimoto Unyu Soko Terminal				
Berth	385m	—	—	Wood chips.
Eastern Wharf Terminal				
Wharf	—	—	—	Bulk cargo. Continuous berthing length of 520m.
NSM Coil Terminal				
Coil Berth	460m	—	—	Copper
Tokyo Wharf and Warehouse Terminal				
Tokyo Wharf	240m	—	—	General cargo and coal.
Hinode Terminal				
H	94m	6.7m	3,000 dwt	Non-ferrous metals and foodstuff.
I	94m	6.7m	3,000 dwt	Non-ferrous metals and foodstuff.
J	94m	6.7m	3,000 dwt	Non-ferrous metals and foodstuff.
K	94m	6.7m	3,000 dwt	Non-ferrous metals and foodstuff.
L	94m	6.7m	3,000 dwt	Non-ferrous metals and foodstuff.
M	94m	6.7m	3,000 dwt	Non-ferrous metals and foodstuff.
Shibaura Terminal				
B	130m	7.5m	5,000 dwt	Cement, paper, and foodstuff.

Tokyo—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
C	130m	7.5m	5,000 dwt	Cement, paper, and foodstuff.
D	130m	7.5m	5,000 dwt	Cement, paper, and foodstuff.
E	130m	7.5m	5,000 dwt	Cement, paper, and foodstuff.
F	130m	7.5m	5,000 dwt	Cement, paper, and foodstuff.
G	130m	7.5m	5,000 dwt	PCC.
Shinagawa Terminal				
SC	185m	10.0m	15,000 dwt	Containers.
SD	185m	10.0m	15,000 dwt	Containers.
SE	185m	10.0m	15,000 dwt	Containers.
SF	190m	10.0m	15,000 dwt	Containers.
SG	171m	10.0m	15,000 dwt	Containers.
SH	171m	10.0m	15,000 dwt	Paper and vehicles.
SI	171m	10.0m	15,000 dwt	Paper and vehicles.
SJ	171m	10.0m	15,000 dwt	Paper and vehicles.
SK	171m	10.0m	15,000 dwt	Paper and vehicles.
OI Container Terminal (K Line)				
No. 1	330m	15.0m	50,000 dwt	Containers. Maximum draft of 14.0m.
No. 2	330m	15.0m	50,000 dwt	Containers. Maximum draft of 14.0m.
OI Container Terminal (Mol)				
No. 3	340m	15.0m	50,000 dwt	Containers. Maximum draft of 14.0m.
No. 4	340m	15.0m	50,000 dwt	Containers. Maximum draft of 14.0m.
OI Container Terminal (Wan Hai Lines)				
No. 5	340m	15.0m	50,000 dwt	Containers. Maximum draft of 14.0m.
OI Container Terminal (NYK)				
No. 6	340m	15.0m	—	Containers. Maximum draft of 14.0m.
No. 7	340m	15.0m	—	Containers. Maximum draft of 14.0m.
OI Marine Products				
J	225m	12.0m	15,000 dwt	Marine products.
K	225m	12.0m	15,000 dwt	Marine products.
OI Foodstuffs Terminal				
L	205m	12.0m	30,000 dwt	Wheat, fruit, and vegetables.
M	203m	12.0m	15,000 dwt	Wheat, fruit, and vegetables.
N	203m	12.0m	15,000 dwt	Wheat, fruit, and vegetables.
Bulk Cargo Terminal				
No. 1	240m	12.0m	30,000 dwt	Coal and metal.
Aomi Container Terminal				
A-0	260m	13.0m	35,000 dwt	Containers.
A-1	260m	13.0m	35,000 dwt	Containers.
A-2	350m	15.0m	50,000 dwt	Containers.

Tokyo—Berth Information				
Berth	**Length**	**Depth**	**Vessel Size**	**Remarks**
Hanjin Aomi A-3 Tokyo Terminal				
A-3	350m	15.0m	50,000 dwt	Containers.
Evergreen Aomi A-4 Container Terminal				
A-4	350m	15.0m	50,000 dwt	Containers.
Odaiba Liner Terminal				
A	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
B	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
C	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
D	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
E	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
F	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
G	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
H	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
I	200m	10.0m	15,000 dwt	Steel, paper, and lumber.
Ferry Terminal				
AA	160m	7.5-8.5m	6,000 gt	Vehicles and paper.
AB	185m	7.5-8.5m	6,000 gt	Vehicles and paper.
AC	225m	7.5-8.5m	6,000 gt	Vehicles and paper.
AD	110m	7.5-8.5m	6,000 gt	Vehicles and paper.
No. 15 Lumber Terminal				
B	240m	12.0m	25,000 dwt	Lumber.
C	240m	12.0m	25,000 dwt	Lumber
D	240m	12.0m	25,000 dwt	Lumber.
Wakasu Domestic Trade				
A	226m	11.0m	15,000 dwt	Containers.
Harumi Passenger Terminal				
K	226m	10.0m	20,000 gt	Passengers.
L	228m	10.0m	20,000 gt	Passengers.
Harumi Passenger Terminal				
G	166m	9.0-10.0m	15,000 dwt	Non-ferrous metals and paper.
H	166m	9.0-10.0m	15,000 dwt	Non-ferrous metals and paper.
I	166m	9.0-10.0m	15,000 dwt	Non-ferrous metals and paper.
J	166m	9.0-10.0m	15,000 dwt	Non-ferrous metals and paper.
Tanker Berths				
Oi Thermal Power Plant				
No. 1	140m	—	—	Petroleum products,

Anchorage is prohibited in Tokyo East Passage.

District No. 3 and District No. 4 lie E and W of the Tokyo West Passage, respectively. Shinagawa and Oi Wharves, having container and ro-ro facilities, are situated on the W side. Shinagawa Terminal also handles general cargo. Depths alongside range from 8 to 10m. On the E side of Tokyo West Passage are the Foreign Trade, Odaiba Public, and General Cargo Wharves. Depths alongside range from 4.5 to 11.5m.

Aomi Container Wharf, on the E side of Tokyo West Fairway, has five berths. Two berths have depths of 13m alongside while the remaining three berths have depths alongside of 15m.

Rainbow Bridge from E

The passenger ship terminal is at Takeshiba. Terminal 10 serves vessels of up to 5,000 gt with facilities for ro-ro, container, and general cargo. Terminal 15 is principally a lumber terminal. The Harumi Terminal receives foodstuffs, lumber, and cement; there is also a passenger terminal on the S side. The Asashio Terminal, to the W of Harumi Terminal, handles steel, chemical products, and fertilizers. The Rainbow Bridge, with a vertical clearance of about 50m, spans the S end of District No. 2. For further berthing information see the table titled **Tokyo—Berthing Facilities.**

Aspect.—The most prominent landmarks are Tokyo Tower, 350m high, situated in the NNW part of Tokyo, and the World Trade Center Building, 160m high, situated 0.55 mile ESE of Tokyo Tower. There are many chimneys that are useful in fixing a position.

A Ferris wheel, approximately 200m in height, is also prominent.

Pilotage.—Pilotage is compulsory. The pilot boards in the vicinity of the quarantine anchorage and Tokyo Light. The ship's ETA should be sent 24 hours, 6 hours and 3 hours in advance. All communications with the pilot should be by radio. Requests for pilotage should be made by 1200 on the previous day. Pilots are normally available 24 hours for vessels of 10,000 gt and larger.

Regulations.—Passenger ships and large vessels using mooring facilities must submit applications for use to port managers through shipping firms or agents 3 days before entry into port, so that they may have berths designated. Small vessels, less than 300 gt, do not need to apply for anchorage.

When a vessel wants to use the anchorage facilities, they must submit an application for use of the anchorage areas to the Tokyo-Yokohama Port Director, to have anchorage sites designated. Small vessels, less than 300 gt, do not need to request anchorage.

A ship carrying explosives or any other dangerous cargo must submit two copies of the application in advance to the Port Director for permission to use the port. Such ships are required to stay outside the port, in the Third District. However, they may enter at the discretion of the Port Director.

Vessels over 500 gt that want to enter the port at night (between sunset and sunrise) must apply to the Port Director in advance and receive permission.

Tankers must enter port at dead slow speed preceded by a patrol boat, with one tug boat on each side of the vessel, and followed by a patrol boat. When moored, the tanker's engines should be kept ready for immediate use in case of an emergency. In addition, tow lines are to be placed over the bow and

stern, with eyes close to the water surface.

Signals.—Flashing light traffic signals for vessels using Tokyo Fairway are shown from Tokyo Light (35°34'N., 139°50'E.). Illuminated letter traffic signals are shown from the three signal stations on Oi Wharf No. 2, Maritime Museum, and Harumi Wharf. The signals, shown by day and night, apply to vessels over 500 gt, as given in the table titled Tokyo Ko—Tokyo Fairway Signals.

The signals contained in the table titled **Keihin Port—Tokyo Quarter—Signals** (see paragraph 3.23) are for the intended destination and route of vessels entering the port.

Vessels of 500 gt or more, intending to depart District No. 1 and District No. 2, shall hoist the signal from the International Code of Signals for preparing to get underway by day, and by night, illuminate two vertical white lights, both plainly visible, 30 minutes prior to scheduled time of getting underway. Such vessels shall also sound two prolonged blasts on whistle or siren, and shall follow signal instructions from Shibaura Wharf Signal Station.

Tokyo Ko—Tokyo Fairway Signals

Flashing Light	Illuminated Letter	Meaning
White light flashing every 2 seconds.	Flashing I	Outbound vessels stop and wait clear of the fairway.
Red light flashing every 2 seconds.	Flashing O	Inbound vessels stop and wait clear of the fairway.
Alternating white and red lights flashing every 3 seconds.	Flashing F	Vessels exceeding 5,000 gt and tankers stop and wait clear of the fairway.
Light exhibiting three red flashes and three white flashes every 6 seconds.	Fixed X	All traffic prohibited.
—	Alternating flashing of X and I, X and O, or X and F	Preliminary signal for changeover.

Anchorage.—Vessels requiring pratique must anchor in the quarantine anchorage, which is situated about 1 mile SE of Tokyo Light.

Tokyo Wan—East Side

3.26 The E shore of the inner part of Tokyo Wan extends NE from Futtsu Saki for a distance of 20 miles, then NW about 9 miles to the head of the bay.

The bank that lies N of Futtsu Saki dries out as much as 1 mile offshore in places.

Kisarazu Ko (35°22'N., 139°53'E.)

World Port Index No. 61372

3.27 Kisarazu Ko is an open port established on reclaimed land, situated about 3.3 miles NE of Futtsu Saki. The N side of the harbor is protected by a breakwater extending about 1.8 miles W on the N side of the dredged channel, and on the S side by the reclaimed land that forms the wharves. The harbor limits may be seen on the chart.

Depths—Limitations.—The harbor is entered through a channel, about 4 miles long, that has been dredged to a depth of 19m, and has a width of 440m. A turning basin at the E end of the 19m dredged area, is about 700m in width. A 12m dredged channel leads NE from the turning basin, and an 11m channel extends SE from the turning basin. On the SW side of the reclaimed land there is a channel, leading to the berths, that is dredged to a depth of 11m; these berths are referred to as West Pier. Center Pier is situated at the turning basin and East Pier is situated SE of the turning basin.

Center Pier can accommodate vessels up to 270,000 dwt and a draft of 19m at HW.

East Pier can accommodate vessels up to 30,000 dwt and a draft of 11m.

West Pier can accommodate a vessels up to 40,000 dwt and a draft of 11m.

Public Wharf has a dredged depth of 12m at the “G” berth, which is situated at the head of the wharf.

Futtsu Passage is entered 4 miles NNE of Futtsu Misaki and leads 2.75 miles SSE to Futtsu LNG Tanker Berth (35°20'N., 139°50'E.). The fairway and turning basin are dredged to a depth of 14m and are marked by lighted buoys.

Kisarazu Ko is one of the largest ports in Japan. There are various piers within the port which can accommodate vessels with drafts from 7.6 to 10.8m.

Aspect.—There are several chimneys on the reclaimed area that rise above 100m. In the W part of the area, the most prominent chimney rises to a height of 224m.

Pilotage.—Pilotage is compulsory for vessels exceeding 10,000 gt. Requests for pilots should be sent via ship’s agent 24 hours in advance. Pilots board, as follows:

Kisarazu Ko—Berth Information

Berth	Length	Depth	Maximum Vessel		Remarks
			Draft	Size	
Futtsu Terminal					
A	90m	5.5m	—	—	General cargo.
B	90m	5.5m	—	—	General cargo.

Kisarazu Ko—Berth Information					
Berth	Length	Depth	Maximum Vessel		Remarks
			Draft	Size	
C	90m	5.5m	—	—	General cargo.
D	90m	5.5m	—	—	General cargo.
E	130m	7.5m	7.0m	5,000 dwt	General cargo.
F	130m	7.5m	7.0m	5,000 dwt	General cargo.
Kisarazu Terminal					
Log Berth	190m	7.5m	—	—	Timber.
Kisarazu Timber Terminal					
Central No. 1	5.0m	5.5m	—	—	Coal and iron ore. Berthing length of 30m (including dolphin).
Central No. 2	6.0m	6.0m	—	—	Coal and ion ore. Berthing length of25m (including dolphin).
Central No. 3	7.0m	5.5m	—	—	Coal andiron ore. Berthing length of 108m (including dolphin).
Central No. 4	120m	4.5-6.0m	—	—	Coal and iron ore.
Central No. 5	282m	19.0m	—	—	Coal and iron ore.
Central No. 6	304m	17.0m	16.3m	150,000 dwt	Coal and iron ore.
Central No. 7	350m	19.0m	18.0m	200,000 dwt	Coal and iron ore.
Central No. 8	422m	19.0m	18.0m	270,000 dwt	Coal and iron ore.
Central No. 10	13m	9.0m	—	—	Limestone and bunkers. Berthing length of 200m (including dolphin).
Central No. 11	35m	7.5m	—	—	Limestone and bunkers. Berthing length of 136m (including dolphin).
Central No. 12	172m	15.0m	—	—	Limestone and bunkers. Berthing length of 295m (including dolphin).
East No. 2	172m	11.0m	—	—	Breakbulk.
East No. 3	173m	11.0m	—	—	Breakbulk.
East No. 4	172m	7.5m	—	—	Breakbulk.
East No. 5	173m	7.5m	—	—	Breakbulk.
East No. 6	135m	6.5m	—	—	Breakbulk.
East No. 7	135m	6.5m	—	—	Breakbulk.
East No. 8	135m	6.5m	—	—	Breakbulk.
East No. 9	135m	6.5m	—	—	Breakbulk and bunkers.
East No. 10	130m	6.5m	—	—	Breakbulk.
East No. 11	130m	6.5m	—	—	Breakbulk.
West No. 1	143m	5.5-6.5m	—	—	Breakbulk and bunkers.
West No. 2	143m	5.5-6.5m	—	—	Breakbulk and bunkers.
West No. 3	143m	5.5-6.5m	—	—	Breakbulk and bunkers.
West No. 4	111m	11.0m	—	—	Breakbulk.
West No. 5	100m	11.0m	—	—	Breakbulk and bunkers.
West No. 6	111m	11.0m	—	—	Breakbulk and bunkers.

Kisarazu Ko—Berth Information					
Berth	Length	Depth	Maximum Vessel		Remarks
			Draft	Size	
West No. 7	144m	11.0m	9.0m	30,000 dwt	Breakbulk.
West No. 8	250m	11.0m	—	30,000 dwt	Breakbulk and bunkers.
West No. 9	310m	11.0m	—	40,000 dwt	Breakbulk.
West No. 10	277m	11.0m	10.0m	40,000 dwt	Breakbulk and bunkers.
West No. 11	277m	11.0m	10.0m	30,000 dwt	Breakbulk.
West No. 12	277m	11.0m	10.5m	30,000 dwt	Breakbulk.
Shinminato					
A	90m	5.5m		—	Coal, breakbulk, and bunkers.
B	90m	5.5m		—	Coal, breakbulk, and bunkers.
C	90m	5.5m		—	Coal, breakbulk, and bunkers.
D	90m	5.5m	—	—	Coal, breakbulk. and bunkers.
E	130m	7.5m	—	—	Coal, breakbulk. and bunkers.
F	130m	7.5m	—	—	Coal, breakbulk. and bunkers.
G	220m	12.0m	—	—	Breakbulk and bunkers.
H	280m	12.0m	—	—	PCC and bunkers.
Shiohama					
A	60m	4.5m	—	—	Sand and bunkers.
B	60m	4.5m	—	—	Sand and bunkers.
C	60m	4.5m	—	—	Sand and bunkers.
D	60m	4.5m	—	15,000 dwt	Sand and bunkers.
Tanker Berths					
Tokyo Electric Futtsu Thermal Power Station					
No. 1	145m	14.0m	—	—	LNG.
No. 2	45m	14.0m	12.5m	79,000	LNG. Maximum loa of 297m. Maximum beam of 48.2m.

1. Kaisarazu Fairway and Kimutsu Fairway—within a circle of radius 1 mile centered on Harbor Entrance Lighted Buoy No. 2.

2. Futtsu Fairway—on the E side of a circle of radius 1 mile centered on Nako-no-Se Fairway Lighted Buoy No. 6.

Contact Information.—See the table titled **Kisarazu Ko—Contact Information**.

Kisarazu Ko—Contact Information	
Port Radio	
VHF	VHF channels 11, 12, 14, 16, 18, 20, and 22
Port Authority	
Telephone	81-438-360700
Facsimile	81-438-364-696
E-mail	kouwansei2@mz.pref.chiba.lg.jp

Anchorage.—The quarantine anchorage is centered about 2 miles ENE of the dredged channel entrance buoys. There are depths of 15.6 to 22m in the anchorage.

Caution.—Seaweed cultivation is being carried out in the area SW of the West Pier. It should be noted that the discharge of oil or oily waste into the water is strictly prohibited by the Marine Pollution Law and other related laws. Similarly, proceeding to the cultivated area is prohibited.

Banzu Hana (35°25'N., 139°54'E.) is situated about 1.5 miles N of Kisarazu Ko harbor limit. From Banzu Hana to the S harbor limit of Chiba (Tiba) Ko, 3 miles ENE, the coast is low and fronted by shoal water up to 1 mile offshore.

Chiba Ko (Tiba Ko) (35°35'N., 140°04'E.)

World Port Index No. 61375

3.28 Chiba Ko is an industrial harbor complex, designated as an open port, situated in a bight between 3 miles ENE and

13 miles NE of Banzu Hana. The harbor consists of a number of dredged basins and sections on reclaimed land. It consists of an inner and outer harbor, whose limits may be seen on the chart. Chiba Ko fronts the cities of Chiba and Ichihara (Itihara). There are five sections in this harbor and four fairways. The fairways include Chiba Passage, Anegasaki Passage, Ichihara Passage, and Shiizu Passage.

Depths—Limitations.—Chiba Passage, marked by lighted buoys, has been dredged to a depth of 18m. It extends in a NE direction from the outer harbor for a distance about 8 miles to Section No. 1. There is a basin within this section that is also dredged to 18m. The draft limitation in the channel is 17m. Ichihara Passage, dredged to a depth of 12m, leads to berthing spaces close S of those accessed by way of Chiba Passage.

Anegasaki Passage, dredged to 15.7m, is also marked by lighted buoys, as are Chiba and Itihara Passages. Shiizu Passage, dredged to 15.8m, leads to a basin on the S side of Anegasaki Power Station. Kitasode Fairway is the southernmost passage in Chiba Ko and has a least depth of 10.5m.

Section No. 1 and Section No. 2 contain the main berthing facilities for public use. Depths alongside range from 3 to 18m. Mitsui Dry Dock, having a capacity of 150,000 dwt, is situated in Section No. 2, 2.5 miles SE of Chiba Light.

In Section No. 3, depths alongside range from 3 to 12.8m. Marubeni Sea Berth has alongside depths of 14 to 14.4m.

In Section No. 4, depths alongside range from 4.5 to 16m. Petrochemical, oil, gas, and power companies are situated there.

Tokyo Gas Terminal (35°28'N., 139°59'E.), in the S part of the harbor, consists of No. 1 Pier, a dolphin berth, with a depth of 15.6m on its E side and 14.5m on its W side. A basin W of Tokyo Gas Terminal is approached by a channel dredged to 14m and marked by lighted buoys. No. 2 Pier, provides a dolphin berth with a least depth of 14.5m for LNG vessels.

East of the gas terminal there is a basin with Sodegaura Wharf at its head. Lighted buoys mark the W side the entrance to the basin. The LNG terminals, to the S of a passage about 1.5 miles long and dredged to a depth of 14m, can accommodate vessels up to 70,000 dwt, having a draft of 16m.

Keiyo Sea Berth, with two berths can accommodate a vessel of 260,000 dwt, with depths alongside of 20m.

Reference should be made to the charts for location of the prohibited areas and submarine cables and pipelines in this harbor.

Aspect.—Conspicuous landmarks include two chimneys, each 204m high, situated about 0.6 mile S of the liquid natural gas pier; three chimneys in a line, 205m high, about 2.5 miles NE of the above chimney; and the government building at Chiba and a lighted tower 0.25 mile NW of it. A light is shown from the shore 3.25 miles NNE of Chiba Light. There are numerous tanks and chimneys with flares charted in this area.

Pilotage.—Pilotage is compulsory and is available from sunrise to 1 hour before sunset. Requests for pilots should be sent 24 hours in advance. Pilots board, as follows:

1. Chiba, Ichihara, Anegasaki, and Shiizu Fairways—within a circle of radius 1 mile centered on the Harbor Entrance Lighted Buoy; however, the pilot normally boards vessels with a draft of 10m or less in the vicinity of the quarantine anchorage and vessels with a draft of greater than 10m about 1 mile WSW of Chiba Ko Harbor Entrance Lighted Buoy No. 1.
2. Funbashi Fairway—within a circle of radius 1 mile centered on a position 1 mile WSW of Lighted Buoy No. 1.
3. Kita Sode and Minami Fairways and the Tokyo Gas LNG Berth—within a circle of radius 1 mile centered on a position 1.5 miles SW from the SW end of Keiyo sea berths.
4. Keiyo sea berths—within a circle of radius 1 mile centered on a position 2 miles WSW of Keiyo sea berths.

Vessels unfamiliar with Uraga Channel may receive a pilot at Uraga Channel No. 1 Lighted Buoy. This is especially recommended for tankers exceeding 100,000 dwt and liquefied-gas carriers.

Regulations.—See paragraph 3.23 for position and destination reporting regulations required in Chiba Ko.

Signals.—Flashing light traffic signals for vessels using Chiba Passage are shown from Chiba Light (35°34'N., 140°03'E.) and Chiba Chuoko Signal Station (35°35.7'N., 140°05.3'E.). Flashing light traffic signals for Ichihara Passage are shown from Chiba Light. Illuminated letter traffic signals for vessels using Chiba Passage are shown from Chiba Light.

The signals, shown by day and at night, are as given in the table titled **Chiba Ko—Signals**.

The flashing light signals are the same for both Chiba Passage and Ichihara Passage.

From the N limit of the outer harbor of Chiba Ko, the coast trends N to Funabashi and Itikawa. The entire coastal area is under reclamation.

The signals contained in the table titled **Chiba Port—Signals** (see paragraph 3.23) are for the intended destination and route of vessels entering the port.

Anchorage.—The quarantine anchorage is situated on the N side of Chiba Passage, about 2.8 miles NE of its entrance. The depths in the anchorage vary from 11 to 14.2m.

Chiba Ko—Signals

Flashing Light	Illuminated Letter	Meaning
White light flashing every 2 seconds.	Flashing I	Inbound traffic and outbound small craft may proceed. Outbound vessels over 500 gt or 50m loa or greater stop and wait clear of passage.
Red light flashing every 2 seconds.	Flashing O	Outbound traffic and inbound small craft may proceed. Inbound small craft may proceed. Inbound vessels over 500 gt or 50m loa or greater stop and wait clear of passage.

Chiba Ko—Signals		
Flashing Light	**Illuminated Letter**	**Meaning**
Alternating white and red lights flashing every 3 seconds.	Flashing F	Both inbound and outbound traffic of 140m loa or greater (over 1,000 gt for tanker) must stop and wait clear of passage. Vessels under these limits may proceed.
Light exhibiting three red flashes and three white flashes every 6 seconds.	Fixed X	All traffic prohibited except the one vessel permitted by the Port Captain.

Katsunan Ku (35°40'N., 139°59'E.)

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3.29 Katsunan Ku lies N of the outer basin of Chiba Ko and embraces the former port of Funabashi Ichikawa Ko. The port consists of a number of quayed basins. Breakwaters protect the S side of the port, and the W part is protected by the reclaimed land. Edo Kawa flows into Tokyo Wan through the W part of the harbor.

Depths—Limitations.—The harbor is approached from the S through a channel 4.25 miles long, dredged to a depth of 12m. Close within the breakwater the channel is dredged to 10m. The quays have depths from 5 to 12m alongside and will accommodate vessels up to 15,000 dwt.

The basins in the E mouth of the Edo Kawa can be approached through Ichikawa Channel, dredged to 6.5m (2012). This channel is buoyed and its entrance is about 3 miles N of the entrance to the main channel.

Pilotage.—Pilotage is compulsory for vessels exceeding 10,000 gt. Pilots embark at Chiba quarantine anchorage. There are no restrictions on entry or sailing, however, pilots are only available during daylight hours until 1 hour before sunset.

Anchorage.—Vessels for Katsunan Ku may use Chiba Ko quarantine anchorage. The depths in the anchorage range from 11 to 14.2m.

Between the W limit of Katsunan Ku and the E limit of Keihin Ko, 3 miles W, is an area of reclaimed and developed land. The W mouth of Edo Kawa flows out close E of the E limit of Keihin Ko. Urayasu Light is shown from a square metal framework tower, 8m high, situated off the S extremity of the reclaimed land

Caution.—Depths of 0.5 to 1.5m less than charted were reported (2006) in Katsunan Ku.

3.30 South side of Miura Hanto.—From Ken Saki. the coast trends in a W direction about 3 miles to Misaki Ko. The coast is indented by several small bays. There are many rocks and reefs along the coast, with depths ranging more than 20m, 0.5 mile offshore and beyond.

Joga Shima (Zyo-ga Shima) (35°08'N., 139°37'E.), a flat trapezoidal shaped island, 30m high, lies about 0.2 mile offshore, and forms the S side of Misaki Ko. A bridge, with a vertical clearance of 22m, spans the channel. A breakwater extends toward the mainland from both the NE and NW ends of the island. A breakwater also extends from the mainland in a SSW direction toward the W breakwater; there is an opening about 100m wide. A detached breakwater extends NW from the NW extremity of Joga Shima.

Misaki Ko (35°08'N., 139°37'E.) is a small harbor enclosed by the above-described breakwaters.

3.31 Misaki Seto—West entrance.—A light stands on the head of the S outer breakwater, which extends 0.18 mile WNW from Nadaga Saki, the NW extremity of Joga Shima. A light stands on the head of the N outer breakwater, which extends NNE to the shore from a position 0.1 mile NE of the S outer breakwater. The W entrance to Misaki Seto lies between the outer breakwaters. Inner N and S breakwaters lie about 0.3 mile inside the outer breakwaters. There is a basin bordered by quays between the inner and outer N breakwaters.

3.32 Misaki Seto—East entrance.—A breakwater projects 91.5m NE from the NE extremity of Joga Shima on the S side of the E entrance to Misaki Seto. A light stands at the head of this breakwater. A 2.1m patch, located about 0.2 mile SE of the head of the breakwater, is the outermost of several rocky patches lying off the E side of Joga Shima. Drying reefs, lying on the N side of the E entrance to Misaki Ko, are marked by a lighted buoy.

Tides—Currents.—Off Misaki Ko, the tidal currents are affected by the ocean current, but the flood usually sets W or N and the ebb S. During the summer, there are occasional periods when a constant S set is experienced. In Misaki Seto the flood sets W, attaining a rate of 1.5 knots, and about 0.5 mile W of Joga Shima it sets NW at a rate of 2.75 knots. In a position more than 2 miles W of Joga Shima, a S set of 1 knot has been observed.

Depths—Limitations.—The fairway channel has depths of 5.5m, and the depths in the N part of the harbor are between 4 to 5.9m.

At night, buoys on the N side of the channel, in the vicinity of the bridge, are difficult to distinguish against the lights of the town.

Signals.—Local storm signals are displayed from a hill to the W of the town of Misaki, which is situated on the mainland.

Anchorage.—A quarantine anchorage is situated close NE of the E extremity of Joga Shima.

Sagami Wan

3.33 Sagami Wan (35°12'N., 139°22'E.) is a large open bay between Joga Shima and Manazuru Misaki, 22 miles W. This bay lies at the head of Sagama Nada. The E shore of the bay is formed by the W coast of Miura Hanto, which extends in a general NNW direction for about 10 miles; it has many indentations with a few sandy beaches and many rocks. The N shore of the bay is a long sandy beach with no dangers except in the vicinity of Uba Shima (Ubaga Shima). The W shore has

few indentations, except for the projecting Manazuru Misaki, and consists mostly of a stone beach.

The depths in the bay generally are deep, especially in the W where the 20m curve lies within 0.4 mile of the shore near Odawara (35°15'N., 139°10'E.).

Winds—Weather.—At Ken Saki, E of Sagami Wan, in winter when the NW seasonal winds are strong, the wind direction is affected by geographical features. The velocity of the winds from the N or NE is relatively low, and the weather is mild.

In the summer, land and sea breezes develop and it is fairly cool. Wind direction is S or SW. Offshore, fog often develops in the spring when the area is covered by a high pressure system and a weak wind blows. In the summer, fogs are common late at night or in early morning when there is a weak wind.

Tides—Currents.—Near Joga Shima, tidal currents are changeable due to the effects of ocean currents. In general, the flood tide current flows to the W, and the ebb tide current to the E. West of Joga Shima, the flood current is NNW at a rate of 0.5 knot and the ebb is SSW at a rate of 1 knot. At a distance of 5 miles NNW of Joga Shima, the flood current flows N at 1.25 knots and the ebb current flows SSW at 1 knot.

In the NW extremity of the bay near Odawara, swells begin to hit the shore a few days before a typhoon reaches it, and when the center of a typhoon actually passes, high tides occur, sometimes causing substantial damage.

Caution.—Submarine exercises are conducted in Sagami Wan, N of a line joining Joga Shima and Kawana Saki, a point 25 miles SW.

Vessels should use extreme caution while transiting in the vicinity of position 35°10'N, 139°25'E due to naval operations which may involve frequent maneuvers.

3.34 East coast of Sagami Wan.—There are many coves on the W side of Miura Hanto, N of Joga Shima, none of which are useful as anchorages. Miyata Wan, 3 miles N of Joga Shima, is too shallow; Shinjuku Wan (Sinzyuku Wan), 6.5 miles farther N, is exposed to WSW winds and is used as an anchorage only when winds blow from the land.

Submarine cables indicated on the chart are landed on the N shore of Miyala Wan. A light is shown in Koaziro Wan (35°10'N., 139°36'E.). A light is shown off Miura in position 35°16'N, 139°34'E.

Syonan Ko (35°18'N., 139°29'E.) is a small harbor protected on the W by Eno Shima and a causeway that extends from the island in a NNE direction about 0.2 mile to the mainland. A light stands on the mainland, 0.8 mile NE of Eno Shima Light. There are depths in the outer harbor up to 7m. There is a yacht marina enclosed by three breakwaters. Vessels should navigate with caution when approaching from the S in order to avoid Kamo Ne, a shoal with a least depth of 1.5m. Kamo Ne lies close S of the light on the breakwater extending from the SE end of Eno Shima.

3.35 West coast of Sagami Wan.—Sagami Gawa flows into Sagami Wan, about 5.5 miles W of Syonan Ko. Teruga Saki lies about 2.5 miles farther W. This coast is flat and sandy.

Uba Shima (Ubaga Shima) is a group of rocks lying about 1 mile offshore, 2.5 miles ESE of the mouth of Sagami Gawa. Hira Shima is a chain of rocks lying 1 mile NW of Eboshi Iwa, the largest island of the Uba Shima group.

Odawara (35°15'N., 139°10'E.), a small village situated 8.5 miles WSW of Teruga Saki, is fronted by a basin protected by a breakwater.

Aspect.—A conspicuous cliff is located about 3.5 miles NE of Odawara.

Signals.—Storm signals are displayed in the village.

3.36 From Odawara, the coast trends S about 6 miles to Manazuru Misaki, a point which projects 1.5 miles E from the mainland. A hill, 128m high to the top of the trees, is located near the E extremity of the point.

Kasa Shima, 18m high, is located 0.25 mile SE of Manazuru Misaki.

Manazuru Ko (35°09'N., 139°09'E.) is a small harbor protected by two breakwaters, situated on the N side of Manazuru Misaki. The town is situated at the head of the harbor. There are quays inside the breakwaters with depths of 2 to 5m alongside. Two radio masts stand on a hillock SE of the town and storm signals are displayed.

3.37 West side of Sagami Nada.—The W side of Sagami Nada is backed by Izu Hanto and extends from Manazuru Misaki SSW 37 miles to Iro Saki, the S extremity of Izu Hanto. This coast is indented by numerous small bays and is backed close inland by a mountain range that parallels the shoreline for much of its length.

There are no dangers charted outside the 200m curve, which lies from 0.25 mile to 6.75 miles offshore.

Winds—Weather.—Along the W coast of Sagami Nada the seasonal winds are NW in winter, NE or SW in spring, and SW in the summer. Along the coast it is warm in the winter, as the seasonal winds are obstructed by the chain of mountains on Izu Hanto, and because of the effect of the Kuroshio.

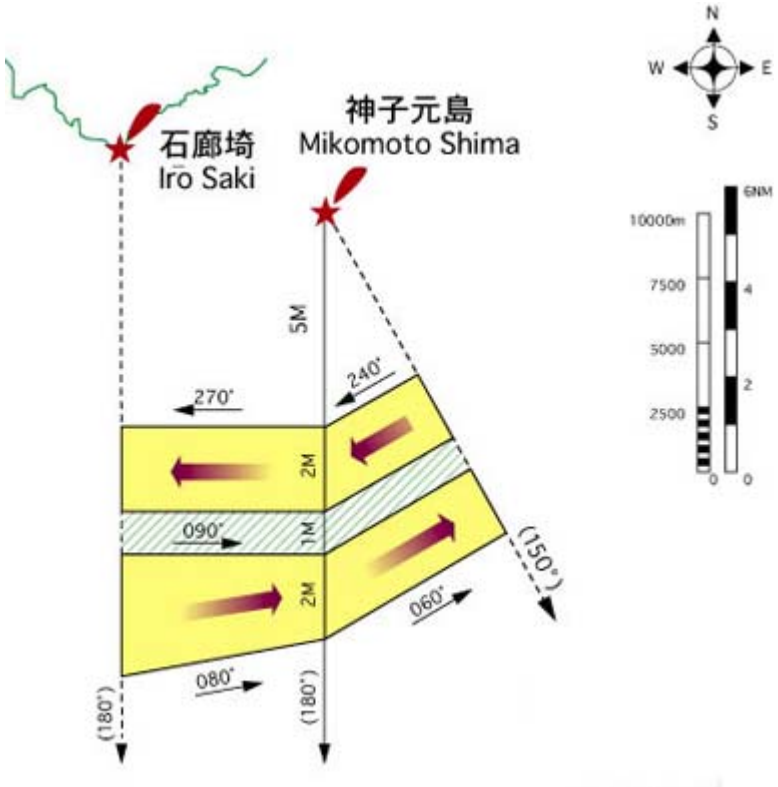
In the vicinity of Ajiro Ko the winds are N or W in winter, the wind speed is fairly low and most days are clear. In spring N or NE winds blow; in June, it is mostly S; from July to autumn NE winds dominate.

Near Mikomot Shima. the weather is especially changeable due to the geographical features. Strong SW winds change to strong NE winds, and suddenly reverse directions with no advance indications. Due to the strong winds and the strong oceanic and tidal currents, the sea in the area often develops violent swells and waves.

Near Iro Saki, the W wind in winter and the E wind in summer dominate. There are many days of strong winds in winter, and during a typhoon, gusts of more than 87 knots have been recorded.

Tides—Currents.—Between Izu Hanto and O Shima, there is a tendency of a drift to the W during HW and to the E during LW; the flood current flows WSW and the ebb current ENE. The velocity of the tidal currents in this area is fairly high, and it sometimes reaches 3 knots when the ebb tide current coincides with the ocean currents.

The flood tidal current not only loses its velocity through contact with the ocean current, but sometimes it overcomes the ocean current and creates a SW flow. For navigation in this area, the effect of the resultant flow of tidal and ocean currents must be taken into account. Near Izu Hanto, the flow depends completely on tidal current, and its velocity becomes about 1 knot.



Courtesy of Japan Captains Association

Mikomota Shima—Voluntary Traffic Separation Scheme

Near Mikomoto Shima, the flood tidal current flows to the W and the ebb tidal current flows to the E. The directions change about 2 hours after the LW and HW. The maximum velocity of the E flow, during the spring tides, is more than 3 knots, and it was once observed that the current flowed to the E all day with a maximum velocity of 5 knots. Rapid currents caused by an irregular sea bottom are sometimes found NW and N of Mikomoto Shima.

3.38 Yoshihama Hakuchi (35°08'N., 139°08'E.) is an open bay situated W of Manazuru Misaki and the coast 2.5 miles W, in front of Yoshihama. Its depths are 10 to 20m, sand and mud. Vessels with local knowledge can obtain temporary anchorage off the village with an offshore wind.

Two chimneys on the SW entrance point to the bay are prominent.

From Yoshihama Hakuchi the coast trends 3 miles SSW to Atami.

Atami Ko (35°05'N., 139°05'E.) is a small basin with depths up to 8m that lies in the SW corner of Atami Hakuchi. It is protected from the NE by an area of reclaimed land extending NNW from Uomi Saki, and by an outer breakwater projecting NNE from the N end of the reclaimed land. A light stands on the NNW end of the reclaimed land. Within the basin are two quays used by ferries, with depths alongside 1.4 to 4.8m. Three detached breakwaters lie between 0.1 to 0.5 miles N of the basin protecting small jetties extending from the shore.

A white tower at the top of a mountain, 254m high, situated close W of Uomi Saki, is conspicuous. Iwado Yama (Iwato Yama), 734m high, rises 2.5 miles NNW of Uomi Saki.

Temporary anchorage can be obtained in offshore winds, in a depth about 14m, mud and sand, off Atami.

Ajiro Ko (35°03'N., 139°05'E.) is entered between Egawa Saki and Iso Saki, about 1 mile NW. The port is open to the NE, but is the best harbor on the E side of Izu Hanto. The inner harbor is protected by breakwaters. A light stands at the head of the N breakwater.

Tides—Currents.—The mean range of tide at Ajiro Ko is 0.8m and the spring range is 1.1m.

Signals.—Local storm signals are displayed at Ajiro Ko.

Anchorage.—Good anchorage can be had off the town of Ajiro, on the W side of Egawa Saki, in a position about 0.4 mile W of the point. The depth is about 41m, sand and mud.

Caution.—Fishing nets may be laid throughout the year in Ajiro Ko and its approaches.

3.39 Hatsu Shima (35°02'N., 139°10'E.), a low flat island 51m high, is located about 3.3 miles E of Ajiro Light. A light shown from a white cylindrical concrete structure, 15m high, is situated in the SE part of the island. The island is surrounded by a rocky coast, and a 6.4m patch lies close off its NW extremity. A submarine pipeline lies between Izu Aziro Light and Hatsu Shima.

From Egawa Saki, the coast trends 2.5 miles S to O Saki, which rises to a height of 157m close within.

Ito Ko (34°58'N., 139°06'E.) is a small artificial harbor situ-

ated close W of a point that lies 2 miles SSE of O Saki.

Teishi Shima, a small islet 40m high, lies on the foul ground that extends about 1 mile E of the S entrance point of Ito Ko.

A submarine volcano lies in a position about 1 mile N of Teishi Shima.

The bay that is formed between O Saki and Teishi Shima is obstructed with a number of fish havens.

From Ito Ko, the coast trends 2 miles SE to Kawana Saki, then 4 miles SSW to Nichiren Saki.

Komuro Yama, 321m high, lies 1.25 miles SW of Kawana Saki, and Omuro Yama, 589m high, rises 3 miles farther SW. Both hills are rounded, but Komuro Yama is heavily wooded while Omuro Yama is grassy.

From Nichiren Saki the coast trends SSW about 8.5 miles to Inatori Saki (Misaki). A hotel on the N side of Inatori Saki is conspicuous.

3.40 **Inatori Ko** (34°46'N., 139°03'E.), a small artificial harbor, lies on the N side of Inatori Saki. The harbor is protected by four breakwaters, one of which is detached. A light stands at the head of each of the N and S breakwaters and at the N end of one of the detached breakwaters.

Anchorage is afforded to small vessels in Inatori Ko except when the wind is between NE and E. Anchorage may be obtained in a position about 0.3 mile ENE of the head of the N breakwater.

From Inatori Saki, the high bold coast trends 7.25 miles SSW to Tsumeki Saki. For most of this section of the coast, it is steep-to and bordered by flat rocks.

Shoal water fringes Tsumeki Saki to a distance of 0.4 mile, and a rock, 33m high, is located on this shoal area about 0.2 mile NE of the point.

Tsumeki Saki is the E extremity of SuSaki Hanto, which forms the E shore of Shimoda Ko (Simoda Ko).

From Tsumeki Saki, the S coast of SuSaki Hanto trends 1.5 miles WSW to Susari Saki. This coast is indented by several coves and is fringed by a number of islets and sunken rocks extending up to 0.5 mile in places. A light shown from a round concrete tower, 8.2m high, is situated on Susari Saki.

Shimoda Ko (Simoda Ko) (34°40'N., 138°57'E.)

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3.41 Shimoda Ko consists of a town that sits on the W side of a river in the NW part of the bay that is entered between Susari Saki and Norosi Saki, about 0.9 mile NW. A line drawn between these two points forms the harbor limits. The harbor is protected by two breakwaters. One extends WNW about 0.2 mile from a position on shore, 0.6 mile N of Susari Saki. The other breakwater extends E from a position close S of the river's mouth to an islet and then about 45m E of the islet. The head of each breakwater is marked by a light. A detached breakwater extends SE from the vicinity of the cape of Akanejima, close N of the harbor limit.

Winds—Weather.—East winds are dominant during the summer and fall; Northwest Monsoon winds prevail during the winter. During the winter the port is protected against winds by the mountains behind it. Vessels may obtain weather reports from the Maritime Safety Office.

Tides—Currents.—The mean range of tides at Shimoda Ko is 0.9m; the spring range is 1.2m.

Depths—Limitations.—Depths range from 37m in the entrance to 5.5m in the anchorage area. Within the mouth of the river, depths are less than 3.5m.

Aspect.—Take Yama, 181m high, rises close inland on the N side of the harbor. A hotel 0.4 mile NNW of Norosi Saki is a good mark both day and night. Akane Shima, 87m high, whose S side is a steep red cliff, is located close within the W entrance point of the harbor.

Anchorage.—This port is congested, especially in winter, when the W winds prevail, or during a typhoon. Occasionally vessels that arrive late may not be able to enter.

An area prohibited to anchoring, the limits of which are best seen on the chart, lies in the approaches to the port and extends inside the S breakwater.

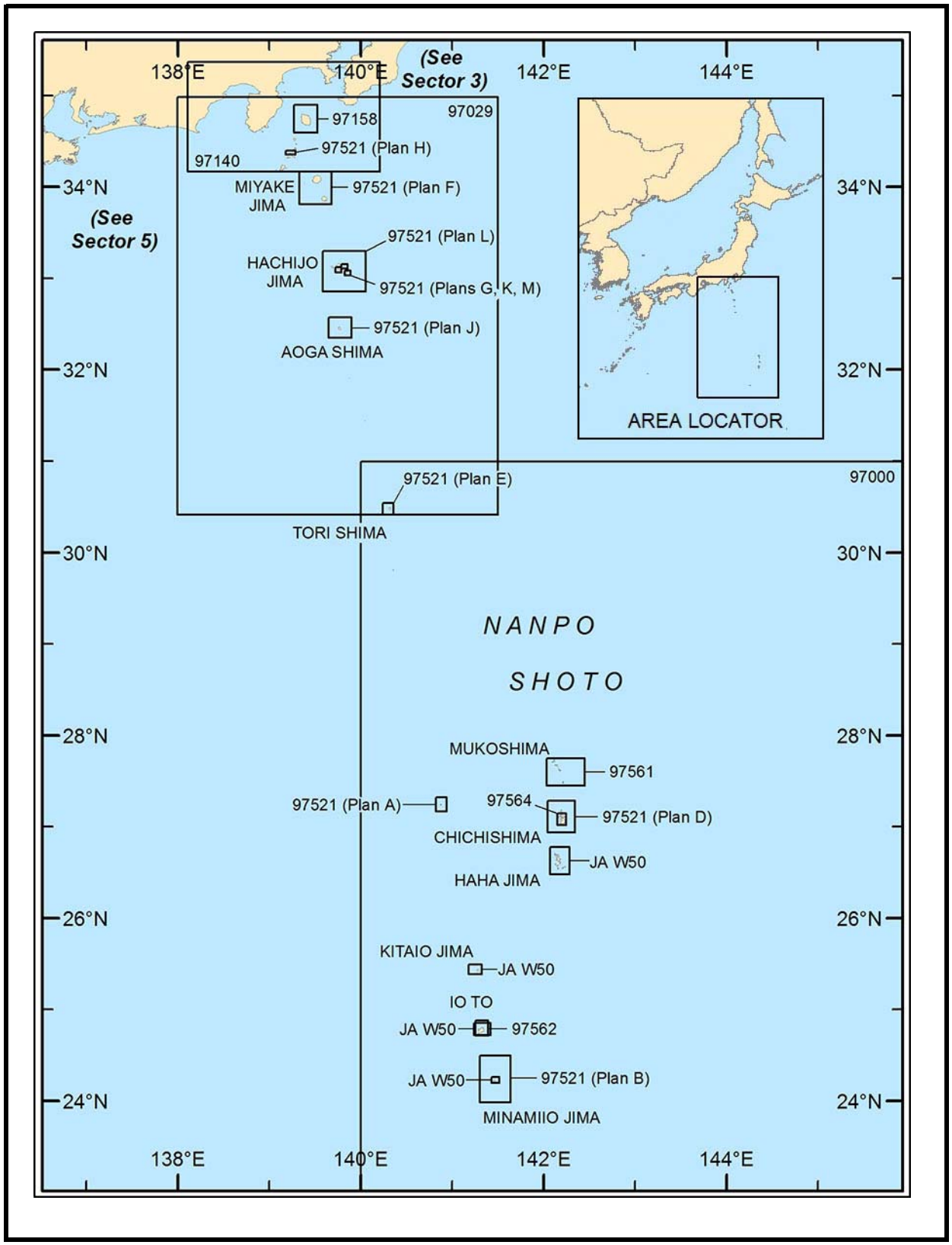
3.42 From Norosi Saki, the coast extends 6 miles SW to Iro Saki, the S extremity of Izu Hanto. Iro Saki is a high steep rocky cape which is marked by a light shown from a white cylindrical concrete tower, 11m high.

Mikomoto Shima (34°34'N., 138°57'E.) is a rocky islet, 32m high, that lies 5 miles SE of Iro Saki. A light is shown on the island; it is displayed from a round stone tower 23m high.

It has been reported that Mikomoto Shima is a good radar target up to 17 miles.

Caution.—The area N of Mikomoto to the mainland is fouled with rocks and wrecks. It is recommended that large vessels pass seaward of Mikomoto Shima when transiting this area.

A voluntary traffic separation scheme has been established by the Japan Captains' Association SE of Mikomoto Shima. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation. further information can be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **4** — CHART INFORMATION

SECTOR 4

NANPO SHOTO

Plan.—This sector describes the islands in the Nampo Shoto group in a N to S direction, with Izu Shichito the first group of islands described, then Ogasawara Gunto and Kazan Retto in order. The off-lying reef Okino-tori Shima (20°25'N., 136°05'E.) is described, then the off-lying island of Minamitori Shima (24°17'N., 153°59'E.).

General Remarks

4.1 Nanpo Shoto, a chain of islands, extends about 650 miles S from O Shima, previously described in paragraph 3.10, to Minami-Io Shima. The Nanpo Shoto are volcanic islands and eruptions of submerged volcanoes frequently occur, with new shallows being formed from time to time.

Winds—Weather.—Izu Shichito (Izu Shoto) is a warm area with considerable rainfall. It is considered one of the windiest areas in Japan, with over 20 days of gale strength wind per month during the winter. The air temperature is high throughout the year. In the winter the air temperature is somewhat higher than Tokyo; however, strong winds make the air feel cooler.

Ogasawara Gunto is dominated by the monsoons. During the cold season, December to March, the winds are NE to N, while during the warm season, April to November, SE winds prevail. Because it is on the N edge of the NE trade wind belt, this area frequently has NE winds in April and September as the monsoons weaken. Air temperatures are higher than in Izu Shichito throughout the year.

The four seasons in the Ogasawara Gunto vary only slightly. A warm and a cold season can be distinguished, but neither registers extreme temperatures. On Chichi Shima, the average temperature ranges between 17°C and 20°C during the cold season, December to March. During the warm season, April to November, the hottest period is from July to September, when the average monthly temperature is 27°C.

Tides—Currents.—The main current of the Kuroshio generally flows ENE in the vicinity of Miyake Shima. When a cold water mass is present off Enshu Nada, the current flows W of Miyake Shima, otherwise it flows to its N.

Generally, tidal currents flow E and W between the islands. When they are not affected by ocean currents, the tidal currents flow 1 hour after HW and LW. Tidal currents between the islands may actually flow in several directions depending on the topography. In the narrow channels there are places where the maximum velocities may range from 2 to 4 knots.

The ocean current in this area affects the tidal currents; directions, velocities, and the reversing times are irregular. Near Izu Shichito, the NE or E set of the ocean current is so strong that tidal currents are suppressed, and at times there is no W tidal current. In the area between To Shima and Kozu Shima, the tidal currents flow E and W from about 1 hour after LW or HW, until 1 hour after the next HW or LW, with maximum velocities reaching 3 to 4 knots in places.

Tidal characteristics of the Nanpo Shoto are virtually identical to those along the S coast of Honshu. High water occurs earliest in the N, gradually later moving S. The range is 1m in the N and 0.5m in the S.

Within the area of predominating tidal currents, to the S of the Izu Shichito, conditions in the vicinity of Mukoshima Retto, a subgroup of the Ogassawara Gunto, situated near the S end of the chain, the flood tidal current flows in a direction between NNW and WSW, with a velocity of about 0.5 to 2.3 knots, and the E ebb current has a strength of about 1 to 3.5 knots. Near and between the islands of Chichishima Retto, another sub-group of the Ogasawara Gunto, the flood and ebb current take the usual W and E directions, but they may follow the E and W coasts of the islands in a N to S direction with weakened velocity. The same conditions are found in the vicinity of Hahasshima Retto, the islands about 20 miles farther S that form the outermost subgroup of Ogasawara Gunto.

Caution.—When navigating in the vicinity of Nanpo Shoto, vessels should bear in mind that this is an active volcanic area and even though the area has been surveyed, there may be dangers that have not been reported.

Undersea and visible volcanic activity may be apparent in the vicinity of Nanpo Shoto. Floating pumice, discolored water, changes in water temperature and magnetic anomalies are all potential signs of volcanic activity.

Intense and continuous volcanic activity was reported in 1984 through a stretch of area about 30 miles wide, commencing 65 miles S of Hatizyo Shima and running 480 miles SSE to the vicinity of Minami Io Shima, then SE to Asuncion Island, the N extremity of the Mariana Islands.

Due to the earthquakes that occurred on 11 March 2011, offshore of the Tohoku region in Japan, and the resultant tsunami, variation of the coastline and seafloor must be considered and caution exercised. Wrecks and obstructions may be displaced from previously charted positions and new obstructions experienced by vessels navigating the Nanpo Shoto islands and harbors. Breakwaters may be altered in position and length and many aids to navigation destroyed. The charts of these areas have been significantly affected and will be updated as surveys and time allow.

Izu Shichito

4.2 **Izu Shichito** (Izu Shoto) (32°20'N., 139°50'E.) is the N group of the chain of islands known as Nanpo Shoto. The group extends SSW from O Shima to Sofu Gan, a distance of 300 miles. Many of the islands reveal continuing volcanic activity, such as the pouring forth of steam and sulfurous fumes, the appearance of new cones, and eruptions and earthquakes of varying intensity.

The islands are generally wooded and there are sand beaches in places. There is also heavy surf and in most anchorages there is difficulty in landing.

O Shima (34°44'N., 139°24'E.), the N island in the Izu Shichito group, was previously described with the approach to Tokyo Wan in paragraph 3.10.

Motomachi Ko (34°45'N., 139°21'E.) is situated in the central portion of the W coast of O Shima. The harbor is protected by a breakwater marked by a light at its head. The port is primarily a fishing and cultivation harbor.

4.3 **To Shima** (34°31'N., 139°17'E.) has a slightly conical summit which rises to a height of 508m and lies about 11 miles SSW of O Shima and about 22 miles ESE of Iro Saki. **Toshima Ko** (34°32'N., 139°17'.), on the N coast of To Shima, is protected by breakwaters. The harbor is primarily for ferries and small vessels.

Tides—Currents.—The current sets NE past both sides of To Shima at rate of 2 to 3.75 knots. Off the N point of the island it forms eddies and sets E at a rate of 4 knots.

Depths—Limitations.—A pier, with depths alongside of 2.6 to 8.2m, extends 183m N of the N side of To Shima.

Aspect.—The island is covered with vegetation and has many camellia trees. The sides of the island consist of steep cliffs, and huge volcanic rocks cover the coastline.

To Shima Light is shown from the N side of the island.

Anchorage.—When the sea is calm, vessels of 200 to 300 gt may anchor about 119m off Toshima Ko, on the N coast, in depths of 20 to 25m, rock.

4.4 Udone Shima is a wooded, cliffy island, 210m high, located about 2.3 miles SSE of To Shima. There are many rocky islets that lie within the 20m curve that extends from 0.15 mile off the S side to 0.6 mile off the NW extremity.

Nii Shima (34°23'N., 139°16'E.), marked at its southernmost tip by a light, lies about 2.5 miles S of Udone Shima. The island is about 6 miles long in a N to S direction. It rises to a height of 429m in the N part and 301m in the S part; low flat land lies between these hills. Habushi Ura is a sandy beach, 4.5 miles long, located on the E side of the island; other parts of the coast consist mostly of steep cliffs.

Niishima Ko is located on the middle of the W side of Nii Shima. It is a port of call for scheduled ships. It consists of a breakwater with a jetty extending seaward to depths of approximately 10m. The jetty is unusable in N to W winds. Hommura is situated on shore here. A high sand wall, built onshore to protect the settlement from the W wind, makes it impossible to see most of the settlement from seaward.

The S part of the beach at Niishima Ko is a conspicuous slope of white sand extending to the foot of a hill, 132m high.

Niishima Ko affords anchorage, in depths of 10 to 20m, to vessels with local knowledge over a sandy bottom; the holding ground is not good and the anchorage is only safe during E winds. During winds from the S and W, temporary anchorage can be obtained off the E side of Jinai Shima, an islet lying off the W extremity of Nii Shima. Two pairs of beacons in line indicate the limits of the prohibited anchorage in the vicinity of the landing place of a submarine cable.

Asa Ne, which dries at 1.5m, is an isolated rock lying 2.5 miles N of Honmura. It is steep-to on its NW side, but reefs extend from its E side.

4.5 **Shikine Shima** (Sikine Shima) (34°19'N., 139°13'E.), the only flat-topped island in the Izu Shichito, is located 1.5 miles SW of Nii Shima. Shikine Shima is about 105m high. The coastline is well-indented with a number of coves which afford shelter for small vessels from various winds. The coast is mostly rocky beach and is cliffy on the W side. Taibusa Iwa, close S of the SW extremity of the island, is a steep pointed rock 53m high.

Small vessels with local knowledge can obtain shelter from all winds by selecting whichever anchorage around the island gives a lee.

A submarine cable is laid between Shikine Shima and Nii Shima.

Kozu Shima (34°12'N., 139°09'E.), 5 miles SSW of Shikine Shima, rises to a height of 574m near its center; this summit is the W edge of an extinct volcano.

Two islets lie about 0.8 mile off the E extremity of the island. The S islet, which rises to a height of 87m, is conspicuous.

Onbase Shima is a group of rocks lying about 2.3 miles W of the SW extremity of the island; the largest rock in this group is 65m high. All except the S edge of these rocks are covered by the red sector of Ichinokubi Saki Light, situated on the SW side of Kozu Shima.

A light is shown on the SE side of the island by Tako Wan, a small bay with a sandy beach and bottom.

Tides—Currents.—In a position 2 miles W of Kozu Shima the tidal current is NW on the rising tide and S on the falling tide. Between Kozu Shima and Shikine Shima the tidal current is N on the rising tide and E on the falling tide. The E current is the stronger and has a rate of 3.75 knots off the N end of Shikine Shima.

Kozushima Ko (34°12'N., 139°08'E.) is situated near the center part of the W coast of Kozu Shima. There is a small harbor protected by breakwaters. There is an entrance, 35m wide, on its N side. A quay, with depths of 4.8 to 7.9m alongside, lies on the N side of the W breakwater. A light stands on the quay near its center. The six chimneys of the power company may be seen to the NE of the boat harbor entrance.

4.6 **Miyake Shima** (34°05'N., 139°32'E.) is a roughly circular dormant volcano located 17 miles SE of Kozu Shima. The summit of the island, 814m high, is frequently obscured by clouds from May to July.

Ha Hana is the SW extremity of the island; a conspicuous hill covered with trees rises to a height of 117m, about 0.6 mile N of the point.

Onohara Shima, a small group of pinnacle rocks, lie about 5 miles W of Ha Hanna. When seen from the NNW the group appears as a small sailing vessel, and when viewed from the SW they appear as one rock. On a clear day, the rocks may be sighted from a distance of more than 20 miles.

Vessels can anchor off the SE side of Miyake Shima, in 30m, or, in 14 to 16m, with the light on the breakwater at Tsubota Gyoko bearing 315°, distant about 0.5 to 0.3 mile, respectively. The bottom is unsuitable for anchorage between Yoko Ne and Tsurune Misaki to the SE. During S winds, vessels can anchor on the N side of the island, in 15m, sand, about 1.3 miles ENE of the NW extremity of the island.

A light is shown on the coast close W of Akron Saki on the N coast.

The depths for a distance of almost 1.3 miles off the NE side

of Miyake Shima are irregular; this vicinity should be avoided.

Reference should be made to the chart for exact location of the submarine cables in this area.

Mikura Shima (33°53'N., 139°36'E.), the summit of which is 853m high, is located 9.5 miles SSE of Miyake Shima. From a distance the top of the island appears to be rounded, but it is frequently obscured by clouds.

Shoji Ne, close off the N extremity of Mikura Shima, is 16m high, and Moto Ne, close off the S extremity, is 67m high. Numuri Ne, 19m high, lies close offshore on the SW side of the island. About 0.5 mile N of Numuri Ne, on Mikura Shima, there is a waterfall visible from seaward.

The village of Sato is situated on the NW side of the island; there is a jetty, used by the ferry, at Mikurashima Ko, at the foot of the cliff below the village.

Tides—Currents.—An ENE current with a rate of 3.5 knots has been observed off Mikura Shima.

Caution.—Zeni Su (33°57'N., 138°49'E.) are two groups of rocky islets located in the middle of a shoal area, about 20 miles SW of Kozu Shima. The two groups of rocks are about 1.5 miles apart in a NE to SW direction. The tallest rock in the N group is 6.5m, and in the S group the tallest rock is 13m. A shoal depth of 21m lies about 3.5 miles SSW of Zeni Su.

These rocks are the most dangerous of the islands and rocks lying S of Sagami Nada.

Inamba Shima (33°39'N., 139°18'E.) is an uninhabited rocky islet lying 19.5 miles SW of Mikura Shima. Its E side is a steep cliff and its W side is a gentle slope. The water around the islet deepens rapidly. The islet, 75m high, is reported to be radar conspicuous at 14 miles.

4.7 Hachijo Shima (Hatizyo Shima) (33°06'N., 139°48'E.), located 42 miles SSE of Mikura Shima, is 8 miles long in a NW to SE direction. Nishi Yama, 854m high, is located in its NW section and Higashi Yama, 701m high, is in its SE section, with a flat area about 90m above sea level lying between the two mountains. The coastline is fairly even and mountains come down to the coast, making it cliffy in most parts. A light is shown close SE of Kanado within Yaene Ko. The cliffs on the SE side are particularly steep, with maximum heights of 200m. Mihara Yama is 70m high with a flat top on the SE side.

A prominent radio mast stands at the E side of Mihara Yama.

There are no dangerous reefs outside the 20m curve except for an 11m reef, 0.75 mile SSE of the S extremity of the island.

Ko Shima is a small island, 617m high, that lies 2 miles W of the W extremity of Hachijo Shima. The islands are separated by Koshimano Seto, which is deep and free of dangers.

Fishing nets may be laid around Hachijo Shima up to 3 miles offshore at night from February to October.

Winds—Weather.—On Hachijo Shima, the W winds prevail throughout the year, especially during winter when they blow on the average of 20 days a month during the monsoon season. The winters are generally warm with the coldest month registering about 10°C. As the summers are fairly cool, the climate is mild throughout the year.

Precipitation is especially high even for Izu Shichito; the annual total being more than 2,920mm, with the month of October having the greatest amount with a maximum of 380mm. Heavy rainfall and W winds in winter are the hallmarks of Izu Shichito.

Tides—Currents.—The flood tidal current sets NW following the contour of Hachijo Shima, and the ebb tidal current sets SE. Reversal of flow occurs about the time of HW and LW, although this is affected by both the ocean current and the weather.

On the N side of the island tidal races and overfalls occur during ebb tides. Tidal currents in Kaminato Ko, on the NE coast, have no slacks and are affected in their velocity and direction by the weather and the ocean current. Visually the flood tidal current sets NW along the coast, with reversal occurring at the time of LW and HW. The maximum velocities for both the ebb and flood current is about 2.5 knots.

About 1 mile E of Uro Ne in Borawazawa Hakuchi, the current makes a complete circle in 12 hours, flowing in a counterclockwise direction. The SW setting current reaches its maximum velocity of 1.3 knots 3 hours after LW, while the NE current reaches its highest velocity of 0.5 knot 3 hours after HW.

Overfalls occur during ebb tides off the S extremity of the island, and a rapid SW current occurs during ebb tide near the SW end of the island.

The flood tidal current sets NNW at 2.5 knots and the ebb tidal current sets SSE at 2 knots, 1 mile offshore of Yaene Ko. Reversal occurs at the time of HW and LW.

In Ko Shimano Seto the flood current sets N and the ebb current sets S. At times, the S setting current may be completely overwhelmed by the ocean current.

Abnormal magnetic variation may be experienced in the vicinity of Hachijo Shima.

4.8 Kaminato Ko (33°08'N., 139°49'E.), located on the NE coast of Hachijo Shima, is open N and E, and is only protected from S or W winds. Hatsuzo Bana, close SE, is piled up with reddish-colored lava and has numerous dangers extending 0.25 mile offshore from this point.

Aspect.—Katto Yama, 200m high, lies 1 mile W of Hatsuzo Bana and is a good mark for approaching Kaminatu Ko, as is a 195m high hill close NW.

The shores of Kaminato Ko consist generally of black uneven volcanic rocks. A breakwater projects NNW from the E entrance point of the inner harbor and there is a quay, 60m long, on the W side of the breakwater. A light also stands at the head.

A light stands 0.25 mile SSW of the E breakwater head. The boat harbor was dredged to 3m in 1973. There is good anchorage, in 35m, coarse sand, with Katto Yama bearing 237° and Hatsuzo Bana bearing 153°. Another good anchorage, in a depth of 23m, sand and rock, is located on the range line with Tatsunega Bana bearing 307°.

Vessels may drag anchors in these anchorages when a ESE to E wind is accompanied by ocean swells.

A submarine cable runs N for 0.75 mile to a wave measuring instrument off the coast by Katoure Bana. Another submarine cable is laid ENE from Kaminato Ko.

A pier, with depths of 4.9 to 10m off its S side, stands about 0.7 mile SE of Kaminato Ko.

Borawazawa Hakuchi (33°04'N., 139°51'E.) is an open roadstead situated on the SE coast of Hachijo Shima. It is protected from W to NW winds, but it is not protected from the heavy swells that set into the bay.

Uro Ne are two black rocks, aligned E to W, that lie 0.5 mile SSE of the boat harbor. The area around the rocks is foul.

Yaene Ko (33°06'N., 139°46'E.) is situated between Nakona Hana (Miko Saki), 3 miles NW of the S extremity of the island, and Funado Hana, 2.5 miles farther NNW. The E side of the bay is deep with a sand bottom, and is protected from E to N winds. A boat harbor has been excavated from the black rock of the shore.

Anchorage can be obtained by vessels with local knowledge, in about 27m, sand, with the meteorological observatory about 0.8 mile inland bearing 042°, and Horikiri Yama, the 215m hill, about 0.9 mile N of Nakona Hana, bearing 126°. Another good anchorage, in 23m, sand, can be found with the breakwater light bearing 072° and Funado Hana bearing 311°.

4.9 Aoga Shima (32°27'N., 139°46'E.) is a dormant volcanic island located 35 miles S of Hachijo Shima. The island is about 6 miles in circumference and rises to a height of 423m in the S part of the island; steam discharges in places from this summit. The island is bordered by steep cliffs on all but the SW side. Scheduled vessels call here once each month, but are often canceled due to bad weather.

Kuro Saki is located on the N side, where a black pointed rock, 2m high, lies close offshore, enabling the landing place to be identified.

A light is shown in the vicinity of Aoga Shima Ko.

Anchorage can be obtained by vessels with local knowledge, in a depth of about 27m, rock, with Kuro Saki bearing 266°. The holding ground is not good, but vessels can remain at anchor with a wind force of 5 from between SSW and SW. If the wind veers to WSW, a berth about 0.8 mile S in a depth of 46m is recommended. The sea bed is foul off Aogashima Ko.

Beyoneisu Retsugan (31°53'N., 139°55'E.) is a group of rocks 32 miles SSE of Aoga Shima. The highest of these rocks lies in the N part, 9.9m high, and can be identified at 10 miles on a clear day. When the swells are high, they are easily seen because of breakers in this area.

Caution.—It is dangerous to navigate in an area with a diameter of 21 miles that is centered 5 miles ENE of Beyoneisu Retsugan. Extensive submarine volcanic action has occurred in this area, with islands appearing and disappearing at irregular intervals. Vessels navigating in the area of a volcano should keep at least 10 miles from the area, leaving the area immediately if there is any indication of an impending eruption.

Generally, just prior to an eruption the surface immediately above the volcano forms a water dome with white smoke rising from the center. However, in many cases eruptions have taken place without such a sign, and the area can be completely calm after an eruption, leaving no indication that it ever took place.

4.10 Sumisu Shima (31°27'N., 140°02'E.) is a large pointed rock, 136m high, located 30 miles SSE of Beyoneisu Retsugan. Vessels have reported sighting the rock from 23 miles to the SE, 2 hours before sunrise. It has been sighted at 6 to 7 miles on a clear moonless night and at 15 miles in moonlight.

Several rocks are found in the vicinity of Sumisu Shima, and Shira Ne, with deep water around it, lies about 4 miles NNE of Sumisu Shima; Shira Ne is steep-to and in calm weather shows a white color. When tidal currents are strong there are tide rips in the vicinity and the sea breaks over the rock.

Caution.—South and SW of Sumisu Shima, islets and rocks, which subsequently disappeared, have been reported at various times. The ocean floor probably changes considerably in the area under the influence of volcanic activity. The area should be avoided.

It was reported (1972) that discolored waters existed in position 31°29'N, 141°14'E, a position about 61 miles E of Sumisu Shima.

4.11 Tori Shima (30°29'N., 140°19'E.), an active volcanic island 60 miles SSE of Sumisu Shima, can be distinguished from 40 miles on a clear day. The central crater of the island is 403m high; it emits steam. The periphery of the island is mostly crumbled cliffs, except for a small portion in the NW, and rocks are scattered along the coast, which is extremely sheer. The white electric cables, which extend from the disused meteorological station on the W coast to the high altitude observation tower, are conspicuous.

The island has been set aside as a natural wild bird preserve.

Several shoal areas are charted in the vicinity of Tori Shima.

Sofu Gan (29°48'N., 140°21'E.) is a solitary, conspicuous black rock 100m high, located 40 miles S of Tori Shima. There are patches of guano on the rock. Sofu Gan can be seen from 25 miles on a clear day.

Ogasawara Gunto

4.12 Ogasawara Gunto (Bonin Islands) (27°09'N., 142°05'E.) consists of numerous islands and islets lying SSE of Izu Shichito, extending from 27°45'N, to 26°30'N. This group is divided into three main groups; from N to S they are Mukoshima Retto, Chichishima Retto, and Haha Retto. Nishino Shima, an isolated island, lies about 70 miles W of Chichi Shima. It is reported (2014) this island is undergoing a volcanic eruption.

Ogasawara Gunto is volcanic and has many hills and peaks. The valleys are steep and deep and there are few flat places. The land is mostly rock, but it is covered by black soil and a number of areas are suitable for agriculture.

A mountain range runs N and S through the islands. Its peaks are barren and are mostly bare rocks, but grass and small trees are found in some places. Tropical vegetation, such as hemp and palm, is found on the mountain sides.

Mukoshima Retto

4.13 Mukoshima Retto (27°37'N., 142°11'E.) is located at the N end of the Ogasawara Gunto, about 156 miles SE of Sofu Gan. The principal islands of this chain include Kitano Shima, Muko Shima, Nakadachi Shima, and Yome Shima, in that order from N to S.

Tides—Currents.—In the Mukoshima Retto area the flood tidal current sets, in general, WSW at a rate of 0.5 to 2.3 knots, and the ebb tidal current sets E at a rate of 1 to 3 knots, changing directions at HW and LW.

In the channel between Kitano Shima and Muko Shima, the flood current sets SW at a maximum rate of 2.33 knots. In the E part of this channel the ebb current sets E at a maximum rate of 3.5 knots.

In the channel between Muko Shima and Harino Iwa, 0.7

mile SSE, the ebb sets E and the flood current sets W; both are considerable.

North of Yome Shima the flood current sets N, between 0.11 and 0.12 mile offshore, without reference to the ebb or flood tides when the tide is a maximum. South of the island the ebb current sets mostly E.

Kitano Shima (27°43'N., 142°06'E.) is located at the NW end of the Mukoshima Retto. Dangerous rocks are scattered to the NE of Kitano Shima. Ichino Iwa, lying 1.5 miles NNE of Kitano Shima, is the farthest N of the rocks. The tidal currents are strong among these rocks.

4.14 Muko Shima (27°41'N., 142°08'E.), the largest island in Mukoshima Retto, lies 2 miles SSE of Kitano Shima. O Yama, the highest point on the island, rises to 88m in the E part of the island. Minamihama, on the SW side of the island, provides good anchorage for small vessels with local knowledge. There are many rocks in the bay that are dangerous when SW winds prevail, due to high swells and waves.

Harino Iwa, 0.7 mile SSE of Muko Shima, rises to a height of 136m in the N part and 80m in the S part.

Nakadachi Shima (Nakodo Shima) (27°38'N., 142°11'E.), located 2.5 miles SE of Muko Shima, has two peaks, Tsurugi Yama and Byobu Yama, that rise to a height of 121m and 155m, respectively.

Fukuro Minato is a small rock-infested bay that penetrates the island's S side. It will protect small vessels with local knowledge from all except S winds.

Yome Shima (27°30'N., 142°12'E.), located 7 miles SSE of Nakadachi Shima, is mostly rocky and precipitous, but there are small beaches on either side of the S extremity of the island. There is a small open bay on the NE side of the island where landing can be affected; this beach is steep and there are numerous above-water and sunken rocks.

Yome Shima rises to a height of 67m and Ushiro Shima, off the E side, and Mae Shima off the SW side, rise to heights of 46m and 127m, respectively. There are several above-water rocks in the vicinity of Yome Shima and a rocky patch, with a depth of 14.6m, lies 0.4 mile W of Mae Shima.

4.15 Chichishima Retto (27°06'N., 142°12'E.) is a group of islands lying 18 miles S of Yoma Shima; the three principal islands, from N to S, are Ototo Shima, Ani Shima, and Chichi Shima. These islands fall in line 10 miles long.

These islands, surrounded by several islets, are volcanic and mountainous; their coastlines consist mostly of steep cliffs, except for one section of Chichi Shima. Landing places are few and there are always high waves along the E coast.

Tides—Currents.—To the N and S of Chichishima Retto, and between the islands, the flood current sets W and the ebb current sets E with considerable velocity, turning at HW and LW. On the E and W coast of the island chain, the currents flow N and S following the contours of the islands. In the Anishima Seto. the ebb current sets E at a rate of 4.5 knots and the flood sets W at 2.25 knots; rips occur at ebb tide.

Between Chichi Shima and Nishi Shima, the flood current sets SW or NW at a rate of 0.8 knot and the ebb current sets ENE at a rate up to 1 knot. Between Nishi Shima and Hyotan Shima the flood current sets NW and the ebb current sets SE; the rate of each is 1.5 knots.

Ototo Shima (27°10'N., 142°11'E.), the farthest N of Chichishima Retto, rises to a height of 229m in the S part. The coast is comprised of steep cliffs, but there are small beaches on the W side. A landing place is situated close S of Kitano Hana, the NW extremity of Ototo Shima.

Mago Shima, 134m high, is precipitous and covered with grass; it lies 0.35 mile NE of Ototo Shima.

Kito Iso, a flat rock 2m high, lies 0.2 mile N of Mago Shima.

4.16 Ani Shima (27°07'N., 142°13'E.), a mountainous rocky island 254m high, lies close S of Ototo Shima. The two islands are separated by Ototoshima Seto, a shallow channel that is unsafe even for small craft.

Ani Shima has few trees and its landscape is desolate; its shores are steep cliffs. The NE coast has many indentations, but it is deep, beset with waves, and lacks a safe area for anchorage.

Takinoura Wan is located on the SW coast; it lies between Sujiiwa Misaki and Hakidashi Hana, 1 mile SE. It is protected from all except SW winds, which bring in swells and waves. Vessels can anchor in Takinoura Wan, in depths of 10 to 42m, sand. A sunken rock, 10m deep, lies 0.22 mile NW of Hakidashi Hana.

Chichi Shima (27°04'N., 142°12'E.) lies S of Ani Shima and is separated from that island by Anishima Seto. Chichi Shima is the largest and farthest S of Chichishima Retto group, and is the principal island of Ogasawara Gunto. The island is 4 miles long in a N to S direction and has a width of 3 miles. The highest peak, 327m high, is located near the center of the island. The W part of the island is lower, but more uneven than the E part. The E and S coast are smooth with steep cliffs, but there are some sandy beaches toward the head of the coves.

Tatsumi Wan indents the SE coast and Maruen Wan and two other bays indent the S coast. However, all of them are open and there is no place for a vessel to land or moor. The SW coast of the island is also indented with several small shallow bays that have many drying rocks.

4.17 Futami Ko (27°05'N., 142°12'E.), situated on the NW coast of Chichi Shima, is entered between One Saki and Yayo Saki, 0.85 mile S. The bay extends about 1.3 miles NE of a line between the entrance points. Futami Ko is protected from the S by a breakwater extending W from the shore across Futami Iwa, 11m high, to the edge of the drying reef 0.24 mile NE of Omuga Breakwater; a light stands at its head.

This is a Quarantine Port, a Port of Entry, and a Local Port.

This harbor provides the best anchorage in Ogasawara Gunto. The W and S part of the bay is encumbered with submarine cables, anchorage is confined to the N and E parts of the bay, in depths of 37 to 44m. The quarantine anchorage is centered about 0.5 mile ENE of Yayo Saki.

Caution.—Kuchino Se, with a depth of 3.4m, is located near the center of the entrance to Futami Ko. There are other obstructions and dangers in the bay which may best be seen on the chart.

Nishino Shima (27°15'N., 140°53'E.), the farthest W of the Ogasawara Gunto group, lies 70 miles WNW of Chichi Shima. It is a flat island, 24m high, covered with grass. There is usually a heavy surf on all sides of the island. When seen from the NW at 10 miles, it appears as two islets. Nishino Shima is re-

ported to be radar conspicuous at 14 miles.

Discolored water was reported (1987) 16 miles SSW and 43 miles ESE of Nishino Shima.

Hahashima Retto

4.18 Hahashima Retto (26°38'N., 142°08'E.) is a group of islands lying about 20 miles S of Chichi Shima that cover an area of 11 miles long in a N to S direction. This group consists of the principal island Haha Shima, which lies at the N end of the group, and five smaller islands. The islands' coasts are steep and cliffy. In general, the water is deep near the shore, but ridges are found within 0.5 to 1 mile offshore, in the N and middle parts of the islands. These islands lie at the S extremity of a 0.1 mile bank that encompasses all the islands of Ogasawara Gunto, with the exception of Nashino Shima.

Tides—Currents.—The tidal currents in Hahashima Retto set W with rising tide and set E with the falling tide. On the E and W sides, the currents set S and N with the rising and falling tides, respectively, and generally follow the shape of the land. The current NW of Innui Saki is considerable and wave patterns occur; NW of Sawara Ne, the ebb current sets N at 1.75 knots. Near Okinohae and Jinohae, the tidal currents are especially strong; the ebb current sets NNE at a rate of 1.4 to 3.5 knots and the flood current sets SW to W at a rate of 1 to 2 knots. These currents change at HW and LW. There are tide rips in this area.

One mile off Higashi Saki, off the E coast, the flood current sets SE and the ebb current sets SW, both at a rate of 1 knot.

At the center of Aneshima Seto the flood current sets WSW at a maximum rate of 3.5 knots and the ebb current sets SE. Between Ane Shima and Imoto Shima the current always flows S or W at a maximum rate of 1 knot.

4.19 Haha Shima (26°39'N., 142°09'E.) is the largest and N island in Hahashima Retto; it is 7 miles long in a N to S direction and has a maximum width of 2.25 miles. Chibusa Yama, 462m high near the center of the island, is the highest peak of the mountain range which extends N and S.

Inui Saki, the N extremity of the island, is a cliffy point 190m high. Jinohae, 2.1m high, and Okinohae, 1.8m high, lie 0.58 mile and 0.65 mile NNW, respectively, of Inui Saki; Oni Iwa, 91m high, lies 0.18 mile NNW of the same point.

Kita Minato is entered between Inui Saki and Kita Misaki, a point 1 mile SE. A vessel of 2,734 gt has anchored in the bay, with Kita Misaki bearing 068°, 0.3 mile distant, in a depth of 29m, sand. However, tidal currents are strong and during W winds, swells and waves are heavy and it is occasionally unsuitable for anchorage; at times strong winds blow off the mountains. A sunken rock, 12.8m deep, is located about 0.3 mile NW of Kita Misaki.

Gagyu Kaku, a steep cliffy point 136m high, located 1.25 miles ESE of Kita Misaki, is the N entrance point of Higashi Minato. Sekimon Saki, the S entrance point of the bay, is a rocky cliff 130m high; it lies 0.75 mile SSE of Gagyu Kaku.

Higashi Minato is protected against winds, except from the E, by the high cliffs of the shore. A good anchorage, in 22m, sand, is situated with Higashi Yama bearing 354° and Gagyu Kaku bearing 054°. Anchorage can be taken farther out, in 29m, with Higashi Yama bearing 347°.

Okuzure Wan is an open bay entered between Sekimon Saki and Higashi Saki, a rocky point that rises to a height of 128m close inland, located 2 miles SE.

This bay is protected from SW to NW winds, but swells will enter from the E.

Anchorage.—A temporary anchorage is situated 0.4 mile off the SW section of the bay, in a depth of 27m, sand.

Higashisaki Wan is an open bay penetrating 0.5 mile to the W on the S side of Higashi Saki; the general depths in the bay are from 20 to 40m. The coast from Higashi Saki to Minami Saki, 3.25 miles SSW, consists of steep cliffs with no landing areas.

Oki Minato (Oki Ko), situated on the SW coast of Haha Shima, lies between Minami Saki and Samega Saki, 2 miles NNW. The bay is open to the W, but is protected against winds and waves from the SW.

Oki Minato is divided into two harbors. The inner harbor is situated between Samega Saki and Oki Misaki, 0.5 mile SE. Okimura Asane extends 0.45 mile WSW from Oki Misaki and blocks the entrance to the inner harbor. The inner harbor is shoal but a channel that leads to Okimura was being dredged to a depth of 4.5m. A directional light on Oki Misaki marks the fairway to avoid Okimura Asane.

Large vessels may anchor temporarily in Oki Minato with Maru Shima bearing 171° and Kita Ne, close off the N end of Muko Shima bearing 254°, in a depth of 18.3m, sand. The anchorage is calm in NE winds; however, in SE to NW winds, swells enter and cause a vessel to drag.

From Samega Saki to Inui Saki, 5 miles NNW there are several indentations in the coast, but none provide protection. Megane Iwa, 1 mile NW of Samega Saki, and Sawara Ne, 1 mile SW of Inui Saki, are two of the many rocks and islets that are charted off the W coast of Haha Shima.

Hira Shima is located 1.5 miles SSW of the S extremity of Haha Shima. There are several islets and straits charted between these two islands; these straits are narrow, with many rocks and reefs and are only navigable by small craft.

4.20 Muko Shima (26°36'N., 142°08'E.) is located 1 mile NW of Hira Shima; it is a wooded island mostly bordered by steep cliffs, and on its E and W sides there are occasional beaches of sand and rock.

Ane Shima is located 1 mile S of Hira Shima. A chain of mountains run from the N to the S along the E and W coasts. The periphery of the island consists of steep cliffs and there is no place to land. Dobu Iso, which uncovers 0.3m, lies 0.85 mile ESE of the S extremity of the island.

Aneshima Seto, between the islands Ane Shima and Hira Shima, is about 0.28 mile wide between the 20m curves. Passage through this channel is difficult for small vessels because of strong tidal currents.

Imoto Shima (26°33'N., 142°12'E.) about 2.25 miles E of Ane Shima, is densely covered with trees. The coast consists of rocks and steep cliffs, but landings can be made on the W coast.

Mei Shima about 0.5 mile ENE of Imoto Shima is ringed by steep cliffs, but small boats can reach the beach on the W side.

Sukezo Asane, two detached rocks, lie 0.25 mile off the S coast; the sea frequently breaks over them.

Caution.—The approach to the islands of this group and the passages between the islands are encumbered with reefs, rocks

and islets, whose positions may be seen on the charts.

Kazan Retto

4.21 Kazan Retto (24°52'N., 141°20'E.), also known as the Volcano Islands and Io Retto, extend along a line about 70 miles long from N to S. Kita-Io Shima, the farthest N of the group, lies 85 miles SSW of Haha Shima. There are three islands comprising the group; from N to S they are Kita-Io Shima, Io To (Io Shima), and Minami-Io Shima.

These islands are of volcanic origin, and gas continues to escape from them, especially on Io To, and from the sea that surrounds them. It has been reported (1992) that sulpherous smoke has been erupting from the sea about 55 miles SSE of Minami Io Shima in the vicinity of Minami Hiyosi Seamount.

Kita-Io Shima (25°26'N., 141°17'E.) contains a chain of mountain peaks running N to S through its middle. Sakakiga Mine, the highest peak, 804m high, is located in the S part of the island. The coast is precipitous cliffs except for sections on the E and W coasts. The 20m curve lies about 0.2 mile offshore and the 200m curve lies from 0.75 mile to 1.25 miles offshore.

Maguro Asane, with a depth of 14.6m and Funka Asane, with a depth of 13.7m, lie 0.6 mile WSW and 2.5 miles WNW, respectively, from the island's N extremity.

Kaitoku Kaizan (Kaitoku Seamount), a submarine volcano, lies approximately 48 miles NNW of Kita-Io Shima. In 1984, a bank with a depth of 10m, was reported in position 26°11.5'N, 141°00.9'E, about 6 miles NW of Kaitoku Kaizan.

Winds—Weather.—During the spring and summer, the SW winds are dominant; NE winds prevail during autumn, and W winds prevail in January and February. There is considerable rain from April to June, and frequent fogs. Strong winds often blow from August to October, and the sea is fairly calm in June and July.

Tides—Currents.—The flood current flows NW and strikes the SE end of the island. Part of the flood flows N along the E coast while the other part flows W at 1 knot S of the island. At the N extremity of the island, the flood current that flows along the E coast joins a current from the W and makes an E current, whose velocity reaches 1.8 knots. Between Funka Asane and the island, flood currents set NNW at a maximum velocity of 1.5 knots; ebb currents set SSE at a maximum velocity of 1 knot. Off the N coast of Kita-Io Shima, the ebb current flows E at a rate of 1.75 knots. Elsewhere on the ebb tide the directions are reversed and the velocity increased by 50 per cent.

Anchorage.—Kita-Io Shima has no good anchorage, but an unprotected berth can be obtained 0.4 mile SE of the village Ishino, on the E side of the island.

The inter-island steamer usually anchors, in 24m, with warehouses on the shore bearing 276° and the SE extremity of the island bearing 200°. The rocky holding ground is poor.

4.22 Io To (Io Jima)(Io Shima) (24°47'N., 141°19'E.) is located at the mid-point of Kazan Retto, about 36 miles S of Kita-Io Shima. The island, which is about 4.5 miles long in a NE to SW direction, consists of two volcanoes, Moto Yama in the NE and Suribachi Yama at the SW end with a narrow strip of land, Chidoriga Hara, between them.

Moto Yama, 112m high, is a domed hill with a flat peak located near the airstrip. Steam and sulfur gas, visible from offshore, escape from the fissures, or vents, in the hill.

An aeronautical light is located near the airstrip.

Chidoriga Hara is a volcanic dune, with sandy beaches at its E and W ends.

Suribachi Yama (Mount Suribachi), 161m high, a dormant volcano in the form of a truncated cone, rises at the SW end of the island.

Io Shima is reported to be radar conspicuous at 17 miles.

Tides—Currents.—North of Kitano Hana, the N extremity of the island, the ebb current sets E at 1.5 knots; SW of Tobiishi Hana, the S extremity of the island, the flood tide sets NW at 1.75 knots; W of Kama Iwa the flood current sets SW at 1.3 knots; and NW of Kangoku Iwa the flood current sets W at 2.5 knots.

Anchorages.—Anchorage can be obtained about 2.8 miles NE of Tobiishi Hana, close S of a line connecting Suribachi Yama and Higashi Iwa, off the village of Minami. The depth at the anchorage is 12m, sand, good holding ground.

Caution.—Higashi Iwa are a group of uncovered rocks, 6m high, located about 2 miles E of the E extremity of Iwo Shima. Kama Iwa lies 0.55 mile off the W coast and Kangoku Iwa, 8.2m high, lies 0.75 miles N of Kama Iwa. There are two rocks located on the shoal area 0.35 mile W of Kangoku Iwa that uncover at LW.

There are numerous wrecks on the W coast of Io Shima, N of Tobiishi Hana and close off the beach, as indicated on the chart.

Due to volcanic action, the contour of the shoreline and the depths in the approach to Io Shima are constantly changing. Depths up to 51m shoaler than charted have been reported (2022) around the island. Great care should be exercised when approaching or anchoring in these waters.

4.23 Minami-Io Shima (24°14'N., 141°28'E.) is a volcanic island located 33 miles SSE of Io Shima. The island is about 1 mile long in a N to S direction and has a height of 918m; this peak is often covered by fog and clouds. The island is bordered by cliffs and rocky beaches. The 20m curve lies from 0.1 mile off the W coast to 0.6 mile off the E coast.

In 1974, an islet was reported to lie 1.75 miles NE of the NE extremity of the island. In 1982, discolored water was observed in the vicinity of position 24°16.6'N, 141°29.2'E. In 2005, discolored water, with submarine volcanic activity, was observed in position 24°17.4'N, 141°29.1'E.

Fukutuku-Okano-Ba, a submarine volcano, lies 2.5 miles NE of Minami-Io Shima, and a reef, with a depth of 18.3m, lies 0.5 mile farther NW. In 1904 and in 1914, an island was reported in this area, which has subsequently subsided below the surface. In 1986, the volcano erupted and an islet was formed, but three months later the islet had disappeared, leaving a least depth of about 1m in the area.

Kita-Hukutoku Tai, a submarine volcano, lies about 11 miles NNW of Minami-Io Shima.

Discolored water and a suspected volcanic eruption were reported (1987) in the vicinity of Fukutuku-Okano-Ba. An additional account of discolored water was reported in this position in 2006.

Caution is necessary when navigating in this area.

Okino-tori Shima

4.24 **Okino-tori Shima** (20°25'N., 136°05'E.), a Japanese possession, is located about 375 miles SW of Minami-Io Shima. It was formerly known as Parece Vela or Douglas Reef. This coral reef extends about 2.8 miles in an E to W direction, is about 0.8 mile wide, and encloses a reef-encumbered lagoon. Two small islets and a number of man-made concrete structures lie on and near the reef. It is reported (2016) that a pier is under construction near the atoll.

A lighted buoy exists 1 mile SSE of the atoll.

Caution.—A below-water reef, with estimated depths from 2 to 3m, has been reported to extend about 3 miles NW from the W part of Okino-tori Shima. Numerous tide rips were observed in the vicinity.

Breakers extend 0.5 mile off the E and W ends of Okino-tori Shima. It has been reported that breaking seas have been observed about 1 mile N of the W extremity of Okino-tori Shima, but were not observed in 1997.

Okino-tori Shima and the reported reefs should be given a wide berth, as there has been no recent survey.

Boat passages have been reported on the SE and NE sides of the reef, but they have not been examined.

A large platform, about 20m high and supported by six rows of supporting pillars oriented approximately E and W, stands close E of the small towers. This platform, which appears abandoned, was reported (1997) visible on radar at a distance of 20 miles.

Another off-lying danger was reported in 1971. It appeared to be a coral-like shoal breaking in position 20°18'N, 135°28'E, bearing 259°, 36 miles from Okino-tori Shima. In 1988, it was reported that a vessel transiting the area failed to see this danger. Vessels are urged to exercise caution when navigating within the vicinity.

Minami-tori Shima (Marcus)

4.25 **Minami-tori Shima** (Marcus) (24°17'N., 153°59'E.) is an isolated triangular-shaped island lying 695 miles E of Minami-Io Shima. This island is the easternmost island in Japan and has sides about 1 mile long, rising to a flat surface 18m high. It is bordered by a wide beach consisting of white coral stones and shells with some sand. The beach is strewn with large boulders and debris consisting of scrap metal and broken concrete. The island is covered with sparse vegetation; there are a few buildings. An airstrip is constructed on the NW side of the island.

Minami-tori Shima is a good radar target from 21 miles. It was reported that a radar fix obtained from 13 miles was accurate.

Winds—Weather.—An E wind is dominant all year, averaging 14 knots from October to April, but is slightly less during the summer. The temperatures are high with a yearly average of 26°C. The highest temperature recorded was 36°C and the lowest was 16°C. Rain is frequent all year round but precipitation amounts are relatively low, about 1,000mm per year. Mild fog occasionally forms during September and October.

Tides—Currents.—The current in the vicinity of Minami-tori Shima is variable, with rates up to about 1 knot. During most of the year the predominant set is E, but in September to November it may be W.

Aspect.—A stone tower, a building with a red roof and a concrete building are situated in the vicinity of East Point, the E extremity of the island.

An aero radiobeacon transmits from the middle of the E side of the island.

Both the shore line and surf line give good radar responses and care must be taken to distinguish between them when closing the island, particularly from NW.

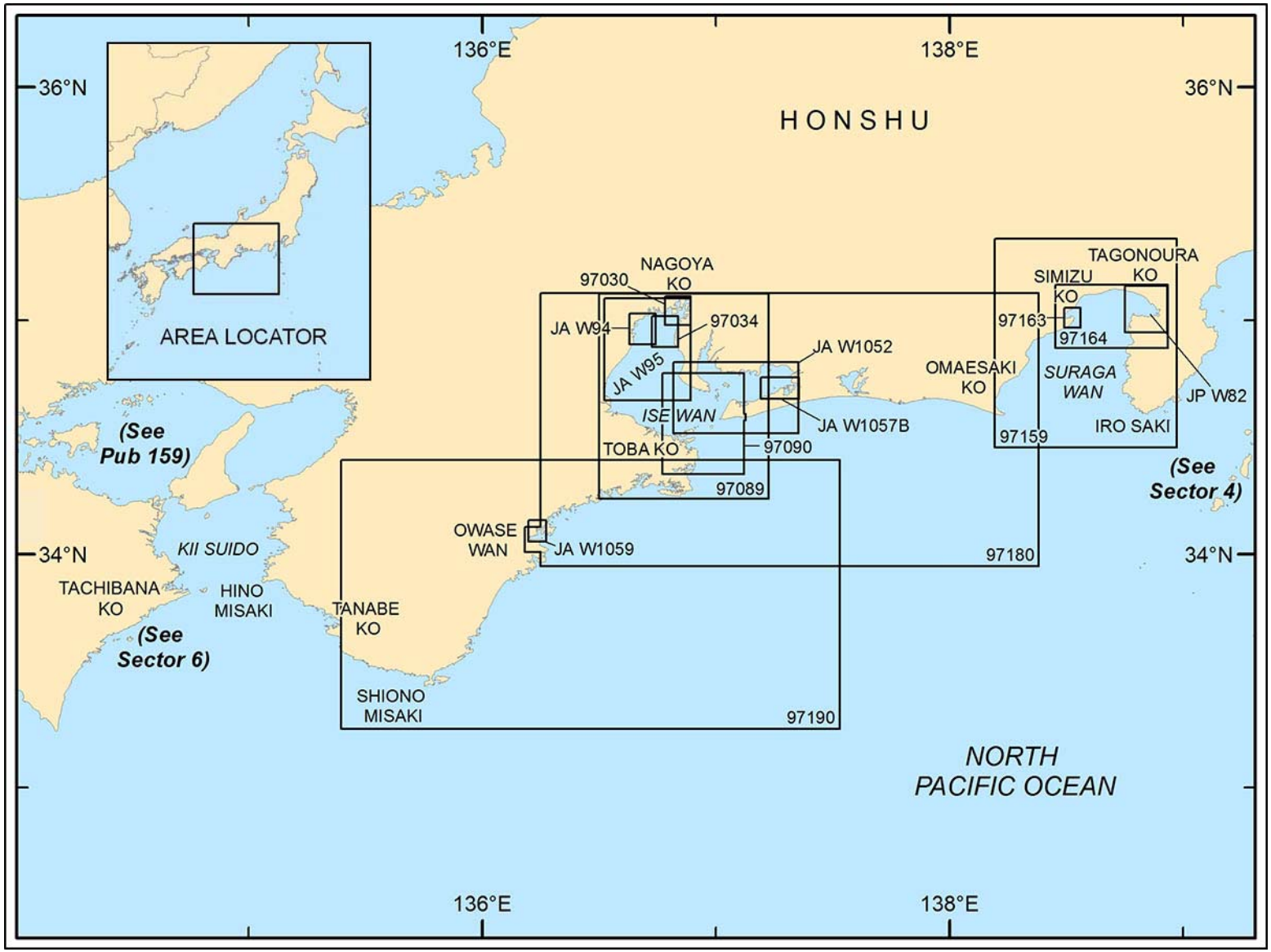
Anchorage.—The best anchorage area lies about 0.25 mile off the S side of the island, in depths of 70 to 80m.

Caution.—Because of its low elevation, small size, and lack of off-lying reef structure, Minami-tori Shima offers no lee in any weather. The bottom is of volcanic rock, dead coral, boulders and some sand; it has a steep incline and affords poor holding ground. In the face of the slightest weather, a vessel should stand clear of the island.

There is a pier 20m long in a boat basin formed by the opening in the reef on the S side of the island.

A dangerous pinnacle rock lies in deep water nearly 0.3 mile W of West Point.

There is a dangerous rock 0.2 mile ESE of West Point, about 0.1 mile offshore.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **5** — CHART INFORMATION

SECTOR 5

SOUTH COAST OF HONSHU—IRO SAKI TO HINO MISAKI

Plan.—This sector describes the S coast of Honshu from Iro Saki SW about 175 miles to Shiono Misaki, then NW to Hino Misaki.

General Remarks

5.1 The E part of this area includes the large bays known as Suruga Wan and Ise Wan; the coast between these two bays is a straight and almost unbroken stretch of sandy beach.

From Daio Saki, the coast trends SW for 75 miles to Shiono Misaki, the S extremity of the Kii Hanto, a broad mainland peninsula projecting S between the E end of Naikai on the W and Ise Wan on the E. This section of coast, known as the Kumano Nada, is generally rocky and faced with steep cliffs. The bays and coves of the irregular shoreline are relatively small and afford little protection, from, wind and sea.

Between Shiono Misaki and Hino Misaki, 45 miles NW, the coast forms the SW side of Kii Hanto and the E shore of the S approach to the Kii Suido. Sand and shingle beaches interspersed with rocky stretches make up the broken shoreline. There are no sheltered harbors, the small bays and inlets are open to the SW.

Winds—Weather.—Since the S coast of Honshu is fronted by the Pacific Ocean and backed by mountainous terrain, when face either the Kuroshio or Oyashio, its climate is controlled by these features and differs from the rest of Honshu.

During winter, there is a buildup of the continental high in the W and low pressure in the E, with the Northwest Monsoon dominating. As the continental high moves E, they bring behind them violent W winds that may blow for several days. On the Pacific seaboard, there is a high incidence of clear days with low humidity and dry air. Snowfall is generally light, although occasional heavy snows may be encountered on the S coast.

During spring, the change of pressure patterns is violent, and the weather shifts periodically. When low pressure systems originating on the continent move E and build up, fronts, especially cold fronts, are distinct and frequently generate violent storms.

The period from mid-June to mid-July is the early summer rainy season. The pattern of the rainy season front varies according to the strengths of the N (Okhotsk) and S (North Pacific) highs. Thus, if the Okhotsk high does not form or is weak, the rainy season precipitation is minimal. The rainy season is quite pronounced in S Japan where it brings abundant precipitation, but it is less pronounced and not as wet in N Japan. When the rainy season front moves N and dissipates, summertime pressure patterns move into place, and true summer begins.

During summer, hot humid, relatively weak, SE and S winds are frequent. The weather is generally fair, but with many sultry days and the highest incidence of thunderstorms for any season of the year. The frequency of onshore winds is notable. Summer is also the peak season for fogs. The end of the early summer rainy season marks the beginning of the typhoon season and coastal areas and the surrounding seas are often struck by torrential storms.

The autumn months of September and October are the peak months for typhoons and the autumnal rains, when the highest amount of precipitation for the year is recorded. Rainfall totals increase as one moves from N to S, in contrast to early summer rains, which are not so pronounced.

The climate on the S coast of Honshu, even during the winter period of the Northwest Monsoon, is generally mild due to the influence of the Kuroshio, and there are many days of good weather. However, when the Northwest Monsoon is strong, the air becomes extremely dry and chilly.

In summer, since relatively weak SE winds dominate and blow across the Kuroshio, temperatures become extremely high. Throughout the summer offshore winds in various parts of the S coast serve to alleviate the humid heat.

The Enshu Nada coast, centering around Omae Saki, has an extremely strong Northwest Monsoon during winter.

Winter temperatures on the S coast of Honshu have an average minimum range of 1° to 4°C. During summer most of the S coast is hot, but during the early summer rainy season from mid-June to mid-July, the high number of rainy and cloudy days keep the temperature down. Following the rainy season, the temperature rises sharply to a peak in August, when maximum temperatures average about 30°C.

Tides—Currents.—The Kuroshio is the largest of the ocean currents in Japanese waters, and globally only the Gulf Stream in the Atlantic compares to it in magnitude. This is the principal current that affects the current along the S coast of Honshu.

The average speed of the Kuroshio is 2 to 3 knots, with maximums of 4 to 5 knots. Since the current shifts its course in unexpected and violent manner, and exerts such a powerful influence on navigation, mariners must always keep its movements in mind.

The Kuroshio, in its N flow from Luzon, generally skirts the S coast of Honshu and then flows E and NE. However, when a large cold water mass appears in the Enshu Nada, the course of the current undergoes a spectacular shift between the Kii Suido and the Izu Shoto, as it makes a wide detour around the cold water mass. Once such a cold water mass appears, the zigzag route of the Kuroshio tends to become fixed and to remain unchanged for a period of 2 to 9 years. According to a survey of the 47-year period from 1921 thru 1967, cold water masses appeared and persisted three times.

When the cold water mass appears off Omae Saki, the Kuroshio may be deflected as far S as 31°S, S of Daio Saki, when the average flow without the presence of the cold water mass is 34°S.

The Kuroshio is a relatively narrow current, and the width of the portion flowing faster than 2 knots ranges from 15 to 25 miles.

Tidal currents along the S coast of Honshu flow along the coast. The flood tide current sets W and the ebb current sets E. The direction changes within 1 hour after each LW and HW; the rate is nominal. The tidal currents are affected by the diur-

nal tide. Sometimes there is only one tidal current a day when the declination of the moon is great.

Caution.—Due to the earthquakes that occurred on 11 March 2011, offshore of the Tohoku region in Japan, and the resultant tsunami, variation of the coastline and seafloor must be considered and caution exercised. Wrecks and obstructions may be displaced from previously charted positions and new obstructions experienced along the E coast of Honshu and in the harbors. Breakwaters may be altered in position and length and many aids to navigation destroyed. The charts of these areas have been significantly affected and will be updated as surveys and time allow.

Suruga Wan

5.2 **Suruga Wan** (34°50'N., 138°35'E.), a large deep bay, lying between the W side of Izu Hanto and the mainland is entered between Iro Saki and Omae Saki, about 30 miles W, and from its entrance it extends almost 35 miles ENE.

Winds—Weather.—The seasonal winter winds blow N, often becoming stronger in the afternoon. Along the coast of Suruga Wan the average temperature in winter is 6° to 7°C, while in summer it is cool due to land and sea breezes. The W wind prevails on the W coast of Izu Hanto due to the effect of the seasonal wind in winter.

At Omae Saki, the prevailing winds are WNW in winter and WSW in summer. The W wind prevails throughout the year, except during September and October.

During SW winds a heavy swell runs into Suruga Wan.

Tides—Currents.—The tidal currents in Suruga Wan set N on the flood and S on the ebb at a slight rate. At the entrance to Utiura Wan (Uchiura Wan), the flood tide current flows into the bay and the ebb flows out of the bay. The directions change within 1 to 2 hours after LW and HW. The flood current is irregular and the current following an extremely low tide is stronger than usual.

Suruga Wan—East Side

5.3 From Iro Saki, the E coast of Suruga Wan trends 7 miles NNW to Hagati Saki (Hakachi Saki) (34°41'N., 138°45'E.). This coast is indented by Mera-Koura Ko and is bordered by rocks for a distance of 0.5 mile offshore in places. The coast then trends irregularly N for 7 miles to Ima Yama. Matu Saki Ko indents the coast about halfway between Hagati Saki and Ima Yama. Ima Yama, a rounded headland, is a good mark.

The 20m curve lies 1.25 to 0.7 mile offshore along the coast. A 26m patch lies 0.9 mile W of Iro Saki; fish havens are charted 2 miles W of Iro Saki and outside the 20m curve in Mera-Koura Ko. A patch with a depth 2.9m, lies 1.25 mile SW of Ima Yama. Tago Shima, consisting of two sharp rock islets, lies about 0.8 mile SW of Ima Yama. The W rock is 47m high; the E rock has a light situated on it. Both rocks are visible at some distance. Foul ground extends from Tago Shima SE to the coast. A fish haven lies 0.25 mile SE of Tago Shima Light.

5.4 **Tago Ko** (34°48'N., 138°46'E.), a small deep port surrounded by hills, lies close S of Ima Yama and is fronted by Tago Shima. The village of Tago is located at the SE part of the bay. A light is shown close NW of Tago village on the point. Anchorage for vessels with local knowledge can be taken in the harbor, in a depth of 39m, mud. The harbor is open NW and is not tenable in winter. Small vessels can anchor, in a depth of 30m, mud, off the village of Tago, in the inner part of the harbor.

Ose Saki (35°02'N., 138°47'E.) is located 12.75 miles N of Ima Yama; there are cliffs and several small inlets in the intervening coast. The 20m curve lies no farther than 0.4 mile off this coast. A light is shown from the N part of the inlet.

Daruma Yama, 982m high, is located 9 miles NNE of Ima Yama; it is the most prominent mountain on Izu Hanto. Sototakumi Yama, 221m high, is located on the coast 3.5 miles NW of Daruma Yama. It is a round mountain covered with short grass and has steep cliffs at its base.

Enasi Yama (Enashi Yama) (35°00'N., 138°48'E.), 1.75 miles NE of Sototakumi Yama, rises to a height of 437m. It has a sharp peak, without trees, and can be seen from a point 4 to 5 miles W of Hagati Saki when entering Suruga Wan from the E, and it can also be seen, on a clear day, immediately after passing Omae Saki when entering the bay from the S.

5.5 **Ugusu Ko** (34°51'N., 138°46'E.) is an open harbor situated 2 miles N of Ima Yama. The entrance is open to the W, and the other three sides are surrounded by mountains.

A basin protected by two breakwaters, is situated in the S part of the bay and in it are quays used principally by small vessels loading ore. A light stands at the head of one of the breakwaters. There are mooring facilities within the breakwaters with depths of 2.5 to 5.5m alongside. There is a breakwater projecting NE from a point on the S side of the bay, and there are mooring facilities within the breakwater, with depths of 2.5 to 5.5m alongside.

Koshino Hana, a conspicuous red, wooded cliff, is located in the middle of the E beach in the harbor. Anchorage can be taken, in a depth of 13m, W of Koshino Hana.

Caution.—Caution should be used to clear the fish haven obstruction charted near the middle of the bay.

5.6 Toi Ko is an open roadstead that is located 3.5 miles N of Ugusu Ko. A breakwater is located on the N side of the river's mouth, which discharges into the harbor on its E side. A breakwater, with a light at its head, projects from the E shore of the bay. There is anchorage, in a depth of 26m, sand and mud, off a pier in the S part of Toi Ko.

Heda Ko (Heta Ko) (34°58'N., 138°46'E.), located 4 miles N of Toi Ko, is open to the NW and is surrounded by mountains on the N, E and S. On the W side, Mihama Saki (Ohama Saki) extends 0.4 mile NNE and forms a natural breakwater to protect the port against all winds except from the NW. The entrance between Mihama Saki and the N shore is 0.2 mile wide. The harbor is deep and shoals quickly on nearing the shoreline, where depths drop abruptly from 18 to 2m.

A breakwater, with a light at its head, is situated at the inner end of Heda Ko. A landing jetty, with depths from 2.5 to 4m alongside, lies to the S of this breakwater. A vessel may find good anchorage with the peak of Inari Yama bearing 048° and the NE extremity of Mihama Saki bearing 310°, in a depth of 34m, mud.

5.7 **Utiura Wan** (Uchiura Wan) (35°03'N., 138°50'E.) is an open bay that lies 4 miles NNE of Heda Ko, in the NE extremity of Suruga Wan. The bay is about 5 miles in length in a N to S direction and recedes about 5 miles E.

Mito Hakuchi is a small, deep harbor located in the SE corner of Utiura Wan. It is entered by passing between Awa Shima, 147m high, on the N, and Nagai Saki about 0.4 mile to the S. Nishiura Kisho Breakwater extends 0.2 mile NE from a point 0.4 mile W of Nagai Saki. A light stands at the head of the breakwater. A light stands at the head of Mito Breakwater situated about 1.5 miles ESE of Nishiura Kisho Breakwater Light.

There is good anchorage, protected from all but NW winds with the E extremity of Awa Shima bearing 343° and the N extremity of Nagai Saki bearing 282°, in 35m, mud. A shoal, with a depth of 8.8m, is located 0.14 mile S of the anchorage.

5.8 **Shizuura Ko** (35°02'N., 138°54'E.) lies at the head of Utiura Wan, in its E extremity. Shizuura Ko is entered between Awa Shima on the S, marked by a light on its N extremity, and Okubono Hana, about 0.7 mile to the N. Okubona Hana, which has reclaimed land on its S and E side, rises to a height of 142m. In general the bay is too deep for anchoring, however, there is good anchorage with Okubona Hana bearing 293°, and the N end of Awa Shima bearing 211°, in 50m, mud. The water is choppy in a W wind, and when winds blow down off the mountains, as a NE wind prevails.

Numazu Ko (35°05'N., 138°51'E.), situated 2.5 miles NW of Okubona Hana, is comprised of an inner and outer harbor. The port is located at the mouth of the Kano Kawa (Kano Gama), which flows out between training walls on each bank. The inner and outer harbors are connected by a channel 40m wide that has a least depth of 3.2m. The outer harbor is located on the N bank and is protected by an E and W breakwater. The depth of the channel to the outer harbor is over 6m, with a width of 55m between the 5m curves. Vessels may moor at the N seawall in depths of 5 to 7.5m. The E and S seawalls have depths from 3.5 to 5.5m.

Suruga Wan—West Side

5.9 **Omae Saki** (34°36'N., 138°14'E.), marking the W entrance to Suruga Wan, is about 50m high and heavily wooded. Its E and S sides decline sharply and lead to a flat sand beach. The point appears as two belts whose upper half is green and the lower half white. The white belt is particularly conspicuous from the S. The point is fringed with reefs that dry out about 0.2 mile offshore, and shoals with depths of less than 5.5m, lie within 1 mile of the shore.

A light is shown the S side of Omae Saki. A radio tower, standing about 0.7 mile NW of the light, is prominent. Gozen Iwa dries 0.9m and lies 1.75 miles E of Omae Saki on One Bae, a reef with a least depth of 3m. A light is shown from a round iron tower on a tripod, 11m high, situated on Gozen Iwa.

Caution.—Due to dense fog, vessels entering Suruga Wan from the W may not recognize the landmarks near Omae Saki; and upon entering the bay they may mistake the pine trees on Yaizu for those further N near Miho Saki; Takakusa Yama is often mistaken for Udo Yama. The light on Gozen Iwa should be given a berth of at least 1 mile and vessels should never pass between the light and Omae Saki. Gozen Iwa is difficult to see at HW when the sea is calm.

A dangerous wreck lies 3.5 miles S of Omae Saki.

Fish havens lie 2 miles and 4 miles W of Omae Saki Light.

5.10 **Omae Saki to Wada Hana.—**Motone Bana is the NE extremity of the peninsula and is located 0.6 mile NNE of Omae Saki; it is a flat point. From Motone Bana, the coast recedes to the NNW, then trends NNE to Wada Hana, a distance of 16 miles; this coast is low and sandy. Between Omae Saki and the coast abreast the town of Haibara, 8 miles N, the coast is backed by a plateau less than 91m high. A light is shown from position 35°38'N, 138°12'E. From this position a white sandy beach, backed by rows of pine trees, trends about 8 miles NE to Wada Hana, and for 4 or 5 miles inland the country is flat.

The 20m curve lies up to 2.3 miles off the S part of this area and closes the coast in the vicinity of Wada Hana.

Notari (34°37'N., 138°15'E.), a rocky patch with a depth of 9.4m, is located 1 mile NE of Montone Bana. A fish haven is situated 0.15 mile SE of Notari; other shoal patches lie between Notari and the coast.

A rocky patch, with a depth of 8.3m, is located 0.75 mile N of Gozen Iwa.

5.11 **Omaesaki Ko** (34°36'N., 138°14'E.) (World Port Index No. 61425) is an open port protected by breakwaters and is entered between the breakwaters about 1.3 miles NW of Motone Bana.

A detached breakwater lies close NE of the entrance to the outer harbor.

Depths—Limitations.—The maximum draft limitation in the channel is 10.8m. There are 11 berths having general depths of 5 to 12m. Additionally, Nishi No. 10 container berth, situated at the West Wharf, is 280m long with a depth alongside of 14m; vessels of up to 50,000 dwt can be accommodated.

Pilotage.—Pilotage is not compulsory but is available. Pilots board close NE of the outer breakwater. Berthing is done during daylight hours only; unberthing may be done until 2100.

Anchorage.—Anchorage may be taken outside the inner breakwater, in depths of 5 to 8m, mud and sand. The holding ground is not very good.

Small vessels can anchor within the breakwaters.

5.12 From Omaesaki Ko, the coast trends N about 4.8 miles to Sagara Ko; a small boat harbor situated in the mouth of a river. A light is shown near the river entrance.

Aitaka Iwa (34°40'N., 138°14'E.), about 1m high, lies 1 mile SE of Sagara Ko; it consists of two small rocks that lie in an E to W direction. There are other obstructions charted up to 1.5 miles N.

From Sagara Ko, the coast trends NE 6.5 miles to the mouth of the Oi Kawa, which empties into the bay.

Along this coast is Yosida Gyoko (34°45'N., 138°16'E.), which is protected by a breakwater and has a light on it.

5.13 **Oigawa Ko** (34°46'N., 138°18'E.) consists of a small harbor protected by breakwaters, with an inner harbor and fa-

cilities; it is located close N of Oi Kawa. The harbor has depths of 2.6 to 11m and is approached through a channel about 59m wide. There are wharves with depths of up to 8m alongside.

Ordinary vessels are not allowed within a 50m radius of the oil wall when vessels carrying LPG and other flammables are moored.

Caution.—During the Oi Kawa flood periods, caution is necessary since vessels will be pushed to the N. A wave meter is located 0.75 mile NE of the S breakwater. This meter is marked by a red light and a submarine cable runs from here to the coast. There are wharves here with depths of 1 to 7.5m alongside.

From Oigawa Ko the coast trends NNE 4 miles to Wada Hana. There are fish havens located along this coast as far as 1.5 miles offshore, reference should be made to the chart.

Seno Umi, located 10.75 miles ESE of Oigawo Ko, is a fish haven obstruction.

5.14 From Wada Hana the coast trends in a general NE direction to Hukiai Saki, a distance of 15 miles. The 20m curve lies up to 1.8 miles offshore in this segment of the coast. The dangers outside the 20m curve are fish havens which are charted.

Kogawa Gyoko (34°51'N., 138°20'E.) is a fishing harbor protected by two breakwaters. A light tower stands on each breakwater. The channel leading through the entrance is about 50m wide. A detached breakwater lies 0.1 mile NW of the S breakwater head. A light is shown at the SE end of the detached breakwater.

A submarine pipeline extends 0.13 mile ENE from the coast, 0.3 mile NW of the S breakwater head.

Takakusa Yama rises to a height of 501m, 1.5 miles inland, 4.25 miles N of Wada Hana. Udo Yama, 308m high, is located near the coast 4 miles SW of Hukiai Saki. When approaching this area in a fog, Takakusa Yama has often been mistaken for Udo Yama, since the coasts are low and similar to each other.

Yaizu Ko (34°52'N., 138°20'E.) is an open roadstead, with two basins lying at the head of a bight, 2 miles NNW of Wada Hana. There is an outer, central, and inner district, protected by a N and S breakwater. Within the basins are quays with depths alongside of 5 to 9m.

The middle harbor is entered between the N breakwater and the S breakwater; a light stands at the head of each. The entrance to the harbor is exposed to E winds which send in a swell and hamper maneuvering. A detached breakwater, 150m long lying in NNE to SSW direction, is situated about 0.2 mile SW of the S breakwater.

Reclamation work has been carried out 1 mile S of the harbor. A light stands at the head of a breakwater extending about 0.4 mile N from the shore, about 1.3 miles S of Yaizu Ko.

Ogawa, a boat harbor protected by a N and S breakwater, is situated 1 mile S of Yaizu Ko, and is considered part of Yaizu Ko. The depths in Ogawa are from 2 to 3.8m.

From Yaizu Ko the coast trends NNE 5 miles to Abe Kawa, which flows into the bay, then 8.5 miles NE to Hukiai Saki (Miho Saki).

Shimizu Ko (Simizu Ko) (35°01'N., 138°30'E.)

World Port Index No. 61460

5.15 Simizu Ko, located in the NW portion of Suruga Wan Special Port, is the most important port in the bay. It is a Special Port, Open Port, Quarantine Port, and Port of Entry.

Simizu Ko Port Web Site
http://www.portofshimizu-intl.com

Winds—Weather.—In the spring and summer SW and W winds prevail and the sea is calm. During the fall and winter, NE and E winds prevail; the most frequent wind direction is ENE, and its maximum velocity is 24 knots.

Tides—Currents.—The flood tidal current sets W into the harbor and the ebb current sets E. The change of directions occur at HW and LW; the rate is less than 0.3 knot.

Depths—Limitations.—The port is divided into three sections. Section 1, the S part of the harbor, is approached through a channel dredged to a least depth of 12m. The depths at the berths in this section range from 5.5 to 12m.

Orido Wan, in Section 1, is a large basin with depths from 4.2 to 10.5m. Section 2 lies at the W end of the entrance fairway and has berths within the basin from 3.3 to 11.2m. Section 3 lies on the S and N side of the entrance fairway.

The approach to the Tonen Dolphin Sea Berth is dredged to a depth of 21.5m. Vessels of up to 250,000 dwt, with a draft of 20m, may use this berth. Numerous oil tanks and chimneys stand on the reclaimed land.

Sodesi Wharf No. 1 will accommodate vessels of 30,000 dwt and has depths of 12m alongside. The Nikkei Bauxite Wharf has a depth of 11m alongside for vessels of up to 32,000 dwt. For further berthing information refer to the table titled **Simizu Ko—Berth Information**.

Shimizu Ko—Bert Information

Berth	Length	Depth	Maximum Vessel Size	Remarks
Fuijmi Wharves				
No. 1	113m	5.5m	700 dwt	—
No. 2	113m	5.5m	700 dwt	—
No. 3	140m	—	700 dwt	—
No. 4	190m	12.0m	700 dwt	Grain, pulp, and cement.

Shimizu Ko—Bert Information				
Berth	**Length**	**Depth**	**Maximum Vessel Size**	**Remarks**
No. 5	290m	12.0m	—	Grain, pulp, and cement.
No. 6	180m	9.0m	700 dwt	Grain, pulp, and cement.
No. 7	180m	9.0m	700 dwt	Grain, pulp, and cement.
Hinode				
No. 1	80m	4.5m	700 dwt	Timber products.
No. 2	130m	7.5m	5,000 dwt	Timber products.
No. 3	130m	7.5m	5,000 dwt	Timber products.
No. 4	240m	12.0m	30,000 dwt	Timber products and passengers.
No. 5	240m	12.0m	30,000 dwt	Timber products and passengers.
Okitsu No. 1				
No. 1	185m	10.0m	15,000 dwt	Containers.
No. 2	185m	10.0m	15,000 dwt	Timber products.
No. 3	184m	10.0m	15,000 dwt	Timber and pulp.
No. 4	90m	5.5m	2,000 dwt	General cargo.
No. 5	91m	5.5m	2,000 dwt	General cargo.
Okitsu No. 2				
No. 6	185m	10.0m	15,000 dwt	Timber products.
No. 7	185m	10.0m	15,000dwt	Timber products.
No. 8	185m	10.0m	15,000dwt	Timber products.
No. 9	185m	10.0m	15,000dwt	Timber products.
No. 10	185m	10.0m	5,000 dwt	General cargo.
No. 12	220m	12.0m	30,000 dwt	Containers.
No. 13	185m	10.0m	15,000 dwt	Containers.
No. 14	185m	10.0m	15,000 dwt	Containers.
Shin-Okitsu Container Terminal				
No. 1	380m	15.0m	60,000 dwt	Containers.
No. 2	380m	15.0m	60,000 dwt	Containers.
Sodeshi No. 1				
No. 1	60m	—	—	Dry bulk, scrap metal, and transshipment.
No. 2	60m	4.5m	—	Dry bulk, scrap metal, and transshipment.
No. 3	60m	4.5m	—	Dry bulk, scrap metal, and transshipment.
No. 4	60m	4.5m	—	Dry bulk, scrap metal, and transshipment.
No. 5	135m	7.5m	—	Containers.
No. 6	240m	12.2m	30,000 dwt	Containers.
No. 7	240m	12.2m	30,000 dwt	Containers.
No. 8	240m	12.2m	30,000 dwt	Containers.
No. 9	175m	9.0m	10,000 dwt	Timber products.
No. 10	175m	9.0m	10,000 dwt	Timber products.

Shimizu Ko—Bert Information				
Berth	**Length**	**Depth**	**Maximum Vessel Size**	**Remarks**
North Wharf				
No. 11	240m	12.0m	—	Timber products.
No. 12	130m	7.5m	—	Timber products.
No. 13	130m	7.5m	—	General cargo.
No. 14	130m	7.5m	—	General cargo.
No. 15	130m	7.5m	—	General cargo.
Sodeshi No. 2				
No. 16	330m	10.0-12.0m	30,000 dwt	Wood chips.
Multipurpose Berths				
J-Oil Mills	260m	11.0m	40,000 dwt	Chemicals, molasses, and soy beans. Dolphins.
Shimizu Wharves				
No. 2	120m	4.5m	—	Liquid and dry bulk.
No. 3	—	4.5m	—	Liquid and dry bulk.
No. 4	—	4.5m	—	Liquid and dry bulk.
No. 5	—	4.5m	—	Liquid and dry bulk.
Nippon Light Meta Terminal				
Nippon N	276m	11.0m	—	Liquid and dry bulk.
Nippon S	99m	7.3m	—	Liquid and dry bulk.
Ejiri Wharves				
No. 1	120m	6.5m	—	Marine products and frozen and liquid foodstuffs.
No. 6	—	6.5m	—	Marine products and frozen and liquid foodstuffs.
No. 7	—	6.5m	—	Marine products and frozen and liquid foodstuffs.
No. 8	—	—	—	Marine products and frozen and liquid foodstuffs.
No. 9	—	—	—	Marine products and frozen and liquid foodstuffs.
No. 10	—	—	—	Marine products and frozen and liquid foodstuffs.
No. 11	—	—	—	Marine products and frozen and liquid foodstuffs.
No. 12	—	4.5m	—	Marine products and frozen and liquid foodstuffs.
No. 13	—	4.5m	—	Marine products and frozen and liquid foodstuffs.
No. 14	—	4.5m	—	Marine products and frozen and liquid foodstuffs.
No. 15	—	4.5m	—	Marine products and frozen and liquid foodstuffs.
No. 16	71m	4.5m	—	Marine products and frozen and liquid foodstuffs.
No. 17	—	6.5m	—	Marine products and frozen and liquid foodstuffs.
No. 18	—	6.5m	—	Marine products and frozen and liquid foodstuffs.
Tanker Berths				
Shimizu Tonen				
Tonen Oil Sea Berth	480m	22.0m	250,000 dwt	Crude oil and naptha. Vessels with a maximum loa of 274m, a maximum beam of 43.3m, and a maximum draft of 21.5m can be accommodated.
Tonen No. 2	20m	5.6m	—	Petroleum products.

Shimizu Ko—Bert Information				
Berth	**Length**	**Depth**	**Maximum Vessel Size**	**Remarks**
Tonen No. 3	100m	6.0m	—	Petroleum products.
Tonen No. 4	100m	6.0m	—	Petroleum products.
Tonen No. 5	25m	6.0m	—	Petroleum products.
Tonen No. 6	44m	6.0m	—	Petroleum products.
Tonen No. 7	30m	6.0m	—	Petroleum products.
Tonen No. 8	44m	8.0m	—	Petroleum products.
Tonen No. 9	30m	8.0m	—	Petroleum products.
Tonen No. 10	44m	8.2m	—	Petroleum products.
Sodeshi No. 2				
No. 17	165m	9.0m	10,000 dwt	Chemicals. Maximum draft of 8.1m.
No. 18	72m	7.5m	—	Petroleum products.
Suzuyo No.1	27m	5.0m	—	Petroleum products.
Suzuyo No. 2	17m	3.0m	—	Petroleum products.

Aspect.—Numerous charted chimneys and radio towers are conspicuous.

The harbor offices stand on the S side of Shimizu basin, about 1 mile SW of Ma Saki.

Pilotage.—Pilotage is not compulsory. A request for pilotage should be sent 24 hours in advance through the vessel's agent. The pilot boards in an area about 1 mile NE of Shimizu Light. Pilots for 250,000 dwt vessels embark about 0.8 mile NE of Fukiaino Misaki Light.

Contact Information.—See the table titled **Simizu Ko—Contact Information**.

Anchorage.—Quarantine anchorage is situated on the E side of the N breakwater. Depths in the anchorage range from 18.4 to 29m, mud and sand. Vessels with dangerous cargo are required to anchor in Section 3. The best anchorage here is SW of Ma Saki, in depths of 21 to 26m. This anchorage is frequently congested; vessels may have to wait offshore before entering.

Shimizu Ko—Contact Information	
Pilots	
Telephone	81-543-522-191
	81-543-522-192
Facsimile	81-543-510-527
Port Authority	
Telephone	81-543-532203
Facsimile	81-543-540380
E-mail	port@mail.wbs.ne.jp

Suruga Wan—Head

5.16 From Simizu Ko to Numazu Ko, 18 miles ENE, there is a long, low crescent shaped, continuous sand beach. Fuji Kawa (Huzi Kawa) enters the bay 9 miles NE of Simizu Ko. The area E of Fuji Kawa to Kano Kawa is known as Tagono Ura.

The depth of the water is 200m, 0.3 mile from the shore near Tagonoura Ko. Depths continue to be unusually deep closer to the shore along the coast.

Fuji San (Huzi San) (35°22'N., 138°44'E.) rises to a height of 3,776m, 13 miles N of Tagono Ura Ko. This volcano, with a symmetrical cone shape, is the highest point in Japan. Its peak is often enveloped in clouds and there are few days when the entire mountain is visible.

Tagonoura Ko (35°08'N., 138°42'E.)

World Port Index No. 61415

5.17 Tagonoura Ko is situated at the head of Suruga Wan, 11 miles NE of Simizu Ko. The port is protected by an E and W breakwater; a light is situated on the head of each breakwater. There are three public wharves in the port; Chuo Wharf, Fuji Wharf, and Yoshihara Wharf. Leading lights are shown in line bearing 323.5° and lead through the dredged channel into Tagonoura Ko.

Depths—Limitations.—The entrance channel is maintained at a depth of 9m at HW. The maximum size vessel to enter the port is limited to a loa of 213m and a beam of 30m. The draft may vary, therefore, it is requested that the allowable draft should be verified by ships agent before arrival. There are charted depths alongside the wharves of 3 to 12m. The entrance is about 91m wide and the basin affords little room for maneuvering. Silting is reported in the N and NW portions of the harbor and depths may be less than charted.

Pilotage.—Pilotage is not compulsory, but is available and should be ordered at least 24 hours in advance through the ship's agent. Pilot will board the vessel about 2 miles SSW of West Breakwater Light in position 35°06.2'N, 138°41.0'E. In

bad weather, pilots board inside the breakwater. The availability of pilotage should be checked in advance via the agent or Tagonoura Port Radio. Pilotage is available 24 hours.

Regulations.—Vessels making use of the channel at Tagonoura Ko shall contact the Port Office with their ETA or ETD and receive a time where it is safe to transit the channel.

Contact Information.—See the table titled **Tagonoura—Contact Information**.

Tagonoura—Contact Information	
Pilots	
Call sign	Tagonoura Port Radio
VHF	VHF channels 11, 12, and 16
Telephone	81-545-3307-34
Facsimile	81-545-3212-60
Port Authority	
Telephone	81-545-3304-96
Facsimile	81-545-3310-09
E-mail	tago-kanri@pref.shizouka.lg.jp
Web site	https://doboku.pref.shizuoka.jp/desaki3/tagonoura/index.html

Anchorage.—The approach to the harbor is deep and exposed. It affords no anchorage; ships having to wait for entry should proceed to Simizu Ko.

Ordinary vessels are prohibited from entering an area within a 50m radius of vessels carrying petroleum and other dangerous cargo. Vessels (ordinary) are not allowed to move within a 30m radius of loaded tankers or vessels alongside. Fuji Wharf and Asahi Kasei Wharf use by vessels which are carrying high pressure gas. Vessels carrying this gas are marked by red buoys during the day and three red lights at night.

Enshu Nada

5.18 Enshu Nada is the name given to the open bight formed in the coast between Omae Saki and Daio Saki, located 70 miles WSW. Between Omae Saki and Irago Saki, the E entrance to Ise Wan, 60 miles W, the coast is almost unbroken, while the coast from Irago Saki to Daio Saki, 14 miles S, is much indented.

From Omae Saki, a sandy beach stretches 21 miles W in a gentle arc to the delta of Tenryu Kawa, which protrudes slightly. A light is shown on the E side of the entrance to the river mouth.

Hamana Ko (34°40'N., 137°36'E.), an extensive salt water lagoon, indents the coast 10 miles W of Tenryu Kawa. Lights are shown at the entrance. From Hamana Ko the coast trends WSW 30 miles to Irago Saki and consists of yellow cliffs broken by a number of gorges. Irago Saki is a small rocky peninsula and forms the E entrance point of Ise Wan.

The 20m curve lies within 1 mile from shore in the E part of the coast, and gradually leaves the shore W of the entrance to Hamana Ko and lies 6.5 miles from shore in the offing to Irago Saki. There are no dangers less than the 10m depth which is about 1 mile from shore or beyond along this coast, however there is an 8 mile stretch W of Omar Saki with less depths.

Winds—Weather.—Strong W winds are common in the winter throughout Enshu Nada. In the summer, high waves often occur with sudden S or SE winds. Water spouts occur in the summer in the vicinity of Daio Saki.

Tides—Currents.—The tidal currents S of Enshu Nada flow WSW on the flood and ENE on the ebb tide current. The direction changes at almost the time as LW and HW water S of Omae Saki, while it changes within 1 and 2 hours after LW and HW at the center of Enshu Nada. The average current velocity at the time of a major tide is 1 knot S of Omae Saki and 0.25 knot at the center of Enshu Nada.

Tidal currents 1 mile E of Matoya Ko, in the vicinity of Daio Saki, are circuitous. The flood current is almost an inshore flow, turning toward the N and S through W, while the ebb current flows S almost parallel to the coast. Current velocity is low it does not attain a speed of more than 0.8 knot. Tidal currents 2 miles E of Daio Saki are controlled by the season, wind direction, and ocean currents; both current direction and current velocity are changeable; the velocity is less than 1 knot.

Fukuda Ko (34°40'N., 137°54'E.) is located at the mouth of Ota Kawa, 17 miles WNW of Omae Saki; it can only be used by small vessels.

Only small vessels with local knowledge can navigate the mouth of the Tenryu Kawa, 5 miles WSW of Fukuda Ko. The depth of the water is inconsistent, becoming deepest during the months of August through October and shallowest from March through May. Strong winds are common in this area and there are few days without wind. There is a sand spit at the river mouth. When there is a W wind, anchorage is available, in depths of 12 to 18m, at places on the leeward side of the spit.

Ise Wan

5.19 **Ise Wan** (34°45'N., 136°45'E.) is an extensive bay entered between Irago Saki (Misaki) and Kaburako Saki, a mainland projection about 9.25 miles SW. The fairway through this entrance is greatly restricted by islands and reefs; the principal passage, Irago Suido, lies between Irago Saki and Kami Shima, an island 2.25 miles SW. Within the entrance Mikawa Wan leads off in an NNE direction, and is further divided into Atsumi Wan on the E and Tita Wan on the N. The principal part of Ise Wan recedes about 35 miles N of Irago Saki and is bound by Tita Hanto on the E and the mainland on the W. The important port of Nagoya Ko is located at the head of the bay.

Winds—Weather.—In Ise Wan, the N wind prevails in winter. Strong winds in Ise Wan are generally caused by S or SSE seasonal winds in summer and by typhoons. Studies have shown that wind direction and velocity vary in separate parts of the bay. In the vicinity of Irago Saki, over a 30-year period, the wind direction was NW for the months of September through May at an average velocity of 11 knots. During the months of June, July, and August, the winds were S at an average velocity of 8 knots. During the month of January, there were 20 days of gale force winds observed.

In the vicinity of Nagoya, in the same period of time, the wind direction from January through April was NW at an average velocity of 7 knots. The winds in May were from the N at 7 knots, shifting to SSE during the months June, July, and Au-

gust at about 5 knots velocity. From September through December, the winds were from the N at an average daily rate of about 5.5 knots. In the month of March, there was an average of 10 days of gale force winds observed.

Regulations.—The Ise-Wan Vessel Traffic Service Center (Ise Wan MARTIS) has been established and is operated by Japan Coast Guard. The mission of this VTSC is to maintain and improve safety and efficiency of vessel traffic in Irago Suido and its vicinity.

Additional information, including a copy of the Ise-Wan Martis User Manual, may be found at the Ise Wan MARTIS web site:

Ise Wan MARTIS
http://www6.kaiho.mlit.go.jp/isewan

Vessels of more than 150 gt carrying hazardous and noxious substances, in liquid form, as defined in MARPOL 73/78 Annex II, and calling at ports or terminals within Tokyo Wan Ise Wan, and the Naikai, must comply with regulations effective April 1, 2008.

Ise Wan Traffic Service (Ise Wan MARTIS) is in effect in the following ports:

1. Atsumi.
2. Gamagori.
3. Kinuura Ko.
4. Matsusaka.
5. Nagoya.
6. Toyohashi.
7. Tsu Ko and Igurazu Ko.
8. Yokkaichi.

See paragraph 5.20 for details on specific requirements of the Ise-Wan VTSC for vessels transiting Irago Suido.

Further information can also be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Irago Suido

5.20 Irago Suido (34°34'N., 137°00'E.), the channel between Irago Saki and Kami Shima, 2.25 miles SW, is the main entrance of Ise Wan and Mikawa Wan.

Irago Suido Lighted Beacon stands 2.75 miles SE of Kami Shima Light.

A wreck was reported 1.7 miles ENE of Kami Shima Light

A traffic route, prescribed by the Maritime Traffic Safety Law and shown on the chart, is in effect in Irago Suido. Vessels must enter and leave the route at its charted extremities, using the whole of the scheme.

Tides—Currents.—The tidal currents between Kami Shima and Irago Saki flow NW and SE. The NW (SE) current flows from 20 minutes after LW (HW) tide at Nagoya until 20 minutes after HW (LW) at Nagoya. During spring tides there are two currents daily at a velocity of 2 knots. A SE current of 2.7 knots has been observed, and a NW current of 2.1 knots occurs during the summer major tides.

The current near Irago Saki turns about 1.3 hours before the current in the central part of Irago Suido. The current near Kami Shima is about 30 minutes after that in the channel. The current along Irago Saki is about 3 knots, and 1 knot along Kami Shim. Vortices are generated.

Pilotage.—Pilotage is compulsory and available 24 hours for vessels using the Irago Suido Traffic Route. Pilotage is also compulsory for vessels 10,000 dwt or larger sailing NW of a line bearing 050° from Ijika Light (34°26.7'N, 136°55.4'E) to the coast of Atsumi Hanto. Pilotage is strongly recommended for all foreign vessels passing through Morozaki Narrows (Morozaki Suido) at night and all vessels unfamiliar with Morozaki Narrows.

Inbound vessels should send their ETA at the pilot boarding position 24 hours and 6 hours in advance of expected arrival, with immediate notification of changes. The ETA messages should include the following information:

1. Vessel name and gt.
2. Maximum draft.
3. Length of vessel.
4. ETA or ETD.
5. Last port of call and destination.
6. Berthing schedule.
7. Nature of cargo, including specification of any dangerous cargo on board.
8. Any other information such as quarantine, vessel defects, problems with navigational equipment, or any other problems that could interfere with the safe navigation of the vessel.

Outbound vessels should send request for pilots 12 and 6 hours in advance of departure.

Inbound vessels should contact the pilot vessel 3 hours prior to ETA at No. 1 Buoy.

The pilot boards in the following positions:

1. Vessels with a draft less than 14m arriving from the E, within 1.5 miles of position 34°31'N, 137°6.7'E.
2. Vessels with a draft less than 14m arriving from the S or W, within 1.5 miles of position 34°28.5'N, 137°3.6'E.
3. Vessels with a draft of 14m and greater, within 1 mile of position 34°24.8'N, 136°59.9'E.
4. Vessels with a draft of 14m and greater, within 1 mile of position.
5. Vessels bound for the Ise Wan sea berth will board 4 miles S of the sea berth.

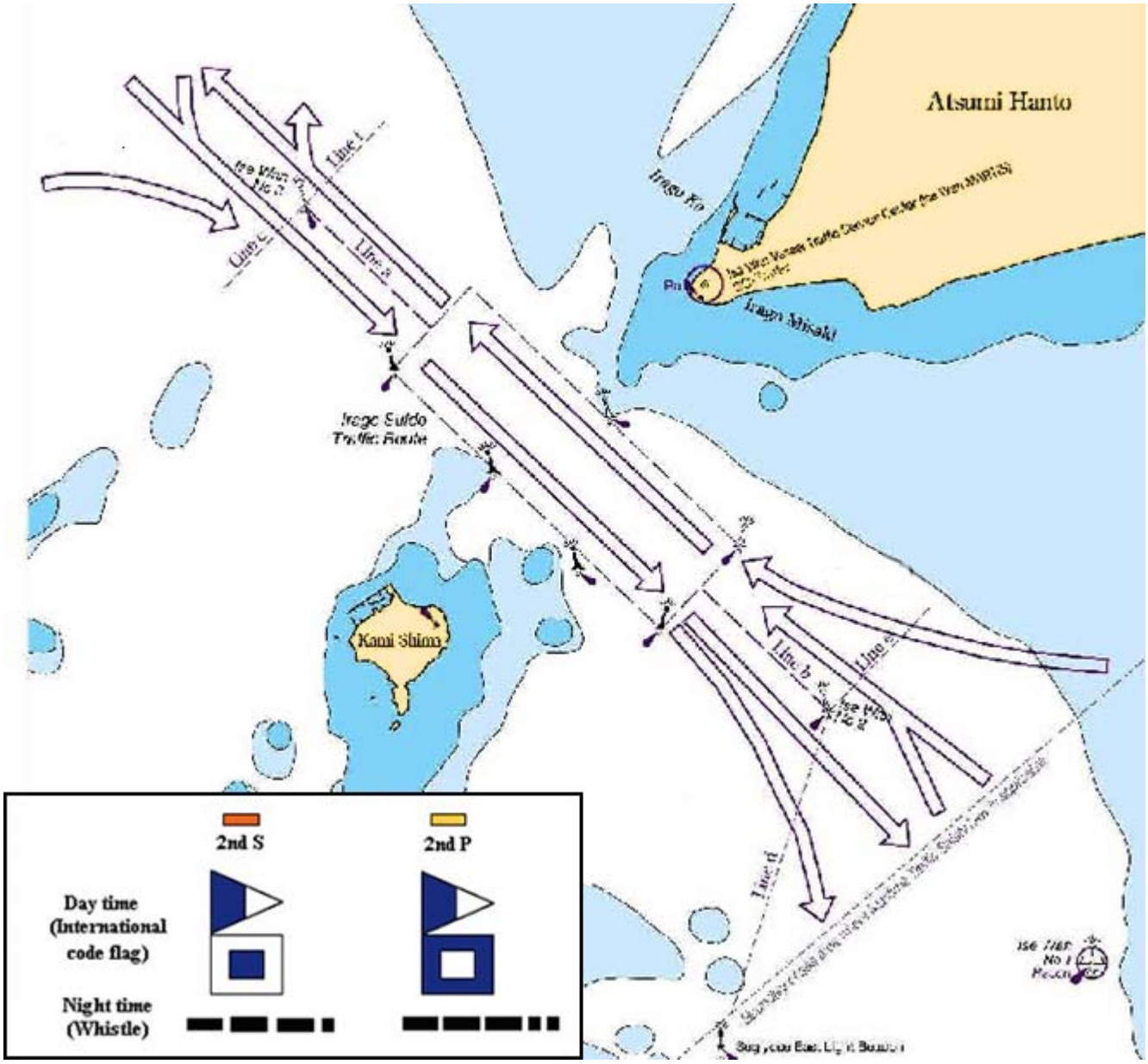
Regulations.—The Ise Wan Vessel Traffic Service Center (VTSC) has been established to ensure safe navigation for vessels passing through Irago Suido.

The following vessels need to report their ETA at the Irago Suido Traffic Route 1 day in advance:

1. Huge vessels 200m in length or greater.
2. Vessels of 130m in length and over but less than 200m.
3. Vessels of 25,000 gt and over carrying liquefied gas.
4. Towing or pushing vessels of 200m in length and over (measured from the bow of the towing vessel to the after end of the towed vessel or measured from the front of the pushed vessel to the stern of the pushing vessel).

The ETAs at the Irago Suido Traffic Route that are reported 1 day in advance of arrival need to have the following information included:

1. Vessel name, call sign, gt, and loa.
2. Specify section of the traffic route vessel will use, including the ETA at the entrance of the traffic route and the ETD from the traffic route.



Irago Suido—Traffic Lanes and Signals

3. Vessel's contact details (if no radio equipment onboard).
4. Destination port.
5. Draft.
6. Specify dangerous cargo on board including confirmation if liquified gas is being carried or not.
7. Length between the bow of the towing vessel and the after end of the towed vessel, or, between the front of the pushed vessel and the stern of the pushing vessel.

In the case of any changes to information provided, the changes should be reported 3 hours before entering the traffic route. Changes to information provided when within 3 hours of entry into the traffic route should be reported immediately.

The following vessels need to report their ETA at the Irago Suido Traffic Route 3 hours in advance:

1. All vessels carrying dangerous cargo intending to navigate the Irago Suido Traffic Route.
2. Vessels of 300 gt and over carrying certain quantities of powder (See item 1, paragraph 1, of article 11 of the Ordinance for Enforcement of the Act on Maritime Traffic Safety, for the exact amount).
3. Vessels of 1,000 gt and over carrying inflammable high pressure gas or liquid in bulk.
4. Vessels of 300 gt and over carrying organic peroxide of 200 tons and above.

The ETAs at the Irago Suido Traffic Route that are reported

three 3 hours in advance of arrival need to have the following information included:

1. Vessel name, call sign, gt, and loa.
2. Specify section of the traffic route vessel will use, including the ETA at the entrance of the traffic route and the ETD from the traffic route.
3. Vessel's contact details (if no radio equipment onboard).
4. Destination port.
5. Specify dangerous cargo on board.

Ise Wan VTSC Navigation Rules—The rules as prescribed by the local Japanese maritime authorities are, as follows:

1. Any vessel of 50m in length or more shall use the traffic route lanes designated by the Ise Wan MARTIS when transiting Irago Suido unless deviation becomes necessary for avoidance of a marine accident or to engage in the rescue of human life or another vessel in distress.
2. Collision avoidance:
   a. Any vessel entering into a traffic lane shall stay clear of any vessels exiting or crossing the traffic lanes as well as avoiding any vessel engaged in fishing or construction work.
   b. All fishing vessels underway shall stay clear of all vessels 200m in length and longer.
3. Vessels should proceed along the right side of the channel as applicable.
4. Vessels shall limit their speed to 12 knots through the water unless deviation becomes necessary for avoidance of a marine accident or to engage in the rescue of human life or another vessel in distress.
5. Vessels in vicinity of the S entrance to the Irago Suido Traffic Route shall proceed (see figure titled **Irago Suido—Traffic Lanes and Signals**), as follows:
   a. Vessels that have completed passage through the traffic lane and are continuing S shall proceed along the W side of the route.
   b. Northbound vessels entering from the S will proceed along the E side of the route.

Vessels in vicinity of the N entrance to the Irago Suido Traffic Route shall proceed as follows:

   a. Southbound vessels entering from the N shall proceed along the W side of the route.
   b. Vessels that have completed passage through the traffic lane and are continuing N shall proceed along the E side of the route.

6. Vessels equipped with AIS shall transmit the code of the destination port to Ise Wan MARTIS for the information of other vessels in the vicinity. These codes are found in Reference 1 of the Ise Wan VTSC User Manual, which is available from the Ise Wan VTCS or directly from the web site. (http://www.kaiho.mlit.go.jp/syoukai/soshiki/toudai/navigation-safety/Martis User Manual/Ise Wan Martis/Ise_Wan_Martis_User_Manual(EN).pdf).
7. Vessels, 100 tons or larger, entering into or exiting from a traffic route shall display the signals shown in the figure titled **Irago Suido—Traffic Lanes and Signals** as appropriate to the time of day.

Ise Wan VTSC Reporting Rules—The following vessels should report to Ise Wan MARTIS on VHF channel 13 or 16 when crossing any Reporting Line (see table titled **Ise Wan Reporting Lines**):

1. Vessels 50m in length or longer.
2. Towing or pushing vessels of 100m in length and over (measured from the bow of the towing vessel to the after end of the towed vessel or measured from the front of the pushed vessel to the stern of the pushing vessel).

The report made when crossing any one of these Reporting Lines should include the following information:

1. Vessel name and call sign.
2. Reporting Line Code being crossed and time of position, or present position.

Signals.—Ise Wan Vessel Traffic Service Center shows signals to instruct vessels of 130m in length or more, but less than 200m in length. Vessels in this category will follow procedures described by the following signals before transiting the Irago Suido Traffic Route:

1. Letter N (flashing)—A vessel is already transiting the traffic route northbound and vessel bound SE should wait outside the designated traffic route until all northbound vessel has cleared.
2. Letter S (flashing)—A vessel is already transiting the traffic route southbound and vessels bound NW should wait outside the designated traffic route until all southbound vessel has cleared.
3. Letters N and S (flashing alternately)—Something is occurring within the traffic route that will not allow entry from either side so all vessels traveling in either direction should wait outside the route.

Vessels 200m or longer transiting Irago Suido must display:

1. By day—Two black cylinders, vertically aligned, 1.5m apart.
2. At night—An all round green flashing light.

Vessels transiting Irago Suido that are carrying dangerous goods must display:

1. By day—1st substitute, Bravo flag.
2. At night—An all round red flashing light.

Contact Information.—See the table titled **Irago Suido—Contact Information**.

Ise Wan Reporting Lines

Name of Reporting Lines	Abbreviation	Description
Ise Wan Ko Minami	IS	A line extending E from E of Ijika Light 20.5km to position 34°26.7'N, 136°55.4'E.
Ise Wan Ko Higashi	IE	A line extending from 17 miles S of O Yama triangle Point 17.5km to position 34°36.1'N, 137°08.8'E.

Ise Wan Reporting Lines		
Name of Reporting Lines	**Abbreviation**	**Description**
Nakayama Suido Higashi	NE	A line connecting Tatsuma Saki Light to the S end of Sakushima Island.
Morosaki Suido Minami	MS	A line connecting the S end of Sakashima Island to Cape Hazumisaki.
Ise Wan Ko Kita	IN	A line extending from the W light on the breakwater off the Toyama Port Sandbank for 11.1km to the SW.
Ise Wan Ko Nishi	IW	A line extending 13.3km N from the W end of Toshijima Island.
Sugashima Suido Higashi	SE	A line connecting the E end of Suga Shima Island and the SE end of Toshijima Island.
Note.—See the graphic titled **Ise Wan VTSC Reporting Lines**.		

Irago Suido—Contact Information	
Ise Wan MARTIS	
Call sign	Ise Wan Martis
VHF	VHF channel 16 (calling and response). Monitored 24 hours by Ise-Wan Martis.
	VHF channel 13 (calling and communication). Monitored 24 hours by Ise-Wan Martis.
	VHF channels 14 and 22 (communication)
Telephone	81-531-342443
Facsimile	81-531-342444
RT Frequency	2189.5 kHz
Ise Wan Pilots (Irago Pilots)	
Call sign	Irago Pilot
VHF	VHF channels 16 and 68
Telephone	81-569-230713
Facsimile	81-569-228835
E-mail	goikenban@isemikawapilot.jp

Caution.—In Irago Suido, vessels of 10,000 gt or over, carrying dangerous cargo (except for huge vessels and vessels of 25,000 gt or over carrying liquefied gases) are prohibited to enter the traffic route when visibility is less than 1 mile. Vessels towing or pushing objects and vessels of 130m in length or over carrying dangerous cargo are also prohibited entry into the traffic route when visibility is less than 1 mile.

Asahi Syo (Asahi Sho) lies at the outer end of a reef that extends 0.75 mile SW from Irago Saki; it has a swept depth of 9.1m.

The W side of the channel is encumbered with reefs and is dangerous. Simosa Syo (Simosa Sho), with a least depth of 2m, lies 0.6 mile E of Kami Shima. Kozukami Syo (Kozukami Sho), with a least depth of 2.2m, and a 9.7m patch, lie 0.6 mile ENE and 0.8 mile NNE, respectively of Kami Shima.

Kami Shima

5.21 **Kami Shima** (34°33'N., 136°59'E.), 171m, high has a reddish summit, and a steep vertical cliff stands on the E side of the island.

Kami Shima Light, from which a racon transmit, stands on the NE extremity of the island.

Segyo Se Buoy (34°30'N., 137°01'E.), marking the boundary of the Maritime Safety Law, lies about 2.8 miles SE of Kami Shima Light. Two fish havens lie close together 0.7 mile SE of Kami Shima.

Foul ground fringes the island for as much as 0.3 mile; a chain of reefs extends 0.5 mile S of the island.

Tainoshima Syo (Tainoshima Sho), with a least depth of 8.2m, lies 3.5 miles S of Kami Shima. The sea within the 20m curve that encircles this depth becomes rough during violent weather.

Sakate Dasi, Asamao Se, and Segyo Se, with least depths of 6.4m, 9.6m, and 9.6m, respectively, lie SSE of Kami Shima, N of Tainoshima Syo.

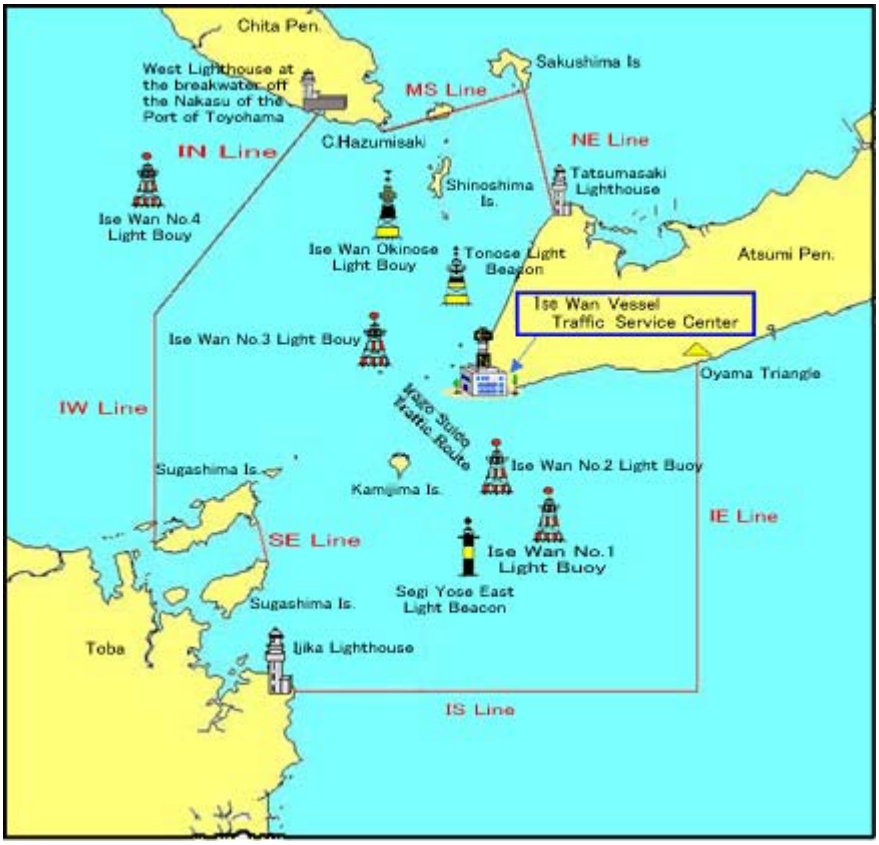
Caution.—A wreck was reported (1996) to lie 1.7 miles ENE of Kami Shima Light.

Entrance to Ise Wan—West Side

5.22 From the SW side of Kami Shima, a chain of detached reefs extends SW for about 3 miles, terminating at a 7.7m rocky patch. This entire area is encumbered with reefs and shoal areas which are charted.

Suga Shima (34°29'N., 136°54'E.), located 4.25 miles SW of Kami Shima, is about 2 miles long on a NE to SW axis, 237m, high and appears flat from the S, but looks pointed when seen from the E. Sira Saki, the NE extremity of the island, is fronted by reefs for a distance of 0.5 mile. There is a channel between these reefs that is 0.9 mile wide between the 10m curve. Tide rips are frequently seen on the shoal areas.

Kaburako Suido (34°28'N., 136°54'E.) is situated between Suga Shima and the mainland to the S and SW. From the E entrance the passage trends W for about 1.5 miles, and then, narrowing abruptly, leads NW for more than 1 mile to Toba Ko. Since this channel is short and well-marked, it is not difficult to navigate. However, it is not suitable for large vessels as the fairway is somewhat constricted and the dangers of submerged rocks exist. An overhead cable, 34m high, spans the channel



Ise Wan VTSC Reporting Lines

between Suga Shima and Sakate Shima, 0.4 mile W. Submarine cables also cross the strait in this area. Submarine cables also cross Irago Suido, about 6 miles E of Kaburako Suido.

Sugashima Suido (34°30'N., 136°54'E.), a straight channel about 1 mile wide, is situated between Suga Shima on the S and Tosi Shima on the N. From its E entrance between Kami Shima and Yoko Se, a rocky patch with a least depth of 14.6m 1.5 miles NW, the channel leads SW for about 7 miles to Toba Ko.

The least depth on the range line is 10.9m, with a least width of 0.2 mile between the 10m curves, N of Sira Saki.

Tosi Shima (34°31'N., 136°53'E.) is about 3.5 miles long on a NE to SE axis, and forms the NW side of the inner part of Sugashima Suido, and the NE part of Toba Ko. Tukiage Saki, the SE extremity of Tosi Shima, is a small peninsula, and when seen at a distance from certain directions, appears to be a small island.

O-Zukumi Shima and Ko-Zukumi Shima lie on foul ground that extends from close off the NE extremity of Tosi Shima for a distance of about 1.5 miles NE.

Toba Ko (34°29'N., 136°51'E.)

World Port Index No. 61500

5.23 Toba Ko, at the inner end of Sugashima Suido, consists of a port, harbor facilities, and a town. The port opens ENE and heavy seas run into it when strong E winds prevail otherwise the port is well-sheltered.

Tides—Currents.—In Toba Ko, the flood current setting SW through Sugashima Suido combines with the branch setting NW through Kaburako Suido, and then flows NW through Momotori Suido at a rate of about 1.5 knots. The ebb current flows in a reverse direction at a maximum rate of about 2.5 knots in the narrows between the W extremity of Tosi Shima and Hinata Shima, 0.4 mile W. The mean range of tide in Toba Ko is 1.2m and the spring range is 1.6m.

Depths—Limitations.—General depths in Toba Ko range from 9.1 to 46m. There are several wharves with depths of 2.1 to 4.9m alongside.

Aspect.—Asama-ga Take rises to a height of 555m, about 4.8 miles W of Kaburako Saki; its wooded dome-shaped summit is conspicuous.

Pilotage.—Pilotage is compulsory for all vessels. The pilot embarks on a vessel from a orange pilot boat. Vessels carrying liquefied gas embark a pilot 6.5 miles E of Yoroi Saki.

Anchorage.—Deep-draft vessels anchor outside the harbor limits of Toba Ko in the vicinity of the entrance range line, in a position about 2 miles from the front range structure. The depth is about 14.6m, sand and mud. Anchorage can also be obtained about 0.3 mile N of the W extremity of Sakate Shima, in a depth of 8.5m, mud; the holding ground is not good.

Caution.—Numerous fish havens lie between and close N of the above boarding area.

5.24 Momotori Suido (34°31'N., 136°50'E.), a winding passage, which is somewhat narrow in places, leads N from Toba Ko to the W extremity of Tosi Shima. The passage then trends W between the mainland on the S and a chain of islands on the N, about 0.5 mile offshore, and finally NW between two shallow areas into Ise Wan for a total distance of about 3.5 miles.

There is an overhead cable, with a clearance of about 41m, between the W extremity of Tosi Shima and Hinata Shima, about 0.35 mile W. This is also the most narrow part of the channel, with a width of 0.23 mile between the 10m curve, directly under the overhead cable.

A light stands on Shimaga Shima, the SW extremity of Tosi-Shima, and there is a tower on the S end of Hyuga Shima.

Kohana, a fishing harbor marked by a light, is situated close SSW of the latter tower. An obstructed fish haven lies within Momotori Suido.

Although the channel is tortuous, it is deep and safe, and there are many marks. It is a good route for small and medium vessels entering Ise Wan from the S.

Ise Wan—East Side

5.25 From Irago Saki the coast trends NNE for 5.5 miles to Tatuma Saki, the SE entrance point of Mikawa Wan. This stretch of coast, which is formed by Atumi Hanto, consists of sand beach with low pine trees.

Tatuma Saki is a low point but it is conspicuous from the SW or NE. There are chimneys, 152m and 203m high, situated 0.4 mile SW of the light on Tatuma Saki.

A tanker berth is situated on Tatuma Saki, with an associated dredged area of 14m (1980).

Tono Se (34°38'N., 137°01'E.), a dangerous steep-to reef, with a depth of 3.5m, is located about 1.3 miles offshore, 3.5 miles N of Irago Saki Light.

Irago Ko (34°35'N., 137°01'E.) is a small port, protected by a breakwater, situated close NE of Irago Saki. A light stands at the head of the breakwater. A detached breakwater lies 0.2 mile NE of the harbor entrance. There are depths within the breakwater from 1.8 to 7.1m. The entrance, which opens N, is about 82m wide and has depths of 3 to 5m. The port provides good anchorage for small vessels with local knowledge.

A sea berth, consisting of an SBM, is situated 0.5 mile NW of Tatuma Saki Light. The berth, which is for the exclusive use of the power plant situated near the light, will provide a berth for a vessel of 15m draft and of 210,000 dwt.

There is also a dolphin berth alongside the head of a pier, about 0.3 mile NE of the light, for a vessel of 11m draft and of 5,000 dwt The area around this berth is dredged to 14m (1980).

Vessels awaiting a berth usually anchor 4 miles NW of Kami Shima; a berthing master embarks in this position. Berthing and unberthing are undertaken in daylight only.

Hazu Saki (Hazu Misaki) (34°42'N., 136°58'E.), the S extremity of Tita Hanto (Chita Hanto), is located about 5 miles WNW of Tatuma Saki. The S coast of the cape is a red cliff and is easily identified. There is an observatory, 38m high, situated near the point.

Nakayama Suido and Morosaki Suido lie between Tatuma Saki and Hazu Saki and will be discussed with Mikawa Wan.

From Hazu Saki, the W coast of Tita Hanto trends NW for 7.5 miles to Noma Saki (Hugu Saki), a conspicuous headland, then N in a gentle concave curve for 8.5 miles to Oniga Saki. From Oniga Saki the coast trends N 2 miles to the harbor limit of Nagoya Ko.

In Tita Hanto, a low range of hills lie, in a N to S direction. The hills in the S range from 100 to 130m high, with many pines, but they become lower toward the N and the pine trees become sparser. From Hazu Saki to Noma Saki the coast is primarily rocky; N of Noma Saki the coast is a sand beach, with a sand bar extending from 2 to 3 miles offshore in places. Hiro Se, a sandbar with a least depth of 2.1m, lies 5.5 miles NNW of Noma Saki and Toga Se, a sand bar with a least depth of 1.8 lies 2 miles farther N. The 20m curve lies about 0.5 mile off Noma Saki and as much as 3.25 miles offshore between Noma Saki and Oniga Saki.

Ise Wan—West Side

5.26 The W side of Ise Wan between Toba Ko and Yokkaichi Ko, 30 miles NNW, deeply penetrates the coastline; Oguchi Wan is located near the center. The coast is low and flat, with white sand and many pine trees. Mountains of almost the same height are located about 11 miles inland, and landmarks are few. The 20m curve lies up to 5 miles off this coast; a sand bar extends 2 miles offshore, about 11.5 miles NW of Toba Ko.

There is no safe berth for large vessels in strong E winds along the coast.

Uji-Yamada Ko (34°31'N., 136°45'E.), a small port at the mouth of the Seta Kawa is situated about 5 miles WNW of Toba Ko, and is available to vessels with local knowledge.

Anchorage can be taken off the port, according to draft, but strong E winds are sometimes experienced in the spring and autumn. Anchorage can also be affected by the tidal current in the area.

Between Uji-Yamada Ko and Yokkaichi Ko, about 26 miles NNW, there are several fishing ports, and numerous rivers flow into the bay. The ports and rivers are marked by lights.

5.27 Matsusaka Ko (Tsumatsusaka Ko) (34°36'N., 136°34'E.) (World Port Index No. 61495), situated at the head of Oguchi Wan, about 11 miles NW of Uji-Yamada Ko, is designated an important port. This is a dredged port, sheltered by breakwaters.

Depths—Limitations.—The port is open NNE and is entered through a channel dredged to a depth of 7.5m the E side of the basin within the breakwater is dredged to the same depth. A wharf, 300m long, in the SE part of the harbor has a least depth of 7.1m alongside.

Pilotage.—Pilotage is compulsory for vessels over 10,000 gt. For daytime service only, pilot comes from the Moro Saki Pilot Station.

Anchorage.—Anchorage is available off the harbor, according to draft, in depths of 7 to 12m, with a mud bottom, good holding ground, although swells may be high when a N wind prevails.

The N mouth of the Kumozu Gawa empties into Ise Wan 3 miles N of Matsusaka Ko. A light is shown on the head of a

breakwater on the S side of the river.

5.28 Ikuratsu Ko (Igurazu Ko) (34°41'N., 136°33'E.), built on reclaimed land close N of Komozu Gawa, consists of a basin about 0.4 mile square, with wharves on three sides and a breakwater protecting its NE side. A light stands at the head of the breakwater. There are depths of about 5.2 to 9.4m in the basin. The harbor limit, shown on the chart, extends about 1.5 miles to seaward of the breakwater.

Tsu Ko (34°42'N., 136°32'E.) is an open port situated at the mouth of Iwata Gawa, 2 miles NNW of Ikuratsu Ko. Tsu Ko, which is protected by breakwaters, has depths of 2.5 to 3.5m, however, the channel narrows to a width of 15m.

Anchorage.—Anchorage is provided 1.5 miles off the mouth of Iwata Gawa in a depth of 10m. The bottom is mud and affords good anchorage, even when N winds prevail. Southeast gusts during September must be carefully watched.

Yokkaichi Ko (Yokkaiti Ko) (34°58'N., 136°38'E.)

World Port Index No. 61490

5.29 This is an Open, Quarantine, Emigration-Immigration, and designated Special Important Port situated 10 miles WSW of Nagoya Ko. It is divided into three sections and is protected by breakwaters and an island of reclaimed land. There is an inner and outer harbor and offshore oil berths.

Winds—Weather.—During the winter WNW winds prevail and SE winds during the summer. Southeasterly winds may blow with great force during the typhoon season, from August to October, causing vessels at anchor to drag. As the prevailing NW winds of winter come off the land, vessels at anchor are not endangered by them.

Tides—Currents.—The mean range of tide is 1.4m and the spring range is 1.8m. The tidal currents in the harbor do not exceed a rate of 0.5 knot and turn at the times of HW and LW.

Depths—Limitations.—Passage I leads into the inner section of the S part of the harbor; it has a dredged depth of 12m and is 300m wide. This passage leads to alongside berths that will accommodate vessels with a draft of 3 to 12m, and up to 30,000 dwt at Wharf No. 1, Wharf No. 2, and Wharf No. 3. Umakosi Passage, 200m wide with a 12m depth, leads NW from the W end of Passage I. There are two buoy berths on the W side of Umaokosi Passage that will accommodate a vessel with a draft of 10.9m and of 65,000 dwt, between Buoy No. 1 and Buoy No. 2, and a vessel with a draft of 9m and of 15,000 dwt, between Buoy No. 2 and Buoy No. 3.

The Showa Sekiyu Company Sea Berth is situated in the SE approach to Passage I; This berth is situated about 2.5 miles offshore and can accommodate vessels of up to 275,000 dwt in a depth alongside of 22m.

Cosmo Sea Berth, owned by Tokyo Sekiyu Company, is comprised of a SBM situated 1.25 miles NNE of Showa Sekiyu Sea Berth No. 1. This berth will accommodate a vessel of up to 314,000 dwt having a depth alongside of 20.8m. Circular areas, with a radius of 0.16 mile centered on buoys of all three sea berths, are designated as prohibited areas.

Submarine pipelines are laid from these sea berths W and NW to the coast.

Passage II leads to Section III in the inner harbor and is dredged to a depth of 14m; it is 300m wide. There are two oil piers within this section which will accommodate a vessel of 10.5m draft and of 60,000 dwt and 90,000 dwt, respectively.

An island of reclaimed land, Kasumiga Ura, extends N of Section III, on the N side of the dredged channel. A pipeline bridge, with a clearance of 21m, extends from the SW extremity of the island S to the mainland. Lights are shown to indicate the channel beneath the bridge. The island has a bridge to the mainland about 1 mile N of the pipeline bridge. A breakwater, with a light at its N end, lies within a prohibited area 0.4 mile E of Kasumiga Ura.

Ocean Berth, with a reported depth alongside of 14m, lies at the E end of the S side of Kasumigaura. LPG vessels up to 68,000 dwt, with a maximum length of 260m and a maximum draft of 11m, can be accommodated.

A prohibited area, as indicated on the chart, lies at the NE terminus of Kasumigaura Breakwater.

Kasumigaura North Wharf, on the NE side of the island, contains one container berth, with an alongside depth of 14m. Kasumigaura South Wharf, on the S side of the channel, provides five additional container berths, with alongside depths of 12 to 14m. The berths are approached through Passage III, a buoyed channel dredged to a depth of 14m (2005).

An LNG pier, with a dredged depth of 14m alongside, provides a dolphin berth at the E extension of Passage III.

Another buoyed channel, dredged to a depth of 7.5m (1997), leads to berths on the NW side of the island, with depths of 4.5 to 7.5m.

Aspect.—A chimney 186m high is situated on the W side of the Kasumiga Ura reclaimed land. There are many chimneys and tanks within the port area, whose positions are charted, that are good marks.

Pilotage.—Pilotage is compulsory for vessels exceeding 10,000 gt. Vessels are requested to cable the agent in advance, at least 24 hours advising ETA at pilot station. The pilot boarding area for vessels enroute:

1. Yokkaichi Ko—3 miles E of the breakwater.
2. Ise Wan Sea Berth—4 miles S of the Ise Wan Sea Berth.
3. Showa Sea Berth and Cosmo Sea Berth—3.25 miles SSE of Showa Sea Berth.
4. Showa Oil No. 1 Berth, Showa Oil No. 2 Berth, and Daikyo Oil Berth—A 1-mile diameter circle, with a center bearing 200°, distant 3 miles from the Ise Wan Sea Berth.

Vessels requiring a pilot should give 24-hour notice. Vessels berth during the day only and can depart anytime; however tankers are restricted to daytime berthing. Pilots are not available after 2100 for vessels entering the port.

Yokkaichi Port Radio may be reached on VHF channel 16.

Regulations.—There are two traffic routes (No. 1 Traffic Route and No. 2 Traffic Route) and three channels in this harbor. No. 1 Traffic Route runs from the W side of the quarantine anchorage to Section I, and connects with No. 2 Traffic Route. No. 2 Traffic Route runs to Gaki Pier in the NW. Navigation control is in effect in No. 1 Traffic Route and No. 2 Traffic Route. Vessels navigating in the traffic routes must follow the navigation control signals given out by each signal station.

In the N part of the port, there are three channels leading to Gaki Pier, Kasumigaura Wharf, and Fuso Wharf. These channels and the traffic routes are marked by lighted buoys.

Photo courtesy of Nagoya Port Authority

Nagoya Ko—Kinjo Pier

Vessels without spark arrestors on the stacks, vessels using open fires, and vessels with inadequate fire control equipment may not approach within 30m of any tanker carrying dangerous inflammable cargo when it is moored within the harbor. This does not apply to vessels that have received special permission from the harbormaster.

Tankers carrying dangerous inflammable materials should display a banner visible at night, reading "Dangerous Inflammable Cargo Aboard," when moored in the harbor.

Signals.—Anchorage and navigation control signals are provided by the Yokkaichi Bohatei Signal Station, on the Yokkaichi Ko Breakwater and the Yokkaichi Signal Station, on the roof top of the Komukyoku Chosha building at Seawall No. 6.

The following traffic signals are shown:

1. White light flashing every 2 seconds—Inbound traffic and outbound vessels of less than 500 gt in Passage I and Umaokosi Passage may proceed.
2. Red light flashing every 2 seconds—Outbound traffic in Passage I may leave. Outbound vessels of more than 500 gt in Umaokosi Passage should stop; vessels of less than 500 gt may leave. Inbound vessels of more than 500 gt should stop in the outer part of Passage I and keep clear of outbound traffic; vessels of less than 500 gt may enter by either passage.
3. Two red lights, vertically oriented, flashing every 3 seconds—Outbound traffic in Umaokosi Passage may leave. Outbound vessels of more than 500 gt in Passage I should stop; vessels of less than 500 gt may leave. Inbound vessels greater than 500 gt should stop in the outer part of Passage I and keep clear of outbound traffic; vessels less than 500 gt may enter by either passage.
4. One red light over one white light, vertically oriented, flashing every 3 seconds—Inbound vessels of 3,000 tons or greater should stop outside the passage remaining clear of vessels in the channel; vessels less than 3,000 tons may enter or leave by either passage.
5. Three red lights over three white lights, vertically oriented, flashing every 6 seconds—Inbound and outbound traffic are prohibited.

Berthing signals and anchorage signals are also displayed from these signal stations. These signals consist of a designation flag and alphabetical or numerical flags of the International Code of Signals. The designation flag is a red square flag with two white squares, one in the middle of the upper edge and one in the middle of the lower edge.

For anchoring, the designation flag above the following flags means:

1. E flag—Anchor in East Anchorage.

2. W flag—Anchor in West Anchorage.
3. P flag—Anchor in Section III, except in East Anchorage or West Anchorage.

The vessel replies with the Answering Pennant above the alphabetical flag of the berth.

For berthing, the berthing flag above the numerical and/or alphabetical flags of the International Code of Signals indicates the alongside berth which has been allocated. The vessel replies with the Second Substitute above the alphabetical and numerical flags of the berth.

Contact Information.—See the table titled **Yokkaichi—Contact Information**.

Yokkaichi—Contact Information	
Port	
Call sign	Yokkaichi Port Radio
VHF	VHF channels 11, 1,2 and 16
Telephone	81-593-6670-42
Port Authority	
Telephone	81-593-6670-22
Facsimile	81-593-6670-25
E-mail	shinko@yokkaichi-port.or.jp
Web site	https://www.yokkaichi-port.or.jp

Anchorage.—The quarantine anchorage, about 0.3 mile in radius, is situated close S of the entrance to Passage I, 0.6 mile SE of the head of Asahi Breakwater. Depths in the anchorage are from 11.4 to 14.2m, mud bottom. Vessels carrying dangerous materials can anchor in the designated areas in Section No. 2 and Section No. 3.

Caution.—Vessels are prohibited from entering the areas within a 300m radius of each of the two sea berths. The other prohibited areas within the harbor are 0.9m NE of the NE end of the E breakwater; the E side of Quay 25 of Kasumiga Ura South Wharf; and the area NE of Tomifuta Wharf.

5.30 From Yokkaichi Ko to Nagoya Ko, the coast trends NE 8 miles to the mouth of the Kisko Gawa, which is on the W side of Nagoya Ko harbor limits. Ibi Gawa flows into the head of the bay close W of Kisko Gawa and mud flats extend S 2 miles from the mouth of each of these two rivers. A groin extends S from the W bank of the rivers.

Ise Wan Sea Berth (Idemitsu Toa Sea Berth) (34°55'N., 136°44'E.) is situated near the center of Ise Wan, 4 miles ESE of Yokkaichi Ko Breakwater. It is a dolphin berth aligned on a N to S axis about 80m long, and 26m deep that will accommodate two tankers up to 310,000 dwt. It is marked by numerous lights, a siren, and a radar reflector. The berth is protected by a submersible oil boom. A submarine pipeline extends NE from the berth to the oil refinery at Nagoya.

Nagoya Ko (35°04'N., 136°52'E.)

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5.31 Nagoya Ko is designated a Special, Open, Quarantine, Emigration-Immigration, and Special Important Port. The harbor has been excavated out of the shallow flat that occupies the head of Ise Wan, and consists of an outer harbor and an inner harbor. The port is divided into six districts.

A storm tide breakwater, about 2.8 miles long, stretches NW across the mouth of the bay; its position may be seen on the chart. There are two openings in the breakwater; the E opening is about 0.2 mile wide while the W opening is about 0.1 mile wide. Dredged channels lead through each of the openings.

Winds—Weather.—During the winter, W winds frequently prevail in the port, but the strongest winds blow from the NW. The mean wind velocity is about 6 knots, with an average of 10 days of gale force winds from the NW in March.

The months with the greatest number of days of rain are March through September, which average 11 days each. The months of January and February average 7 days of snow each.

Tides—Currents.—The flood tide current sets inward and the ebb current sets outward. In general, the flow of the current follows the direction of the channels. At the main entrance to High Tide Breakwater, the tide changes 35 minutes earlier than at Irago Suido and 30 minutes earlier than that at the secondary entrance.

The mean velocity at spring tide is 0.7 knots at the main entrance of High Tide Breakwater and 1.3 knots at its secondary entrance.

When the declination of the moon is great, two flood tidal currents and two following ebb tidal currents show an equal disparity. A flood current immediately following a low tide and an ebb tidal current preceding it are stronger than other currents. This strong flood current occurs during the day in summer and fall, and at night in winter and spring.

Depths—Limitations.—The port is divided into six sections. The three designated traffic routes are Naiko, Gaiko No. 1, and Gaiko No. 2.

East Passage, the main ship channel commencing 3 miles outside the breakwater, is dredged to a depth of 16m. West Passage, to the NW of East Passage, is dredged to 14m.

In the outer harbor are oil piers with dredged depths of 14m. There are dolphin berths here with submersible oil booms. Vessels up to 100,000 dwt can be accommodated at the inner harbor.

The outer harbor also has general cargo berths with depths ranging from 3.5 to 12m, timber wharves with depths of 10m, grain terminals with depths alongside of 10m, and Nagoya Container Wharf, with depths of 11 to 15m. The fairway to the wharves is dredged to a depth of 16m.

Nabeta Wharf, at the W end of Section 4, has dredged depths alongside of 12 to 14m.

The inner harbor contains berths for general cargo, car, fertilizer, and coal vessels. The depths alongside range from 5 to 10.4m on the N side, 10 to 14m at the Garden Wharf, 7.5 to 10.5m on the W side, and 7.5 to 9m on the E side.

New wharfage has been completed S of Inaei Wharf No. 2, with depths of 8.7 to 9.2m alongside its N face and depths of 6 to 10.4m alongside its S face.

The Naiko Traffic Route runs between the SW part of Naiko Hakuchi and the SE end of the Kinzyo Wharf. The Gaiko No. 1 Traffic Route runs from the S entrance of the Naiko Traffic Route to the harbor limit. The Gaiko No. 2 Traffic Route runs from the N part of the No. 1 Traffic Route to the lumber pool.

These routes are indicated by lighted buoys and navigation control is in effect in this area. Vessels should navigate with caution and follow the navigation control signals given out by the signal stations.

Vessels should refer to the following table of signals for designation of anchorage or assignment of mooring signals.

Pilotage.—Pilotage is compulsory for vessels of 10,000 gt and over and is recommended for all vessels. A request for a pilot should be made at least 10 hours prior to arrival. Pilots will board from an orange painted boat with the letters PILOT on the hull.

Large vessels will embark the pilot in a position approximately 2 miles SE of Ise Wan Sea-Berth (34°54.2'N., 136°46.0'E.).

Vessels may sail at any hour, but entry is only permitted from sunrise to sunset.

Nagoya Port Radio may be contacted on VHF channels 12, 18, and 20, in addition to VHF channel 16.

Regulations.—In addition to regulations for specified harbors, the following regulations are in force for Nagoya Ko:

1. Vessels of 20,000 gt or more, and tankers of 5,000 gt or more, shall report to the Captain of the Port their ETA at the entrance to Outer Harbor Fairway No. 1 by noon on the preceding day. An advanced report should be sent to Nagoya Harbor Radar on VHF channel 12 or 16 to Nagoya Hoan (JNT) or by telephone/facsimile to Nagoya Harbor Radar.
2. A vessel using Outer Harbor Fairway No. 1 has the right of way over a vessel using Outer Harbor Fairway No. 2.
3. Vessels of 500 gt or more shall display the International Code pennant above pennant 1 to indicate they have right of way over vessels of less than 500 gt.
4. Overtaking is permitted in the fairways, provided there is adequate sea room, except within 500m of a junction or a bend. An overtaking vessel shall sound one prolonged blast followed by one short blast, if passing on the starboard side of the overtaken vessel, and one prolonged blast followed by two short blasts, if passing on the port side of the overtaken vessel.
5. Vessels intending to leave port shall report their ETD to the Captain of the Port, by noon of the previous day.

Nagoya Traffic Advisory Service (TAS) provides vessels with information, controls traffic routes, and ensures safe navigation. The following vessels are required to report to the Traffic Advisory (TAS):

1. Vessels intending to navigate East Passage—All vessels 270m or greater in length and oil tankers of 5,000 gross tons or more.
2. Vessels intending to navigate West Passage or North Passage—All vessels 175m or greater in length and oil tankers of 5,000 gross tons or more.

Vessels should report to Nagoya Coast Guard Radio on VHF channel 12 or 16, or to Nagoya Harbor Radio by telephone or facsimile, by noon of the day prior to entry into the passage.

The following vessels should report to Nagoya Harbor Radar (Operations Desk) by VHF channel 16 or telephone, as follows:

1. Inbound vessels of 50m or more in length and vessels towing or pushing having an overall length of 50m or more:
   a. When passing the Reporting Lines (see table titled **Nagoya TAS Reporting Line**s.
   b. 30 minutes prior to leaving an anchorage.
   c. Upon getting underway.

Inbound vessels should include the following information in their reports:

a. Vessel's name and call sign.
b. Time passing Reporting Lines (see table titled **Nagoya TAS Reporting Line**s.
c. Abbreviation of Reporting Line.
d. Name of wharf or anchorage.
e. Name of seaway (East Passage, West Passage, or North Passage).

2. Outbound vessels of 50m or more in length and vessels towing or pushing having an overall length of 50m or more:
   a. 30 minutes prior to leaving the berth.
   b. Upon leaving the berth
   c. 30 minutes prior to leaving an anchorage.
   d. Upon getting underway.

Outbound vessels should include the following information in their reports:

a. Vessel's name and call sign.
b. ETD.
c. Name of wharf or anchorage.
d. Name of seaway (East Passage, West, Passage, or North Passage).

Any significant change to the vessel's reported information must be communicated to Nagoya Traffic Advisory Service Center immediately. Vessels should report changes of 10 minutes or more to their ETA.

Vessels should maintain a continuous listening watch on VHF channel 16 for the period of time commencing 2 hours prior to crossing the initial reporting line until berthing or departing the Traffic Advisory Service (TAS) area.

Signals.—Traffic signals, described in the titled **Nagoya Ko—Traffic Signals**, are shown from the signal stations on the SE end of Middle Breakwater and at the Harbor Office

Vessels sailing at night and intending to use the Inner Harbor fairway shall sound three prolonged blasts 15 minutes before getting underway.

A vessel of 500 gt or more, when leaving harbor, shall display one of the following signals:

1. If proceeding by Outer Harbor Fairway No. 1—Flag E below the First Substitute of the International Code.
2. If proceeding by Outer Harbor Fairway No. 2—Flag W below the First Substitute of the International Code.

Berthing and anchoring signals are also displayed from the signal stations on the Middle Breakwater and at the Harbor Office. These signals, which are described in the table titled **Nagoya Ko—Berthing and Anchoring Signals**, consist of the Designation flag (a red square flag with two white squares on it, one in the middle of the upper and lower edge) above an alphabetical and/or numerical flag of the International Code of Signals.

Vessels should reply with the Answering Pennant above the alphabetical and numerical flags of the berths.

Contact Information.—See the table titled **Nagoya Ko— Contact Information**.

Nagoya Ko East Passage—East Breakwater Signal Station Traffic Signal				
Signal Type		**Vessels of 270m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m in length and/or 500 gt**
Entry	"I" Flashing	Entry permitted, departure prohibited		Entry and departure permitted
Departure	"O" Flashing	Entry prohibited, departure permitted		
Free	"F" Flashing	Entry and departure prohibited	Entry and departure permitted	
Prohibition	"X" Fixed	Only specified vessels may enter or depart		
Warning	"XI" Flashing "XO" Flashing "XF" Flashing	Entry and departure prohibited, signal will soon change		Entry and departure permitted
	"X" Flashing	Entry and departure prohibited		

Nagoya Ko East Passage—Kinjo Signal Station Departure Traffic Signal				
Signal Type		**Vessels of 270m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m in length and/or 500 gt**
Entry	"I" Flashing	Departure prohibited		Departure permitted
Departure	"O" Flashing	Departure permitted		
Free	"F" Flashing	Departure prohibited	Departure permitted	
Special	"OE" Flashing	Departure permitted		
	"OW" Flashing	Departure prohibited	Departure prohibited	
	"E" Flashing		Departure permitted	
	"W" Flashing		Departure prohibited	
Prohibi-tion	"X" Fixed	Only specified vessels may enter or depart		
Warning	"XI" Flashing "XO" Flashing "XF" Flashing "XE" Flashing "XW" Flashing	Departure prohibited, signal will soon change		Entry and departure permitted
	"X" Flashing	Departure permitted		

Nagoya Ko West Passage—Kinjo Signal Station Departure Traffic Signals				
Signal Type		**Vessels of 175m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m and/or 500 gt**
Entry	"I" Flashing	Departure prohibited		Departure permitted
Departure	"O" Flashing	Departure permitted		
Free	"F" Flashing	Departure prohibited	Departure permitted	
Special	"OE" Flashing	Departure prohibited		
	"OW" Flashing	Departure permitted		
	"E" Flashing	Departure prohibited		
	"W" Flashing	Departure prohibited	Departure permitted	

Nagoya Ko West Passage—Kinjo Signal Station Departure Traffic Signals				
Signal Type		**Vessels of 175m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m and/or 500 gt**
Prohibition	"X" Fixed	Only specified vessels may enter or depart		
Warning	"XI" Flashing "XO" Flashing "XF" Flashing "XE" Flashing "XW" Flashing	Departure prohibited, signal will soon change		Departure permitted
	"X" Flashing	Departure prohibited		

Nagoya Ko West Passage—West Breakwater Signal Station Traffic Signals				
Signal Type		**Vessels of 175m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m in length and/or 500 gt**
Entry	"I" Flashing	Entry permitted, departure prohibited		Entry and departure permitted
Departure	"O" Flashing	Entry prohibited, departure permitted		
Free	"F" Flashing	Entry and departure prohibited	Entry and departure permitted	
Special	"T" Flashing	Entry permitted W of line between SE end of Tobishima Wharf and NE end of Port Island, departure prohibited		
Prohibition	"X" Fixed	Only specified vessels may enter or depart		
Warning	"XI" Flashing "XO" Flashing "XF" Flashing "XT" Flashing	All traffic prohibited, signal will soon change		Entry and departure permitted
	"X" Flashing	Entry and departure prohibited		

Nagoya Ko North Passage—North Kinjo Signal Station Traffic Signals				
Signal Type		**Vessels of 175m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m and/or 500 gt**
Entry	"I" Flashing	Entry permitted, departure prohibited		Entry and departure permitted
Departure	"O" Flashing	Entry prohibited, departure permitted		
Free	"F" Flashing	Entry and departure prohibited	Entry and departure permitted	
Special	"E" Flashing		N passage-Entry and departure permitted E passage-Departure permitted W passage-Entry and departure prohibited	
Special	"W" Flashing		N passage-Entry and departure permitted W passage-Departure permitted E passage- Departure prohibited	
Prohibition	"X" Fixed	Only specified vessels may enter or depart		

Nagoya Ko North Passage—North Kinjo Signal Station Traffic Signals				
Signal Type		**Vessels of 175m or more in length and oil carriers of 5,000 gt and greater**	**Vessels of 50m or more in length and 500 gt and greater**	**Vessels less than 50m and/or 500 gt**
Warning	"XI" Flashing "XO" Flashing "XF" Flashing "XE" Flashing "XW" Flashing	Entry and departure prohibited, signal will soon change		Entry and departure permitted
	"X" Flashing	Entry and departure prohibited		

Nagoya Ko—Berthing and Anchoring Signals		
AIS Signal	**Flag Signal**	**Meaning**
-	1st Substitute, E	Departing through the E passage.
-	1st Substitute, W	Departing through the W passage.
E1	2nd Substitute, E1	Proceeding to berths on the W side of Kitahama Wharf or the dangerous substance anchorage with a radius of 300m centered in position 34°59.9'N, 136°50.0'E.
E2	2nd Substitute, E2	Proceeding to berths on the S side of Tokaimotohama Wharf, the N side of Kitahama Wharf or the Yokosuka Wharf.
E3	2nd Substitute, E3	Proceeding to berths on the W side of Tokaimotohama Wharf.
E4	2nd Substitute, E4	Proceeding to berths on the N side of Tokaimotohama Wharf.
E5	2nd Substitute, E5	Proceeding to berths at Shinpo Wharf.
B1	2nd Substitute, B1	Proceeding to berths on the S side of Shiomi wharf or the dangerous substance anchorage in position 35°02.9'N, 136°52.0'E.
B2	2nd Substitute, B2	Proceeding to berths on the E side of Shiomi Wharf.
B3	2nd Substitute, B3	Proceeding to berths on the N side of Shiomi Wharf.
B4	2nd Substitute, B4	Proceeding to berths on the W side of Shiomi Wharf.
N1	2nd Substitute, N1	Proceeding to berths at Showa or Funami Wharves.
N2	2nd Substitute, N2	Proceeding to berths at Garden, Ote, Tsukiji E, and Oe Wharves.
N3	2nd Substitute, N3	Proceeding to Isshu Cho or berths at Inaei and Shionagi Wharves.
N4	2nd Substitute, N4	Proceeding to berths on the E side of Sorami Wharf.
N5	2nd Substitute, N5	Proceeding to moorings in Section 1.
K1	2nd Substitute, K1	Proceeding to Kinjo Wharf, No. 52 to No. 57 quay.
K2	2nd Substitute, K2	Proceeding to Kinjo Wharf, No. 58 to No. 67 quay.
K3	2nd Substitute, K3	Proceeding to Kinjo Wharf, No. 76 to No. 85 quay.
W1	2nd Substitute, W1	Proceeding to Kinjo Wharf, No. 71 to No. 75 quay, berths on the W side of Sorami Wharf and E side of the Kibakanaoka Wharf.
W2	2nd Substitute, W2	Proceeding to berths on the E side of Tobishima Wharf.
W3	2nd Substitute, W3	Proceeding to berths on the S side of Tobishima Wharf.
W4	2nd Substitute, W4	Proceeding to berths on the W side of Tobishima Wharf, the E side of Yatomi Wharves, or moorings in Section 4.
W5	2nd Substitute, W5	Proceeding to berths on the S side of the Yatomi Wharf or Nabeta Wharf.
P1	2nd Substitute, P1	Proceeding to the dangerous substance anchorage with a radius of 350m centered in position 35°00.9'N, 136°49.7'E.

Nagoya Ko—Berthing and Anchoring Signals		
AIS Signal	**Flag Signal**	**Meaning**
S1	2nd Substitute, S1	Proceeding to berths in Minamihama Wharf or the dangerous substance anchorage in position 34°59.3'N, 136°49.5'E.

Nagoya TAS Reporting Lines		
Reporting Point	**Abbreviation**	**Description**
Nagoya West	NW	A line bearing 000° and extending 6,100m from Ise Wan Sea Berth Light (34°55'36"N., 136°44'24"E.) and a line bearing 180° and extending 3,600m from the Ise Wan Sea Berth Light.
Nagoya South	NS	A line bearing 270° and extending 4,500m from Togase North Lighted Buoy (34°53'42"N., 136°47'22"E.).

Nagoya Ko—Contact Information	
Nagoya Ko Harbor (Traffic Assistance)	
Call sign	Nagoya Harbor Radio
VHF	VHF channels 12, 16, and 20
Telephone	81-52-3980711
	81-52-3980716 (Scheduling Desk)
	81-52-3980712 (Operations Desk)
Facsimile	81-52-3980716
E-mail	nagoyako-seibi@kaiho.mlit.go.jp
Web site	http://www6.kaiho.mlit.go.jp/nagoyako
Nagoya Coast Guard	
VHF	VHF channels 11 and 16.
ISE-Mikawa Wan Pilots (Nagoya Office)	
Call sign	Irago Pilot
VHF	VHF channel 16 and 68
Telephone	81-56-9230-713
Facsimile	81-56-9228-835
E-mail	user@isemikawapilot.jp
Web site	https://www.isemikawapilot.jp

Anchorage.—A quarantine anchorage in the form of a semicircle with a radius of 0.8 mile is centered about 2.3 miles SW of the E end of Middle Breakwater. The depths within the anchorage range from 11 to 16m mud, sand and gravel.

Inner anchorages are located in 2B, 3B, 4B, and 5B as shown on chart and described in the table. Use of these anchorage is designated by the Port Captain.

Anchoring is prohibited in the mouth of the Hori Kawa and the NE side of High Tide Breakwater.

Vessels should refer to the table containing the special signals for designation of anchorage and assignment of berthing facilities.

Caution.—The Meiko West, Central and East Bridges, having a least vertical clearance of 39m, cross the channel leading into the inner portions of Nagoya Ko in the vicinity of the N end of Kinjo Pier.

Mikawa Wan

5.32 Mikawa Wan (34°45'N., 137°03'E.), with its branches of Atumi Wan (Atsumi Wan) and Tita Wan (Chita Wan), leads off the E side of Ise Wan between Tatuma Saki and Hazu Saki, about 5 miles WNW. From its entrance, Mikawa Wan trends ENE for about 17 miles to the head of Atumi Wan, and a slightly lesser distance to the head of Tita Wan.

The entrance to Mikawa Wan is divided into two main entrances by a chain of islands that extends in a NNE direction from No Shima, an island 3 miles W of Tatuma Saki, for a distance of 5 miles. Nakayama Suido, the E passage, leads into Atumi Wan and Morosaki Suido, the W passage, leads N into Tita Wan.

Inside the bay the bottom is almost flat with even depths which do not exceed 20m, except near the entrance.

Pilotage.—Pilotage is compulsory. Pilots for any part of Mikawa Wan are available at Morosaki Ko, a shallow cove on the W side of Morosaki Suido, close N of Hazu Misaki.

Anchorage.—Anchorage can be taken in Mikawa Wan where the depths are suitable; the bottom of mud and sand affords good holding ground. Kinuura Ko, in the N extremity of Tita Wan, is the best anchorage within Mikawa Wan.

Nakayama Suido

5.33 Nakayama Suido (34°39'N., 137°02'E.) has a least width of 2.5 miles between No Shima and Atumi Hanto. This is the principal channel used by vessels bound for Atumi Wan.

The deepest passage through Nakayama Suido is entered about 0.8 mile NW of Irago Saki Light and marked by buoys. This passage runs nearly parallel to Atumi Hanto for a distance of nearly 3 miles then alters to the N. A depth of 18m can be carried through this passage.

Tides—Currents.—Tidal currents in Nakayama Suido flow NE and SW. The flood current from the LW at Nagoya to HW at Nagoya, and the ebb current flows from HW to LW at Nagoya. The maximum flood and ebb current is 1.5 knots.

Caution.—Tono Se, previously described in paragraph 5.25, lies near the middle of Nakayama Suido. There is a sand bar, with a least depth of 8.6m, centered about 2.8 miles NNW of Irago Saki Light. The sand bar is about 1.5 miles long in a N

and S direction. There are fishing reefs charted in the passage.

Atumi Wan (Atsumi Wan)

5.34 **Atumi Wan** (Atsumi Wan) (34°44'N., 137°10'E.) is entered between Tatuma Saki and Ikuta Hana, 7.25 miles NNW; this arm of Mikawa Wan trends ENE almost 14 miles to the drying flats, where Toyo Gawa flows into the bay.

The S shore of Atumi Wan is formed by Atumi Hanto, and the E and N shores are formed by the mainland. Close within the coast of Atumi Wan the hills rise to a height of 279m. The N coast is fringed by mountains; Goi Yama (Goi Zan) rises to a height of 454m about 2 miles within the NE part of the bay.

Atsumi (34°40'N., 137°04'E.) is a tanker discharging port located 0.5 mile ENE of Tatsuma Saki. Vessels up to 79,900 dwt, with a maximum length of 253m, can be accommodated. There is a limiting draft of 12.5m at this berth.

The bay narrows between Hime Shima, a rocky islet 62m high that lies 1 mile off the S coast, and Hashida Hana, 5 miles NNW.

The 10m curve lies up to 1.5 miles off the S coast of the bay, about 4.5 miles off the head, and 2.5 miles off the N coast. There are no dangers charted outside the 10m curve.

Fuke Ko (Hukue Ko) (34°39'N., 137°07'E.) is entered 2.5 miles ESE of Tatsuma Saki. The depths in the approach to the harbor are less than 5m.

Although Fuke Ko is extensive, its greater part is obstructed by drying banks of mud, sand, or pebbles and local knowledge is essential.

About 1.5 miles E of the E entrance to Fukue Ko lies Izumi Ko, a small harbor protected by two breakwaters displaying lights. Fish havens lie 0.1 mile N and 0.9 mile NW respectively of Izumi Ko.

Tahara Ko (34°42'N., 137°16'E.), located 5.5 miles ENE of Izumi Ko. Reclamation has taken place S and SE of Hime Shima. On the N side of the basin breakwater extend NNE from the E side of Hime Shima and W from the W point of Midorigahama.

A wind farm with turbines up to 124m in height has been established near Hime Shima.

A unmarked channel dredged to 10m leads SE from close WSW of Lighted Buoy No. 2 to the breakwaters. Harbor Law is applicable. A light stands on the head of a short breakwater 1.25 miles SSW of Hime Shima. A spoil ground is situated in the NE part of the basin.

A quarantine anchorage is centered 2 miles NW of Hime Shima.

Take Shima is 42m high to the tree tops, and lies within the port area of Gamagori. It lies close SE of the entrance to the inner basin and is connected to the shore NNE by a causeway.

5.35 **Mikawa Ko** (Toyohashi Ko) (34°43'N., 137°18'E.) (World Port Index No. 61465) is a harbor constructed on reclaimed land in the SE extremity of Atumi Wan. Harbor Law is applicable to this port situated NE of Tahara Ko. This is an Open and Immigration-Emigration Port.

Depths—Limitations.—The entrance to the approach channel to Mikawa Ko is situated 2 miles WNW of Hime Shima. The channel, marked by lighted buoys, leads ENE for 3.5 miles and then ESE to the harbor entrance; it is dredged to 12m.

Jinno North detached breakwater is situated N of the turning point in the approach channel; a light is shown from its SW extremity. Another detached breakwater is located SW of the turning point.

Berth No. 1 to Berth No. 4 lie at Jinno Wharf on the N side of the channel leading E of the harbor entrance. No. 4 Quay has the capacity to accept vessels of up to 30,000 dwt and has a least depth of 10m alongside. No. 8 Quay lies at the W terminus of Jinno Wharf and has an alongside depth of 12.2.m.

The quay for the Tokyo Steel Tahara Pier, situated close NW of Tahara shipyard, has depths of 7.5 to 10.4m alongside.

Funato Wharf, a private quay with depths of 5.5m alongside, lies on the S side of the channel opposite Jinno Wharf.

A channel extends S from a position about 3 miles ENE of Hime Shima and is dredged to a depth of 10m. Sogo Kaihatsu Akemi Quay No. 1 to Quay No. 6 lie on the E side of the channel leading S from the harbor entrance. There are depths of 12m alongside Quay No. 3, Quay No. 4, and Quay No. 5.

Berth T1 to Berth T3, dredged to 10m, are on the W side of the channel. A pair of mooring buoys suitable for a 10,000 gt vessel lie at the head of this channel. At the N end of this dredged channel, there is a patch with a least depth of 9.6m. An overhead cable spans the S channel; it has a vertical clearance of 52m.

Pilotage.—Pilotage is compulsory for vessels exceeding 10,000 gt. Pilots board near Ise Buoy No. 1 (34°30'48"N., 137°03'48"E.). Harbor pilots are available if required at the anchorage or at the Gamagori quarantine anchorage.

Caution.—Depths in the N part of the harbor may be as much as 1.3m less than charted. A overhead power cable with a vertical clearance of 54m spans the channel abreast Quay No. 6. A submarine pipeline is laid across the channel at the S end of Quay No. 1.

5.36 **Miya Ko** (34°48'N., 137°15'E.), an important fishing harbor, is situated in the NE section of Atumi Wan, 5.5 miles NNW of Toyohasi Ko. The port is protected by breakwaters. There are berths with depths up to 4.5m alongside. The entrance to the port is 80m wide and 3.5m deep. A power cable, with a vertical clearance of 12m, crosses the entrance to the port.

Gamagori Ko (34°48'N., 137°13'E.) (World Port Index No. 61475) is backed by a large industrial area and is situated 2 miles W of Miya Ko. This is an Open, Quarantine, Emigration-Immigration, and designated Important Port. Harbor Law applies here.

Depths—Limitations.—A dredged channel, 10m deep, connects an area 2.2 miles ESE of Hashida Hana to the Gamagori Wharf. Another dredged channel, 10m deep, runs from the N side of the main channel to the Hamacho Wharf, 1 mile NW. Both channels are marked by buoys.

Hamacho Wharf accommodates two berths and has depths of 7.5 to 10m alongside.

Tosai Oil Terminal and Nihon Sekiyu are two private dolphin berths situated at the S end of the reclaimed area, with a depth of 4.5m and 6.3m, respectively.

Pilotage.—Pilotage is compulsory and available for vessels over 10,000 gt. The pilot boards near the Ise Buoy No. 1, located at position 34°30.8'N, 137°3.8'E.

Anchorage.—A quarantine anchorage with a radius of 0.33

mile is situated 2 miles SE of Hashida Hana. The depths range from 9.5 to 11.6m, mud bottom.

Anchorage can be found inside the breakwater, in a depth of 4m, mud. Outside the breakwater is good anchorage on the W side of the center of the harbor between Take Shima and O Shima. The depth here is 6m. When the W winds prevail, during the winter, it is safer to anchor on the E side of O Shima.

5.37 Katahara Ko (34°47'N., 137°12'E.), situated close SW of Gamagori Ko, is a fishing harbor protected by two breakwaters. A light stands at the head of each breakwater. Another breakwater, with a light on its E head, lies 0.25 mile S of the fishing harbor, and a detached breakwater 0.3 mile long lies to seaward of the above three breakwaters. A light stands at the S head of the detached breakwater. The depths within the harbor range from 1.7 to 3.5m.

Hashida Hana (Hasida Hana) (34°46'N., 137°10'E.), consisting of black rocks, is located at the SW extremity of a peninsula, 2 miles SSW of Katahara Ko. A number of resort hotels are situated within the point.

From Hashida Hana, the coast is indented by a number of coves which have several fishing harbors that are protected by breakwaters. The E entrance point to Yosida Ko lies 4.25 miles W of Hashida Hana.

Yosida Ko (Yoshida Ko) (34°47'N., 137°05'E.) lies on the W side of the mouth of the Yasaki Gawa; there is a fishing harbor here.

From Yosida Ko to Ikuta Hana, 2.5 miles W, the coast is low and fringed with a stone embankment.

5.38 Morosaki Suido (Morosaki Suidoi) (34°41'N., 136°59'E.), the principal entrance to Tita Wan, leads in N between Tita Hanto on the W and the chain of islands on the E side.

Tides—Currents.—The tidal currents in Morosaki Suido, as observed after a full moon in September, set N on the flood and S on the ebb. A maximum rate of 2 knots on the flood was observed about 3 hours after LW at Sino Shima, and the maximum rate of the ebb, 1.75 knots, occurred about 4 hours after HW at the same place. The turn of the current coincided with the times of HW and LW at Sino Shima and the periods of slack water were of short duration.

Depths—Limitations.—The fairway has a least width of 0.3 mile between the 20m curves. There is a fishing reef charted in the channel 0.5 mile ENE of Hazu Misaki, and a patch with a depth of 1.3m lies 0.2 mile NNW of the fishing reef, in the most narrow part of the channel.

Pilotage.—Pilotage is compulsory for vessels of 10,000 gt or more passing through Morosaki Suido. Pilotage is also strongly recommended for all foreign vessels passing through Morosaki Suido at night and for all vessels unfamiliar with the passage.

Caution.—Mariners are advised that many regular ferry services cross the narrows daily. Many other irregular ferry services and small boats also cross the narrows, especially on weekends and holidays. Large fleets of fishing boats move in and out of the narrows, concentrating before sunrise and sunset.

5.39 Tita Wan (Chita Wan) (34°47'N., 136°58'E.), from its entrance between Hazu Misaki and Ikuta Hana, a distance of 5.5 miles, penetrates the coastline 15 miles. The N half of the bay is occupied by Kinuura Ko. The W shore of the bay is formed by Tita Hanto and the E shore is formed by the mainland N of Ikuta Hana.

The W side is backed by a range of low hills, sparsely covered with trees. The S part of this side is fringed with a bank, with depths of less than 5.5m, which extends about 0.5 mile offshore in places. The S part of the E side of Tita Wan consists mostly of stone embankments, and on this side are the shallow mouths of several rivers; the coastal bank, with depths of less than 5.5m, extends from 0.75 to 2.5 miles offshore in places. The whole of Tita Wan N of the parallel of latitude 34°48'N. is within the harbor limit of Kinuura Ko.

Depths—Limitations.—General depths of 9.1 to 18.3m prevail in the fairway of the S half of Tita Wan.

Anchorage.—A quarantine anchorage with a radius of 0.33 mile is situated near the center of the fairway on Kinuura Ko's S harbor limit.

Morosaki Ko (34°42'N., 136°59'E.) is located immediately N of Hazu Misaki on the SE extremity of Tita Hanto. A light stands at the head of a jetty inside the harbor and also on the detached outer breakwater 0.19 mile N. Northwest winds are prevalent from November through March. East to ESE winds are frequent from May through September.

Kinuura Ko (34°51'N., 136°57'E.)

World Port Index No. 61470

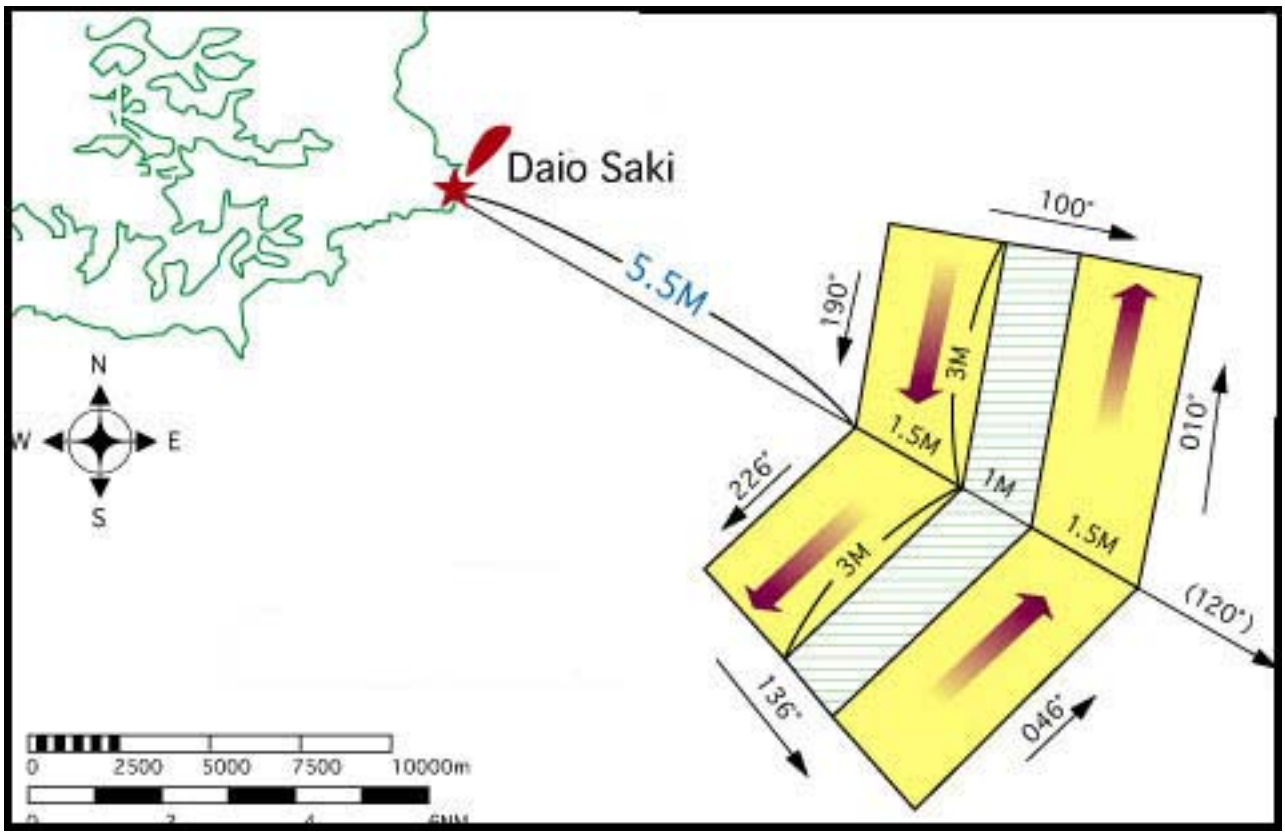
5.40 Kinuura Ko is a Special, Open, Quarantine, Emigration-Immigration, and Important Port occupying the N half of Tita Wan. The harbor lies on both banks of the Sakai Kawa (Sakai Gawa) which discharges into the bay. A dredged channel extends 6 miles NNE from the outer breakwaters. The port is subdivided into 13 areas. Even-numbered areas are situated on the E side of the channel; odd-numbered areas are situated on the W side of the channel.

To the E of the port lie flatlands where Yahagi Kawa discharges into the bay. On the W side are the low mountains of Tita Hanto, which run N and S.

Depths—Limitations.—At the entrance between the breakwaters there is a width of 0.2 mile between the 10m curves. A channel dredged to a depth of 12m extends N into the harbor from the breakwaters for a distance of 6 miles; at this point the harbor is constricted by wharves to a width of about 0.2 mile. Another channel, dredged to 10m, leads NW to Coal Wharf Quay and a steel works wharf from a position 0.5 mile NNE of Lighted Buoy No. 3 and Lighted Buoy No. 4.

At the Central Wharf the depths alongside the quays range from 4 to 12m. Depths at the dolphin berths range from 7.5 to 12m. The two tanker terminals have depths alongside of 9m and 13m. The public wharves can accommodate vessels of up to 40,000 dwt. There are numerous private quays with depths as deep as 12m capable of accommodating vessels in excess of 45,000 gt, on both sides of the harbor.

Aspect.—A chimney, 204m high, marked by red obstruction lights, stands on the W shore 0.2 mile N of the foot of the W breakwater. A breakwater has been completed in the harbor. A light is shown from the head of the breakwater. There are nu-



Courtesy of Japan Captains Association

Daio Saki—Voluntary Traffic Separation Scheme

merous chimneys on either shore of the harbor.

Pilotage.—Pilotage is compulsory at the port and in Irago Suido Traffic Route for vessels exceeding 10,000 gt. The pilot boards off Irago, off Morosaki, and at the quarantine anchorage. Pilots are available from the Irago-Mikawa Bay Pilot Association. Mikawa-wan Port Radio uses VHF channel 16 (calling) and VHF channels 11 and 12 (working).

Contact Information.—Kinuura port can be contacted, by telephone (81-56-9212451).

Anchorage.—The quarantine anchorage, at the line marking the Harbor Limit, has depths of 12.8 to 14.8m, mud bottom.

Caution.—A starboard hand lighted buoy marks the limit of shoal water 0.3 mile SE of the above anchorage and a port hand lighted buoy marks the limit of shoal water 0.6 mile SW.

Hansu Hana to Daio Saki

5.41 Hansu Hana, about 1 mile SSE of Kaburako Saki, the W entrance point of Ise Wan, rises to a height of 118m close within the point. Ijika Light stands on Hansu Hana and is a good mark when approached from the S.

A large fish haven, 1.5 miles in diameter, lies 5.5 miles ESE of Hansu Hana.

From Hansu Hana to Daio Saki, 10 miles S, the coast is indented. Matoya Ko penetrates the coastline at its center. The mountains lie close inland, but conspicuous landmarks are few.

Depths along this coast are irregular; the 20m curve lies up to 1.8 miles offshore. The coast from Hansu Hana to Suga Saki (34°22'N., 136°55'E.), 4.25 miles S, is fronted by rocks reefs for a distance of 0.75 mile in places.

5.42 **Matoya Ko** (34°22'N., 136°55'E.) is entered between Suga Saki and Anori Saki, 0.65 mile to the S. The port entrance is narrowed to about 0.3 mile by reefs extending from both sides. The port is limited to vessels with local knowledge.

From Anori Saki, the coast trends generally S for about 5 miles to Daio Saki, the W entrance point of Enshu Nada.

This coast is fringed with dangers to a distance of 0.5 mile in places. A reef, with a depth of 5m, lies 1.25 miles offshore, 2.5 miles S of Anori Saki.

A submarine cable runs from Anori over to the vicinity of Irago.

Nakiri Ko (34°17'N., 136°54'E.) is a small fishing harbor, protected by breakwaters, situated on the N side of Daio Saki.

Daio Saki, located at the SE end of Shima Hanto, is a low rock-fringed point. A light stands on the SE extremity of Daio Saki; a DGPS is situated at the light.

Daio Shima (Daio Iwa), a rock 8.4m high, is located 0.4 mile E of Daio Saki. Swells break near Daio Shima when winds are strong or swells are high. Daio Shima is illuminated by a spotlight from Daio Saki. Fish havens lie 16 miles SSE and 20 miles SE, respectively, of Daio.

Caution.—A voluntary traffic separation scheme has been established by the Japan Captains' Association SE of Daio Saki. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation. Further information can be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

5.43 Kumano Nada (33°55'N., 136°30'E.) is formed between Daio Saki and Shiono Misaki, 75 miles SW, the S extremity of Kii Hanto. The coast forming the NW shore of Kumano Nada is for the most part indented, rocky, and faced with steep cliffs; the land gradually increases in elevation as the latitude decreases. Most of the inlets are small and exposed to both wind and sea.

From Daio Saki to Goza Saki, 7.5 miles W, the coast trends SW to Mugi Saki, 3 miles distant, then WNW along the S side of a peninsula to Goza Saki, the W extremity of the peninsula. Goza Saki rises to a height of 110m and is heavily wooded; it appears to be black, and is conspicuous from a distance.

Caution.—Kamino Shima (34°12'N., 136°49'E.), a rock that dries 1.2m, lies 3.25 miles SSW of Mugi Saki. A rock, with a depth of 3.7m, lies 0.3 mile SW of Kamino Shima. The water N of Kamino Shima to the peninsula is shoal; there are numerous rocks and islets located on the shoals.

Fuseda Suido, marked by lights and buoys, some of which are fitted with radar reflectors, leads through the shoal water in an E and W direction, about 0.8 mile from, and parallel to, the coastline. The navigable width of the channel is about 350m and the depth is greater than 6m. Only vessels of less than 700 gt, with local knowledge, use this regularly.

5.44 From Goza Saki to Aikuchi Hana, 24 miles WSW, the mountains are close to the shore and form a jagged coastline with many bays and inlets. In most areas cliffs face the ocean.

Along this coast the water is deep close to shore; the 10m curve lies within 0.3 mile of the coast. From Goza Saki to Meto Hana, there are no dangers beyond 0.6 mile of the shore, but from Meto Hana to Aikuchi Hana, there are many isolated islands and dangers off the shore.

Ago Wan (34°17'N., 136°47'E.) is entered between Goza Saki and Meto Saki about 1.5 miles N. The bay is open W and penetrates deeply to the E; there are many branches and islets in the bay. Although the bay is protected against winds it has several dangerous rocky, oyster beds, and fixed fishing nets, all of which narrow the traffic routes and make it suitable only for small vessels with local knowledge.

Anchorage.—Temporary anchorage can be found, in depths of 12 to 14m, in the entrance of Ago Wan, about 1 mile NE of Goza Shima. Vessels may shelter here from the winds except from winds between the S and W.

5.45 Hamashima Ko (Hamazima Ko) (34°18'N., 136°46'E.), protected by a breakwater on its SW side, lies close within Ago Wan's N entrance. A sand bar, with depths of 1.9 to 4m, is located in the entrance; only small vessels with local knowledge should attempt to use this harbor.

Mi Saki (34°17'N., 136°41'E.), approximately 3 miles WNW of Goza Saki, has many rocks and a heavily-grassed summit 72m high. A light, shown from a round concrete tower 12m high, is situated on a hill 0.25 mile N of Mi Saki.

Gokasho Ko (34°18'N., 136°41'E.) is entered between Mi Saki and Todomarino Hana, a low reef-fringed point almost 1.5 miles W. This port penetrates 4 miles to the N and is divided into three branches; Gokasho Ura in the E, Funakoshi Ura in the NW, and Hazama Ura in the W. These three branches are further divided into small inlets.

Katsura Shima (34°18'N., 136°41'E.), an island 83m high, is located close within the head of the bay, 0.9 mile NNW of Mi Saki. A breakwater, with an opening 73m wide, extends from the SE extremity of Katsura Shima to the mainland. A harbor with depths up to 10m is charted within the breakwaters.

Each of the three branches within Gokasho Ko affords good shelter for small vessels with local knowledge.

Caution.—Caution is necessary since the traffic route lies between fixed fishing nets and oyster beds; entry at night is particularly dangerous.

5.46 Akaishino Hana (Akaisi Hana) (34°16'N., 136°38'E.) lies about 1.5 miles SW of Todomari Saki; a white cliff is located about 0.4 mile WSW of its head. A heavily-wooded mountain, 311m high, rises 0.85 mile WNW of Akaishi Hana.

Several fish havens are situated 0.8 mile S of Todomari Saki.

Eboshi Hana, fronted by rocks to a distance of 0.25 mile, is located about 2 miles SW of Akaishi Hana. A mountain, 189m high, rises near Eboshi Hana.

Nie Wan, entered 1.5 miles W of Eboshi Hana, has a number of bays which are mostly used for oyster beds. A mountain, 228m high, on the E side and a mountain, 497m high with a sharp treeless peak, in the N interior, are good marks.

A shallow reef extends W toward the center of the bay from the E entrance; shoal water with rocks extends 0.5 mile S of the E entrance point.

Mie Shima (34°15'N., 136°33'E.), an islet 156m high, lies close S of the peninsula separating Nie Wan and Kamisaki Wan. Numerous rocks and shoals extend up to 0.25 mile S and E of the islet. An islet, 14m high, lies 0.3 mile W of the W extremity of Mie Shima.

Kamisaki Wan is entered between Mie Shima and a peninsula 1.5 miles W; it is encumbered with rocks and only vessels with local knowledge should enter it.

Hoza Ko (Hozaura Wan) (34°14'N., 136°31'E.), located 2 miles W of Mie Shima, is divided into two bays which are sheltered from all winds. These bays are used primarily for cultivating pearl oysters.

Kowa Ko (Kowaura Wan) is located 2 miles W of Hoza Ko and is divided into two bays at its head. It affords shelter for small vessels with local knowledge. The best berth is in a depth of 16m, mud, to the NW of an islet, 1m high, lying in the middle of Kowa Ko.

5.47 Meto Hana (34°12'N., 136°24'E.), the E entrance point of Nishiki Wan, is located 3.75 miles W of the entrance of Kowa Ko. Islets and rocks lie up to 1.3 miles S of Meto Hana and a similar distance S of the W entrance of Nishiki Wan.

Nishiki Wan has depths of 21m in its entrance, with protection for small vessels with local knowledge. There are fixed fishing nets in the entrance from November through May.

Nagashima Wan (34°11'N., 136°21'E.) is open to the S. The small fishing harbor of Nagashima is situated on the W shore of the bay.

From Nagashima Wan to Aikuchi Hana, 4.75 miles SSW, the coast has many small inlets and is fronted by numerous rocks.

Caution.—O Shima (34°09'N., 136°22'E.) rises to a height of 90m, 3.25 miles NE of Aikuchi Hana; foul ground fringes the islet. Sabaru Shima, 4.4m high, lies 0.9 mile SSW of O Shima.

Numerous islets and rocks, the highest of which is Suzu Shima, 104m high and prominent, lie close off the coast 3.5 miles NW of O Shima.

A breakwater, with a light at its head, is situated 0.75 mile W of Suzu Shima.

5.48 Aikuchi Hana (34°07'N., 136°19'E.) has shoal water encumbered with rocks, extending about 0.2 mile E. There are a number of small islets inside the 20m curve, about 0.4 mile E of the E extremity of Aikuchi Hana.

From Aikuchi Hana, the coast trends about 9 miles S to Miki Saki. The mountains are close to the sea, along this coast, and the shoreline is primarily cliffs.

Odaigahara San, about 11 miles WNW of Aikuchi Hana, a tableland whose highest point is 1,695m high, is the most prominent mark along this coast.

Sawa Saki (34°05'N., 136°18'E.), about 2 miles SSW of Aikuchi Hana, has a steep cliff face, with a peak 180m high.

Two rock islets lie about 0.3 mile SSW of Sawa Saki; the W islet is 52m high.

5.49 Owase Wan (34°03'N., 136°17'E.) is entered between Sawa Saki and Kuki Saki, 4 miles SSW. This large bay is surrounded by tree-covered mountains, which rise to a height of 618m on the S side.

There are many fixed fishing nets and oyster beds within the bay; fishing boats operate at night between the entrance points. Vessels must proceed with caution when entering the bay.

Togasira Shima, 167m high, is a triangular shaped islet about 2.3 miles SW of Sawa Saki. The island is conspicuous from a distance due to its shape. A light stands near the NE extremity of the islet; a light is shown on the W end of the islet.

A small craft harbor, protected by an angled breakwater on its NE side, is situated 0.5 mile WNW of Moto Hana. A light is shown from the head of the breakwater.

Owase Wan has three bays that branch off the N side and one bay that branches to the W. Hikimoto Ko penetrates about 3.3 miles to the N. Owase Ko extends 2.25 miles W from the entrance to Hikimoto Ko.

Hikimoto Ko (34°06'N., 136°15'E.), the harbor limit of is a line drawn between Onaso Hana, a point 1.5 miles W of Sawa Saki, and Sabaru Shima, an island 0.85 mile SW of Onaso Hana. Harbor Law applies in this local port.

Nage Isi lies on the W side of the harbor limit 0.3 mile NNW of Sabaru Shima, and Warigame Shima, a low islet 35m high to the tree tops, lies 0.55 mile farther NW. Hira Se is a sunken rock, with a depth of 1.8m, that lies 350m W of Nage Isi. Most large vessels proceed between Warigame Shima and Nage Isi.

Depths of 23m can be carried to within 0.7 mile of the head of the bay. A breakwater extends E from the W shore of the bay, about 1 mile N of Warigame Shima. Vessels up to 1,000 gt may go alongside a seawall N of the breakwater.

Anchorage for vessels up to 2,000 gt may be taken 0.55 mile S of the head of the breakwater, in a depth of 30m, mud, good holding ground. South of this spot the harbor is affected by S and SE winds and swells.

Owase Ko (34°04'N., 136°13'E.)

World Port Index No. 61515

5.50 Owase Ko, the W extremity of Owase Wan, lies W of a line drawn from Moto Hana N to Sabaru Shima, then NW to Nage Isi and then to Ino Hana, a point NW of Warigame Shima. This harbor limit is a common limit with Hikimoto Ko, which lies to the NE. Harbor law applies to this Open, Quarantine, Immigration-Emigration, and designated Important Port.

The harbor is open to the E and surrounded by mountains on three sides. The public wharves are protected by breakwaters totaling 1,013m in length. The majority of vessels calling at the port are fishing and coastal vessels of less than 1,000 gt. There are five wharves, with depths of 4.5m alongside, mainly for fishing vessels up to 700 gt. Also, there are two wharves with depths of 5.5m alongside, for coastal vessels up to 2,000 gt. Berthing facilities for large tankers lie outside the breakwaters.

Winds—Weather.—During the summer, E winds prevail and when they are strong, heavy seas run into the port. In other seasons, W winds prevail. The months of December, January, February, and March average two stormy days each; the average daily wind velocity is 4 knots for these months.

Depths—Limitations.—The 20m curve lies 0.5 mile E of the W breakwaters. East of this curve, to the harbor limit, the depths vary from 21 to 41m. The Dolphin Oil berth can accommodate a vessel with a draft of 17m, and 100,000 dwt. The sea berth can accommodate a tanker of 21m draft alongside, and 210,000 dwt.

Toho Sekiyu Pier is situated at the E end of an oil pipeline. The pier is 150m long, with an alongside depth of 17m; vessels of up to 100,000 dwt can be accommodated on the N side of the pier.

Osone, a small harbor protected by two breakwaters is situated 0.3 mile SSE of Toho Sekiyu Pier. A light stands at the head of the E breakwater.

The depths alongside the quays range from 1.5 to 5m.

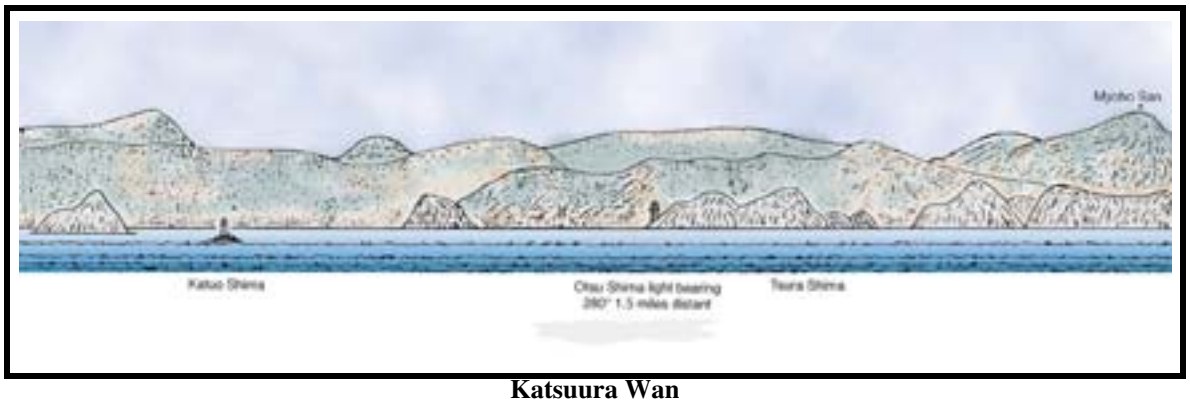
Aspect.—Tekura Iwa, 519m high, is an eroded peak of bare rock, 1.5 miles W of Ino Hana. A chimney, 125m high, is situated near the power plant, W of the tanker berths. There are several oil tanks, 0.45 mile SSW of the chimney.

Pilotage.—Pilotage is not compulsory. Pilots board at the entrance at Owase Bay and are available from sunrise to 3 hours before sunset, as follows:

1. Vessels less than 20,000 gt—1 mile E of Togashira Shima Light.
2. Vessels over 20,000 gt—2 miles E of Togashira Shima Light.

Contact Information.—Owase port can be contacted by telephone at 81-59-7250118

Anchorage.—The quarantine anchorage is situated in Owase Wan, centered 0.5 mile ENE of the E extremity of Sabaru Shima. The depths at the anchorage range from 60 to 80m, sand and mud.



Katsuura Wan

Caution.—It is reported that during the fishing season from April to August, fishing vessel traffic in and around the port can be extremely heavy.

An overhead cable, about 30m high, runs from the W side of Toyasira Shima to the coast.

5.51 Kuki Saki (34°01'N., 136°17'E.), 2.5 miles SSE of Togasira Shima, is a heavily-wooded point, 229m high; it presents a gray-colored cliff face.

Kuki Ura (34°00'N., 136°16'E.), a narrow bay, is entered between Kuki Saki and Nasano Hana, 1 mile SSW. There are no rocks or dangerous reefs in this bay, and it is well-sheltered from winds, affording anchorage for small vessels up to 200 gt, clear of pearl beds, which lie in depths of less than 20m.

Nasano Hana is a cliffy point with a conical top. Haida Ura, entered 0.75 mile S of Nasano Hana, is nearly closed by fixed nets from October through August.

5.52 Kata Wan (33°57'N., 136°15'E.) is entered between Miki Saki, 1 mile S of Haida Ura, and Kosuno Hana, 1.5 miles farther SW. Kata Wan, surrounded by a mountain range, has three arms that penetrate about 3 miles NW. The E arm is Miki Ura Ko; the N branch is called Mikisato Ko, and the W branch is called Asuka Wan (Asuka Ura).

There are fixed fishing nets on both sides of the entrance to Kata Wan; fish cultivation beds fringe the shores of the bay.

Anchorage.—Miki Ura Ko, with depths of 20 to 40m, affords good anchorage for small vessels with local knowledge. Mikisato Ko, the N branch, opens to the SE and heavy seas run into the harbor; it does not provide any shelter.

Asuka Ura, the W arm, with a depth of 50m in its entrance, becomes shallow at its head terminates in a mud flat 1.5 miles W. The bottom is sand and mud and provides a sheltered anchorage for large vessels.

A small craft harbor, protected by an angled breakwater on its NE side, is situated 0.5 mile WNW of Moto Hana. A light is shown from the head of the breakwater.

Kono Shima (33°57'N., 136°16'E.), 11m high, lies 0.6 mile SSW of Miki Saki and provides a good mark when approaching Kata Wan. Vessels should not pass between this rock and the coast.

Tatega Saki lies about 1.3 miles SSW of Kosuno Hana; it is the S extremity of a small cliffy peninsula, which rises to a prominent hill, 159m high.

Nigishima Wan (33°56'N., 136°13'E.) is entered between Tatega Saki and an island, 56m high, located 0.8 mile SW. The bay is relatively deep, and protected by mountains; it provides shelter for small vessels with local knowledge.

Atasika Wan (33°54'N., 136°10'E.) is entered between Mikosi Saki, 1.5 miles SW of Nigishima Wan, and Suzuga Shima, an islet 15m high, 1.25 miles SSW of Mikosi Saki. An islet, 2m high, lies 0.7 mile E of Mikosi Saki; swells break on the islet. Small vessels with local knowledge may find shelter in this bay.

Yuki Ko, protected by a breakwater, lies on the E side of Atasika Wan. A light stands at the head of the breakwater.

5.53 Kaitoro Hana to Shiono Misaki.—Kaitoro Hana (33°54'N., 136°09'E.), at the S entrance point of Atasika Wan, rises to a height of 146m. From Kaitoro Hana the coast trends SSW 34 miles to Shiono Misaki, the SW extremity of Shionomisaki Hanto. The mountains rise close within this coast, with a few good landmarks. The 20m curve lies from 0.1 to 1.5 miles offshore along this segment of the coast; there are several dangerous shoal areas charted outside the 20m curve.

Ino Hana (33°53'N., 136°08'E.), 1 mile SW of Kaitaro Hana, is 104m high. A light is shown from a white octagonal concrete tower, 11m high situated on the point. Mamiruga Shima, a rocky islet 23m high, consists of three peaks; it lies 0.25 mile S of Ino Hana. A rock, that uncovers 2.2m, lies close NE of Mamiruga Shima.

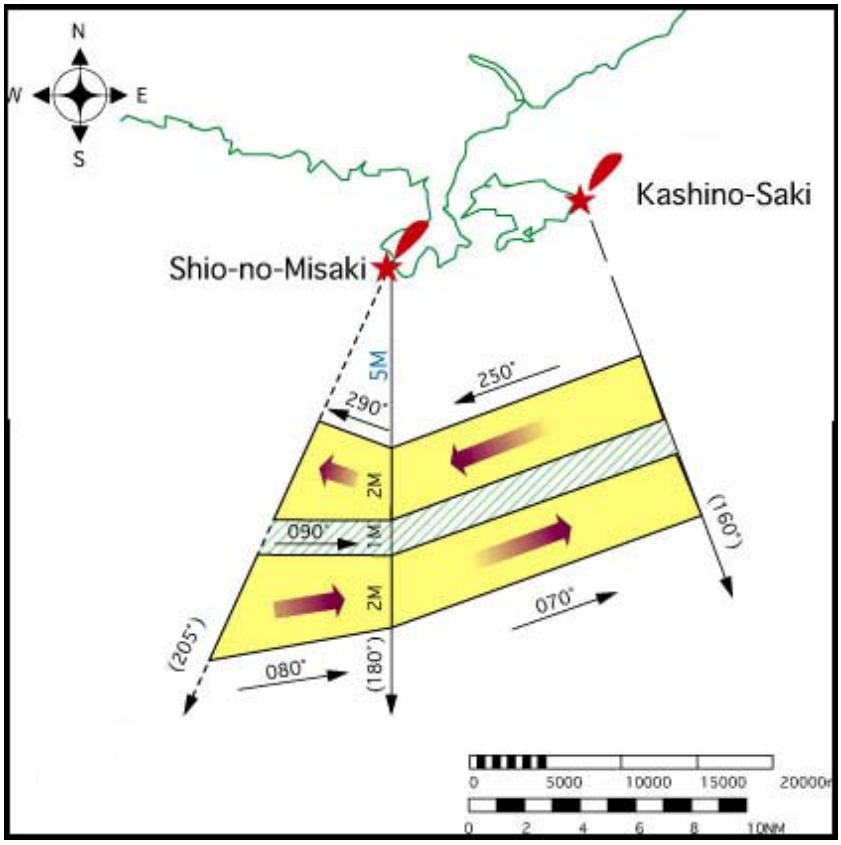
Kinomoto Hakuchi (33°53'N., 136°07'E.), the bay W of Ino Hana, is open to the S. Tomari Wan is the cove in the N section of the bay. During S winds, when the bay is untenable, fishing vessels shelter in Nigishima Wan.

Kodomari Gyoko, protected by a breakwater on which stands a light, lies on the E shore of Tomari Wan.

In winter at Kinomoto Ko, the sea is usually calm and the weather is good. Between June and October it is often rough.

Onigajo, a rock cliff with a peak 159m high, the W entrance point of Kinomoto Hakuchi, is located 0.8 mile WNW of Ino Hana.

From Onigajo, the coast trends SSW 10 miles to the mouth of the Kamano Gawa. Black rocks, 2 to 8m high, are scattered along the coast for a distance of 1 mile N of the river. On the S side of the river a sand bar extends NE and shifts with floods, swells, and waves. The river channel is narrow and has a depth



Courtesy of Japan Captains Association

Voluntary Traffic Separation Scheme off Shiono Misaki

of 3m, but the channel is always changing during the flood season.

Udano Ko lies on the N bank of the river near its mouth and can be used by small craft only. A light stands close E of the harbor. A breakwater is under construction (1988) at Udano Ko.

5.54 Mezamashi Yama (33°39.5'N., 135°59.4'E.), a round-topped wooded islet, 48m high, is connected to the NE extremity of Ukui Hanto; from it a chain of islets and rocks extends 0.45 mile NE.

Singu Ko South Breakwater, with lights shown at its head, extends about 183m NNW of Mezamashi Yama. A ferry wharf, with a depth of 9m alongside, lies on the W side of the islet. Two lighted buoys mark the E side of the shoal water in the approach to the wharf.

5.55 Miwasaki Wan (33°40'N., 135°59'E.) is located 3.5 miles SSW of the mouth of Kamano Gawa. It is protected by a detached breakwater on the N side and a breakwater extending N from the S entrance point; the bay opens E. There are general depths within the bay of from 6 to 11m, but it is filled with dangerous reefs along both sides.

Tenma Wan (Temman Wan) is a large bay close S of Miwasaki Wan opening to the E and affording shelter during W to N winds in a depth of 18m, 0.4 mile SSW of Nakiwa Hana. Obera Shima, 5.6m high, lies in the entrance of Tenma Wan, 0.8 mile S of the N entrance point; low rocks and islets lie between these two points. A rocky patch, with a least depth of 7.7m, lies 0.25 mile S of Obera Shima.

A light stands on Koma Saki (33°39'N., 135°59'E.), the S extremity of Ukui Hanto, 1 mile E of Nakiwa Hana.

A fish haven lies about 1 mile SSW of Koma Saki Light.

5.56 Katsuura Wan (Katuura Wan) (33°36'N., 135°57'E.), located 2 miles SSW of Tenma Wan, is divided into three coves, Katsurra Ko (Katuura Ko) at the N, Moriura Wan in the W and Taiji Wan (Taizi Wan) in the S. Takakura Yama, 54m high at its extremity, projects NE from the S side of Katsuura Wan and separates Moriura Wan and Taiji Wan.

Katsuura Wan is entered between Oshihara Hana and Tomyo Saki, 1.5 miles SSE. Tsuru Shima (Turu Shima), a low island, lies 0.13 mile S of Oshihara Hana and Otsu Shima (Otu Shima), 40m high, lies close W of the S extremity of Tsuru Shima. A group of low rocks and islets lie 0.7 mile E of Oshihara Hana.

Katuo Shima, an islet 5.3m high, lies 0.7 mile N of Tomyo Saki. There is a light structure on this islet. Foul ground extends 0.25 mile ENE of Tomyo Saki.

Foul ground, terminating in a dangerous rock, extends 0.35

mile NE of Takakura Yama.

The entire area of Kutsuura Wan is fouled with rocks and islets; all vessels should use caution when approaching this bay.

Katsuura Ko (33°37'N., 135°57'E.), the N cove, is protected on three sides by land, with Naka Shima, 51m high, in the S part of the harbor; the port is sheltered from winds and swells. This is a harbor of refuge and the anchorage may be heavily congested during periods of bad weather.

The channel E of Naka Shima is the preferred entrance, but is only 91m wide between the 10m curves. Inner harbor depths range from 2.6 to 13m. A drying rock lies in the E part of the harbor and vessels should not attempt to pass between it and the shore.

Anchorage.—Anchorage can be taken W of Tsura Shima, in depths of 3 to 13m, mud. The quarantine anchorage is about 0.2 mile W of Otsu Shima.

At the time of a typhoon, a large number of vessels seek shelter and the harbor becomes congested.

Kantori Saki (33°35'N., 135°58'E.), a low cliffy point, lies 0.8 mile S of Tomyo Saki; the coast between these two points is foul for about 0.2 mile offshore.

5.57 **Urakami Ko** (Uragami Ko) (33°34'N., 135°55'E.) is a local port; it is a narrow bay that penetrates the coast 1.5 miles in a SW direction. The depth at the harbor entrance is 5m and the depth inside is from 4 to 10m. Dangers around the entrance and the fish culture areas on both sides of the port must be watched.

An ore-loading conveyor at the head of the inlet has a reported depth of 5m alongside. Vessels of 500 gt call regularly.

Safe anchorage is available for small vessels, in 8m, thick mud, good holding ground.

Morito Saki (33°32'N., 135°53'E.), a prominent point 3 miles SSW of Urakami Ko, rises to a pine-covered summit, 78m high. A rocky depth of 3m lies at the S extremity of a drying reef, extending 0.5 mile S from the point; breakers mark this area in almost any sea.

Koza-nishimukai Ko (33°31'N., 135°50'E.), about 3 miles SW of Morito Saki, at the mouth of the Koza Gawa, is used by vessels loading timber. A shifting bar blocks the river entrance and cargo is loaded offshore from sampans.

Hako Shima, 8.7m high, lies 1 mile S of the Koza Gawa. A larger island lies 0.5 mile N of Hako Shima.

Aspect.—A radio tower, standing on the summit of a hill 0.3 mile NE of the mouth of Koza Gawa, and a railway bridge spanning the river 0.5 mile about its mouth are good marks for identifying the entrance. A road bridge spans the river at its mouth.

5.58 **Kami Se** (33°29'N., 135°54'E.) is a detached 4.1m rocky patch lying 3 miles E of Hako Shima.

O Shima (33°28'N., 135°50'E.), a hilly island about 3.5 by 2 miles in extent, lies 2.5 miles S of Koza-nishimukai Ko, just E of Shionomisaki Hanto (Uwano Hanto). The N side is fairly regular and steep-to while the S side is cliffy with numerous coves. Islets and rocks fringe the coast up to 0.2 mile offshore. Kasino Saki, the E end of the island, is reported to be a good radar mark from 15 miles. A rock, 7.5m high, lies 0.3 mile NE of the point. The highest point of the island, 169m high, rises in the N central part of O Shima. The summit appears as two light green domes which look white from a distance. A peak, 117m high, stands 0.2 mile SW of the N point of the island and is a useful mark when approaching from the NE.

Shionomisaki Hanto (33°27'N., 135°47'E.) is the S extremity of Honshu. The peninsula, almost 2.5 miles wide from E to W, is connected to the mainland by a low isthmus, 0.26 mile wide. Izumo Saki is the SE extremity of Shionomisaki Hanto. Shiono Misaki, a flat-topped headland, forms the SW end of the peninsula. This flat-topped headland is surmounted by a light. There is a signal station, open in the daytime only, at the light.

An observation tower, 34m high, stands 0.4 mile E of the light and is prominent.

Rocks and foul ground fringe the coastline between these two points, up to 0.2 mile offshore. Shiono Misaki is reported to be a good radar target up to 25 miles.

Caution.—A voluntary traffic separation scheme has been established by the Japan Captains' Association S of Shiono Misaki. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation. Further information can be found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Kushimoto Ko (33°28'N., 135°47'E.)

5.59 Kushimoto Ko, the S town in Honshu, is a shipping point for lumber and a base for the deep sea fishery; it is becoming popular as a tourist center.

The port is situated between Shionomisaki Hanto and the NW side of O Shima; it is comprised of three fishing harbors. Kushimoto Ko affords refuge to shipping from severe weather, especially during typhoons.

Winds—Weather.—The prevailing wind in winter is out of the W. With strong NE to ENE winds, sea and swell set into the harbor.

Tides—Currents.—Tidal currents in the S entrance are weak and irregular. With a rising tide there is a N current of 0.5 knot; with a falling tide there is a S current of 0.3 knot. Generally, there is a constant S current of less than 1 knot in the passage.

Off the S entrance, the ocean current sets E at rates of 2 to 4 knots.

Depths—Limitations.—Kushimoto Ko can be entered N of O Shima, but the fairway is encumbered by rocky patches; the fairway is only 119m wide between the 10m curves.

There are various dangers in the NE approach. Kami Se a reef with a least depth of 3.9m lies in the middle of the approach, in a position about 1.8 miles NE of Kashimo Saki. A rocky depth of 12.8m lies about 0.1 mile NW of Kami Se. A wreck lies sunk about 8.5 miles NE of Kashimo Saki. Hako Shimo, an islet 8.7m high, lies about 2.5 miles NW of Kashimo Saki, and foul ground extends about 0.2 mile S and 0.1 mile W.

Hashigui Iwa is a chain of rocks which extends about 0.5 mile S from Inari Shima, a point on the NW side of the entrance. Bentten Shima is near the middle of this chain. Vessels should navigate with extreme caution as this chain of rocks extends about halfway across the NE entrance of Kushimoto Ko.

The fishing harbors within Kushimoto Ko have depths of 2 to 4m.

The N basin has a quay, with depths of 4.5 to 4.8m on its N

side and fish landing quays on its W and S sides.

The S basin, which can also be entered by a gap in the S breakwater, has several quays, with depths of 2 to 4m.

Aspect.—Myoga Shima (33°27'N., 135°48'E.) is located near the middle of the S entrance. It is 29m high, covered with bushes, and lies about 0.1 mile SW of the W extremity of O Shima.

O Shima Light stands on the rock 0.25 mile NE of Izumo Saki, the E extremity of Shionomisaki Hanto. The coast is foul in this area.

Anchorages.—Anchorage is available off the N part of Kushimoto, during strong NE winds greater protection is afforded in the E part in the lee of O Shima. Large vessels anchor in the bay N of Tsuya Shima sheltered from all but S winds.

Directions.—When entering Kushimoto Ko, vessels using the N entrance steer for Kane Yama on a bearing of 244°, passing N of Kami Se and S of the foul ground in the vicinity of Hako Shima.

When Benton Shima bears 270°, steer for it on that heading until Kane Yama is abeam, then steer for the temporary light staff on the new N breakwater, heading 225°. After clearing the shallows to the SE of Hashigui Iwa, proceed to the appropriate anchorage. Deep-draft vessels must avoid a shallow area SSE of Hashigui Iwa.

Vessels entering S of Kami Se steer for Hako Shima bearing 289° until Kashimo Saki Light is abeam, then steer for Benten Shima on a heading of 279° and proceed to anchorage.

Vessels coming from the S should sight Tomi Yama at 000°, then proceed between Toradashi Sho and Kaba Dashi. When O Shima Light is abeam to port, change course to 336° and head toward the S entrance of the channel between Myoga Shima and O Shima. After reaching the S entrance, change course and steer down the center of the channel.

Caution.—Submarine cables are laid across the N part of Kushimoto Ko, close S of Hashiqui Iwa.

Kushimoto Gyoko lies on the SW side of Kushimoto Ko, and is protected by N and S breakwaters. A light stands on each breakwater head.

Shiono Misaki to Hino Misaki

5.60 From Shiono Misaki, the coast trends in a general NW direction about 44 miles to Hino Misaki, the E entrance point of Kii Suido. Tanabe Ko is the only large bay along this coast, there are only a few harbors since the berths would be open to the sea.

Tides—Currents.—The tidal current off the coast of Susami and Hino Misaki flows to the NW and the SE. South of Susami both flows become strongest 1 hour 30 minutes to 3 hours after HW and LW, while they become strongest 1 to 2 hours earlier near Hino Misaki. The average current velocity at the time of major tide is 0.5 knot. When the declination of the moon is greatest, a S flow occurring twice a day is regular, while the N flow, found twice a day, is irregular. A N flow following the low tide is stronger than others. This stronger N flow occurs at night in spring, in the afternoon in summer, during daytime in autumn, and in the morning in winter.

Although there are many small indentations along this 25-mile coast, there are only a few harbors which can be used by large vessels. The bays on the NW side of Shionomisaki Hanto and facing the mouth of the Tonda Kawa at the NW end of this peninsula are available for temporary stays, depending on the wind direction.

5.61 **Kominato Wan** (33°28'N., 135°46'E.) lies on the NW side of Shionomisaki Hanto, between Shiono Misaki and Inamura Saki, 1.75, miles NNW. Foul ground extends up to 0.5 mile from the shore of the bay. Anchorage, sheltered from NE winds is available, but S by E winds send heavy rollers into the bay. Vessels anchor 1 mile offshore, in 18.3m, fine sand. Fukuro Ko is located in the NE corner of Kominato Wan.

Anchorage.—Anchorage is available in the center part of Fukuro Ko, in depths of 6 to 9m, mud and sand.

Ase Se, a rocky patch with a depth of 6.4m lies outside the 20m curve, 4 miles W of Inamura Saki.

Esu Saki (33°30'N., 135°36'E.), a heavily-wooded islet 52m high, is located 3.5 miles WNW of Asa Se. Shoal water extends 0.4 mile S of the islet. A light stands on the islet.

Susami Ko (33°33'N., 135°30'E.), located in a small bay 6 miles WNW of Esu Saki, is open to the SW; numerous dangers encumber the entrance. There is an anchorage in this bay called Susami Byochi. Vessels of 1,000 gt shelter, in 4 to 20m, protected from all but S to SW winds.

There is a basin protected by breakwaters on the N side of the harbor. A light stands at the head of the W breakwater. A breakwater extends N from near the NE extremity of Inazumi Shima. A small boat basin lies on the W side of the river upstream of the bridge.

Inazumi Shima is dark, wooded, and 78m high; it lies 0.13 mile NW of Shimoyama Hana.

Reclamation work has been carried out on the NE side of Susami harbor; there is a quay and breakwater extending SW.

5.62 **Atagi Saki** (Ataki Saki) (33°33'N., 135°27'E.), the extremity of a cape that is 48m high, is the seaward end of a spur that descends from a peak 374m high, 2.5 miles NNE.

Ichie Saki, 3.25 miles NW of Atagi Saki, is a cliffy headland backed by low hills. A light shown from a white octagonal concrete tower, 11m high stands, on a hill about 0.2 mile NNW of the head.

From Ichie Saki to Seto Saki, 6 miles NW, the coast recedes and forms an open bay.

Caution.—A voluntary traffic separation scheme has been established off Ichie Saki. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation.

Seto Saki (33°40'N., 135°20'E.) is 16.2m high, but about 0.4 mile E of its extremity there is a hill, 84m high.

From Seto Saki, the coast trends NW 18 miles to Hino Misaki. The coast is indented with numerous bays from Seto Saki to Kireme Saki, 8.5 miles NW; then between Kireme Saki to Hino Misaki it is relatively straight with many stone beaches.

There are a number of fishing reefs charted outside the 20m curve along this coast.

Tanabe Ko (33°43'N., 135°22'E.)

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5.63 Tanabe Ko is located at the head of Tanabe Wan at the mouth of the Aizu Kawa. Tanabe, the largest city in the S part

of Kii Hanto, is a shipping point for lumber and a fishing center. The port is protected from all but W winds. Lighted ranges mark the fairways in the bay, which is encumbered by numerous dangers. The light structures may be difficult to distinguish during daylight. Ships load from lighters at anchorage or the mooring buoy.

Tanabe Ko is a Special and Immigration-Emigration Port. It is divided into three districts. Tanabeko is located 1.5 miles ESE of Egawa Hakuchi in the Second District.

Egawa Hakuchi, a small basin protected by breakwaters, is located close W of the mouth of the Aizu Kawa. A light stands at the head of each breakwater. The light on the W breakwater is particularly prominent. Mori Hakuchi, a small landlocked harbor, lies at the end of Tanabe Wan, in the NE corner of the First District.

Winds—Weather.—At Tanabe Wan, the prevailing winds are NW in winter, SW in summer and SE during spring and autumn. Strong winds are most frequent in February and during August and September. Spring and summer are the rainy seasons and fog is sometimes observed in February.

Tides—Currents.—In the vicinity of Tanabe Wan, the weak tidal currents, about 0.5 knot, set NW with the rising tide and SE with the falling tide. The direction changes 1 hour after HW and LW. Off the entrance to the bay the ocean current sets NW at rates of 1.5 to 2 knots, but when cold water areas invade the region, SE sets of up to 1 knot have been observed.

Depths—Limitations.—The draft limitation in the channel is 10.3m at HW. Mooring Buoy A, for log carriers only, is situated near the mouth of the Aizu Kawa and will accommodate a vessel up to 35,000 dwt, with a draft of 10.3m at HW.

Mori Hakuchi has general depths of 2 to 7m within the basin, 5.1m in the entrance, and alongside depths up to 6m.

Egawa Hakuchi is a boat basin 2 to 5m deep that is surrounded by E and W breakwaters.

Tanabe Ko is well-sheltered, except during W winds.

Pilotage.—Pilotage is not compulsory, but if needed it is requested that vessels send the required ETA through the ship's agent. Pilots are not available after sunset to sunrise. Pilots embark at the anchorage. There are no restrictions on entering or leaving port.

Contact Information.—Tanabe port can be contacted on VHF channel 12 or 16 and by telephone (81-73-9242424 or 81-73-9255379).

Anchorage.—Anchorage is available in position 33°42'N, 135°19'E, in a depth of 40m, sand, close S of the entrance range line.

Small vessels can obtain good anchorage in the first district W of Kemi Shima. Vessels carrying dangerous cargo are restricted to the Third District, the outer area.

Caution is necessary when entering and leaving the harbor, there are many dangers and it is not widely used.

5.64 Simohaya Wan (33°44'N., 135°21'E.) is a bay that opens SW, situated close N of Tanabe Wan; it is entered between Saida Saki (Saita Saki) and Mori Saki, 1.5 miles NW. The SE part of the bay has been reclaimed and is faced with a wall. An island, 25m high, lies 0.1 mile W of the reclaimed land, and is joined to it by a shoal, which has a number of above-water rocks on it. Vessels entering the bay should be careful of the 4.8m patch located in the center of the entrance. Care should also be given to other charted dangers that lie in the approach.

Hatano Saki, 38m high, is the W entrance point of a river and lies 2.25 miles NW of Kirime Saki.

Kirime Saki (33°47'N., 135°14'E.) is a cape of rocky cliffs topped with pine trees that lies 5.25 miles NW of Mori Saki. A flat, round mountain, 156m high, is close inland; a mountain range extends farther NE of it.

Katsuo Shima (33°51'N., 135°09'E.), 4m high, lies 4 miles NW of Hatano Saki. Katsuo Shima (Katuo Shima) is connected with Ono Saki, 0.6 mile ENE by a spit that uncovers in places. Shoal water extends 0.18 mile W of Katsuo Shima. A light, shown from a white, round concrete tower, 13m high, is located on Katsuo Shima.

A small harbor, protected by breakwaters, is situated on the shore opposite Katsuo Shima.

An industrial site, situated on reclaimed land, lies between the harbor and Katsuo Shima. Numerous tanks and a chimney, 204m high, stand on this site. A light is shown from the head of a breakwater which extends from the NW corner of the industrial site.

5.65 Gobo Ko (Hidaka) (33°52'N., 135°09'E.) is protected by breakwaters and lies off the mouth of Hidaka Gawa, which enters the bay 1.25 miles N of Katsuo Shima.

Gobo Ko is exposed to winds from between the S to W.

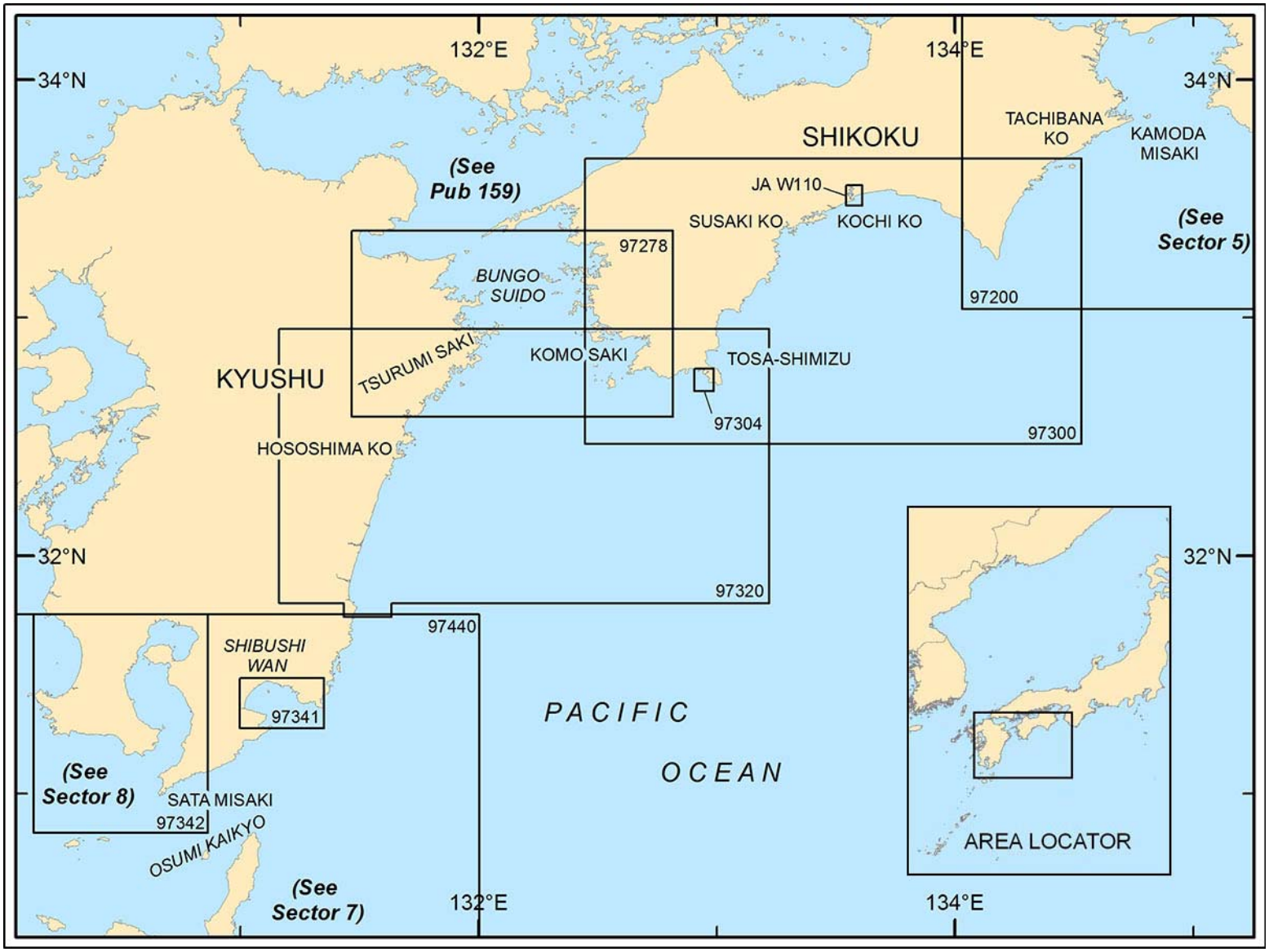
There are charted depths of 7.5 to 16.3m alongside the quays and dolphin berth in the harbor.

A chimney, 204m high, stands at the center of the Tomishima complex at the head of the harbor.

Anchorage.—Anchorage is available N of Katsuo Shima, in 9.1m, sand.

Hino Misaki (33°53'N., 135°04'E.), a cape with a steep cliff, lies 4.5 miles W of Gobo Ko. A mountain 0.35 mile NE of the cape, attains a height of 202m and is a prominent mark. A light is shown from the cape. A signal station, at which weather signals are displayed, is situated 0.13 mile WSW of the light. There are several fishing reefs charted in the vicinity of Hino Misaki, and fixed fishing nets are placed along the coast up to 2.5 miles E of the cape.

Kii Suido is described in Pub. 159, Sailing Directions (Enroute) Japan, Volume II.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **6** — CHART INFORMATION

SECTOR 6

SOUTH COAST OF SHIKOKU AND EAST COAST OF KYUSHU

Plan.—This sector first describes the S coast of Shikoku from Kamado Misaki (33°50'N., 134°45'E.) to the W side of the S entrance to Kii Suido, and to Komo Saki (32°54'N., 132°29'E.) on the E side of the S entrance to Bungo Suido. Next the E coast of Kyushu from Tsurumi Saki (31°56'N., 132°05'E.), on the W side of the S entrance of Bungo Suido, to Sata Misaki (30°59'N., 130°40'E.), the S extremity of Kyushu on the N side of Osumi Kaikyo, is described. Osumi Kaikyo, the strait between the S end of Kyushu and the Osumi Gunto group of islands is described last.

Shikoku—South Coast

6.1 The S coast of Shikoku is divided into three parts by Muroto Saki, in the E, and Ashizuri Misaki, in the W; both capes project S. The E part, between Kamoda Misaki and Muroto Saki, forms the W side of the entrance to Kii Suido. The central part, between Muroto Saki and Ashizuri Misaki, is Tosa Wan, to the S of which is the so-called Tosa Offing. The W part, between Ashizuri Misaki and Komo Saki, forms the E side of the entrance to Bungo Suido.

In the E half of this coast there are virtually no coastal indentations and very few safe anchorages. In the W half there are sheltered anchorages for large vessels in such bays as Susaki Wan and Sukumo Wan. Kochi Ko and Susaki Ko, both ranking as important ports, are in Tosa Wan.

Winds—Weather.—This general area often has heavy rains in the spring as the Asian Continental High weakens and high pressure develops over the ocean area to the S of Japan. The rains come when a low pressure system passes on the Japan Sea side of Japan and causes warm humid air to move into the Shikoku S coast area.

Precipitation during the early summer rainy season totals about 3,500mm. Torrential rains, which can register more than 1,750mm in one day, are mostly caused by typhoons and are most frequent during August and September.

When a typhoon is approaching, ocean swells usually begin to appear 3 to 4 days before it arrives.

Radiobeacon and radio direction finding stations at Muroto Saki and Ashizui Misaki provide weather reports for ships passing along this coast.

Tides—Currents.—Between Kamoda Misaki and Muroto Saki, ocean currents set mainly NE and SW following the coastline. In summer, a SW flow at the rate of 0.6 to 1.0 knot is more frequent, while in winter the flow is more frequently NE at a rate of 0.3 to 0.5 knot.

Inside Tosa Wan the currents are greatly affected by changes in the Kuroshio main current flowing E through the Tosa Offing. Generally during the summer and autumn, when the Kuroshio moves close to the shore at a rate of 4 knots, a counterclockwise current is produced inside the bay. The rate at the Muroto Saki end of the bay is about 1 knot (occasionally 2 knots), but it usually drops gradually to 0.8 knot at the head of the bay and to a rate of 0.3 to 0.5 knot at the Ashizuri Misaki end of the bay. Surface water temperature during the summer reaches a maximum of 29°C on the E side of the bay, while in a small area in the W part there may be a cold water mass with a relatively low temperature reading. When the mainstream of the Kuroshio swings away from the Ashizuri Misaki area and heads toward Muroto Saki, the counterclockwise current may appear only in the W portion instead of in the bay as a whole. Alternately, a branch of the Kuroshio flowing N from the middle of the bay may split into E and W segments and produce two rotary currents, one circling right and the other left, inside the bay. This phenomenon usually occurs in the spring. In the winter a weak counterclockwise current dominates the interior of the bay flowing at a rate of 0.5 to 0.8 knot. The water is 16°C in the interior of the bay and 18°C at its outer limits.

Between Ashizuri Misaki and Komo Saki, the currents generally set E, however, when the Kuroshio is flowing at a distance from the coast, left-circling currents tend to appear near the entrance to Bungo Suido causing the local current to set W. In the channel between Oki-no-Sima and Oshime Hana, the current usually sets SE when the mainstream of the Kuroshio is flowing near the coast and NW when the Kuroshio mainstream has moved away from the shore. The SE current, locally known as Matanuki, runs strong, especially when it is reinforced by a NW wind. When a S wind is blowing, high waves occur.

In this area, the flood tide flows W and the ebb E. The reversal of flow occurs within 1 hour after HW or LW. Mean tidal velocity during spring tides is less than 0.5 knot. Generally, the tidal flow is complicated by the strong influence of the diurnal tide and when the declination of the moon is great there is frequently only one tide per day.

Off O Shima, both semi-diurnal and diurnal tidal currents are left-circling. At a point 1 mile SE of the island, the semi-diurnal tides set WNW and ESE and reach their maximum velocity (mean velocity 0.5 knot during spring tides) within 1 hour after HW and LW. At a point 3 miles SE of the island tides set NE and SW and reach maximum velocity (mean velocity is 0.5 knot during spring tides) 4 to 5 hours after HW or LW. At the first location the diurnal tides set NE and SW at maximum velocity, while at the latter location their set is NW and SE at maximum. Accordingly, when the declination of the moon is great, the tidal pattern is extremely complex. Generally, the W and SW currents reach maximum velocity within 1 hour after LW, and E and NE currents reach their maximum speed within 1hour after HW.

Off Muroto Saki, the flood tide sets WNW and the ebb tide sets ESE, with reversals coming at the same time as HW and LW. Mean velocities are 0.5 knot during spring tides. Both the flood and ebb tides are markedly uneven when the declination of the moon increases. One E current and W current following it become markedly stronger than the other, so that when the moon's declination becomes great there may be only one tide a day. This strong E current occurs at noon during spring, in the

morning during summer, at night during autumn, and in the afternoon during winter.

Off Nuno Saki, the flood tide sets W and the ebb tide E. The reversal of direction occurs at the time of HW and LW. Maximum velocities do not exceed 0.5 knot.

Off Ashizuri Misaki the semi-diurnal currents set SW and NE, attaining a maximum rate about 2 hours after HW or LW. Maximum velocities do not exceed 0.4 knot. The diurnal tidal currents set S and N and attain a rate of 1 knot when the declination of the moon is great. This results in a complex tidal pattern in which one S tide and one N tide following it may become unusually strong. Occasionally, when the declination of the moon is great, there is only one tide per day. The strong N tide occurs about noon during spring, in the morning during summer, at night during autumn, and in the afternoon during winter.

The tides in this area are much the same as those of the S coast of Honshu and do not differ much from place to place. Before and after a new or full moon in spring and autumn high tides occur twice daily with a range of 1 to 2m.

Except before and after a new or full moon in spring and autumn, daily tides are irregular in their times and heights. There is greater variation in the times of high tides than in the times of low tides, which is very slight. The heights of high tides are small and of low tides great.

In periods of great differences in tides, during a quarter moon in the spring and autumn and during a full or new moon in summer and winter, the time when the low tide occurs varies according to the season, usually in the afternoon in spring, at noon in the summer, in the morning in autumn, and at night in winter.

Directions.—Local authorities recommended routes for large vessels sailing off Shikoku are generally, as follows:

1. Eastbound vessels sailing from the Bungo Suido area, with Osaka Wan as their destination, should pass 5 miles S of Ashizuri Misaki and Murato Saki as they head toward the Kii Suido area. Vessels should refer to the chart and note the fish haven obstruction 12.5 miles from Ashizuri Misaki on a bearing of 242°. Because this route will intersect that of vessels sailing S in the Tomogashima Suido, along the W side of Kii Hanto, caution is required when arriving off Hino Misaki. To reduce the angle of intersection and to facilitate evasive movement, it is the general practice to take a somewhat roundabout course, heading from Muroto Saki toward a point S of Hino Misaki, then head N toward a point 4 miles W of Hino Misaki.
2. Vessels bound for the Tokyo area from S Kyushu should proceed along a route beginning about 10 miles SE of Toi Misaki, passing 15 miles S of Ashizuri Misaki and Muroto Saki, and then head toward Shiono Misaki.
3. The westbound route starts 3.5 miles S of Shiono Misaki and passes 2 miles S of Muroto Saki and Ashizuri Misaki. Because it intersects the route for vessels heading for Osaka Wan from the Bungo Suido area, caution is required.

Kamoda Misaki to Muroto Saki

6.2 This stretch of coast is generally un-indented except for several small bays in the central and N parts. A chain of mountains and hills ranging from 300 to 600m is located 0.5 mile from the shore, with higher mountains inland.

The 20m depth curve is roughly 0.5 mile offshore. The detached island, I Shima, is off Gamado Misaki and in the center portion of the area are the islands O Shima, Tsu Shima, and Deba Shima off Mugi Ko; several dangerous reefs are among these islands. South of Deba Shima, there are no dangerous reefs outside the 20m curve.

Aspect.—Okage Yama (33°45'N., 134°30'E.) in the N, O Shima and Takega Shima in the central portion, and Sembonga Mine, Shozoku Toge, Onimaru Yama and Shijuna San in the S, are prominent. Numerous headlands in the N and central portions of this area serve as good landmarks. Lights, located about 5.4 miles apart, are situated at I Shima, Kamoda Misaki, Asebino Hana, Deba Shima, Kannoura, Sakinohama (range beacon), and Muroto Saki.

Caution.—There are numerous dangerous reefs between Kamoda Misaki and I Shima. Shoals are at Yukino Se, off Asebino Hana and in the vicinity of Mugi Ko.

Many fixed fishing nets, some extending as much as a mile offshore, are found along this coast especially in the S part and mainly from October to August.

There are no harbors capable of sheltering large vessels, however, vessels up to 1,000 gt can be berthed at Kannoura Ko and vessels up to 300 gt can be accommodated at Hiwasa Ko, Mugi Ko, and Asakawa Ko.

Tosa Bae (33°05'N., 134°38'E.) is a detached bank about 25 miles ESE of Muruto Saki, with a depth of 139m. In fine weather, with a light wind, tide rips may be observed along its N edge.

6.3 **Kamoda Misaki** (33°50'N., 134°45'E.), the W entrance point at the S end of Kii Suido, is the E point on Shikoku, has brown cliffs, and is marked by a light.

From Kamoda Misaki to O Shima, the coast is rocky with cliffs and no indentations except at Yuki Ko and Iwasa Ko, in the central portion. The water is generally steep-to but dangerous rocks are found.

I Shima (33°51'N., 134°49'E.), an island 3 miles ENE of Kamoda Misaki, is marked by a light.

Kanokubi Saki, a brown headland 6.4 miles WSW of Kamoda Misaki, projects S from a sandy isthmus and looks like an island from a distance. A light is shown on the coast close NE of the isthmus. Another light is situated on the coast approximately 1.8 miles NE.

Nuno Shima, a wooded island 2.7 miles WSW of Kanokubi Saki, has a dark color and a sharp peak.

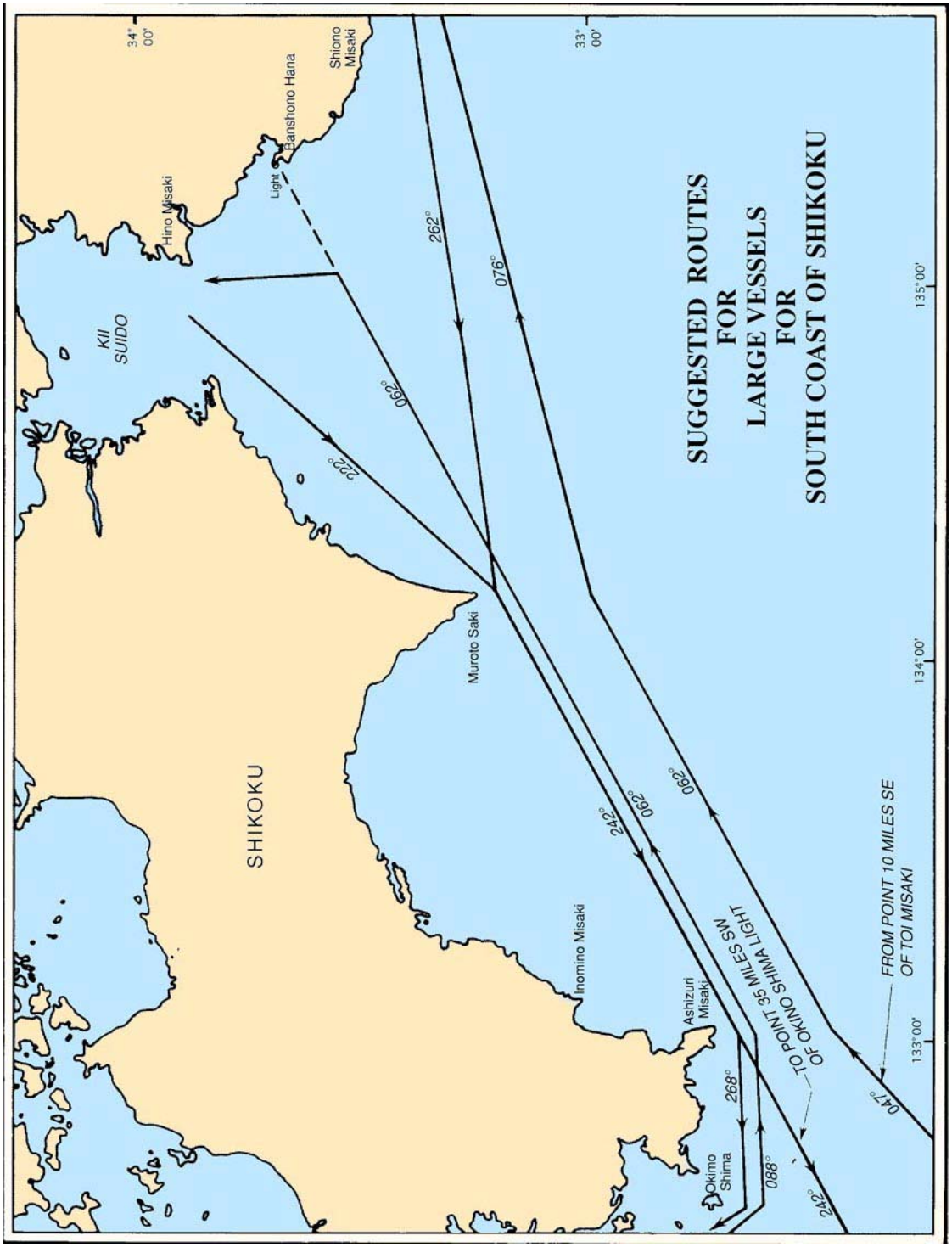
Asebino Hana, a cliffy headland covered with small trees, is 2 miles SW of Nuno Shima. It is marked by a light and two islets are to the E of it; the S islet is tall and steep-sided and the N islet is low and cone shaped. A fish haven lies 1.5 miles SE of the light.

Okage Yama (33°45'N., 134°31'E.), a 460m hill 2.7 miles WNW of Asebino Hana, is tree-covered, helmet-shaped, and visible from a distance.

Caution.—There are many dangerous rocks and reefs in the area between Kamoda Misaki and I Shima.

A ridge extending SSE 0.3 mile from a point on the coast 0.6 mile NE of Kanokubi Saki is marked by several above-water rocks at its outer end.

Okino Bae, a reef 7.2m deep, is 0.7 mile E of Nuno Shima.


SUGGESTED ROUTES
FOR
LARGE VESSELS
FOR
SOUTH COAST OF SHIKOKU
SHIKOKU
KII SUIDO
Hino Misaki
Light
Banshono Hana
Shiono Misaki
Muroto Saki
Inomino Misaki
Ashizuri Misaki
Okimo Shima
34° 00'
33° 00'
133° 00'
134° 00'
135° 00'
022°
290°
262°
076°
242°
290°
290°
268°
088°
242°
047°
TO POINT 35 MILES SW OF OKINO SHIMA LIGHT
FROM POINT 10 MILES SE OF TOI MISAKI

Yukino Se, a reef 2.6m deep, is 1.3 miles E of Asebino Hana. It is easy to detect when there are breaking waves, but it is especially dangerous when the sea is calm. Another reef is 0.4 mile to the SE.

A 16m reef is 1.7 miles N of the NW end of O Shima and about 1 mile offshore. There is a reef, with a least depth of 7.8m, 4.4 miles NNE of O Shima. There are fish havens situated here also.

O Shima to Muroto Saki

6.4 There are many small harbors along this coast including Mugi Ko, Asakawa Ko, Nasa Ko, Shiskikui Ko, and Kannoura Ko. Half of the coastline is cliffy shores and the other half sandy beaches. The S 17 miles of the coastline has fairly uniform terrain consisting of narrow sandy or stone beaches backed by highlands pressing close to the shore. There are many detached islets and dangerous reefs along the N portion of this coast, but in the S portion the water is deep close-in and no submerged dangers with depths less than 10m are beyond 0.3 mile from the shore except Muroto Saki.

The waters near O Shima are fishing grounds for boats out of Mugi Ko and many fishing boats may be encountered.

On the W side of O Shima, a small bay provides protection from other than W winds. The bottom is deep, but strong winds may be encountered at times. The fishing port on the N side of Deba Shima is shallow and limited to vessels under 50 gt. Tomoura, at the mouth of the Kaifu Gawa, and its neighbor to the S, Nasa Ko, are used only by local vessels.

O Shima (33°38'N., 134°30'E.) is a wooded islet, 216m high, with steep cliffs. A rocky islet, 23m high, is close N.

Tsu Shima, 1.6 miles W of O Shima, is a wooded islet, 43m high, with two peaks connected by low land.

Kotsu Shima, 0.3 mile SW of Tsu Shima, is actually two small islets connected by above-water rocks. The S islet is 26m high.

Deba Shima (Teba Shima), 1 mile WSW of Tsu Shima, is a sloping island, 77m high, with small trees and cultivated plots on the slope. A light is on its highest point. Submarine cables run from the N side of Deba Shima to the coast. There is a boat harbor on the N side, protected by a breakwater, on which stands another light. Fish havens lie about 0.5 mile and 1.5 miles E of the light.

Kobari Saki, on the E side of the entrance to Mugi Ko, is a red cliff headland covered with trees. Three fishery radio towers and a radio station marked by white lights, are prominent. A detached breakwater lies S of the entrance. When anchoring, care should be taken to avoid submarines cables laid from Magi Ko to Deba Shima. Two fish havens lie close W of the submarine cables.

Hotoke Saki, on the W side of the entrance to Mugi Ko, is a dark headland covered with small trees.

Ajiro Saki, on the S side of the entrance to Asakawa Ko, is a black headland with cliffs; it is 84m high and wooded at the top. Between this cape and the mouth of Kaifu Gawa, about 2.2 miles to the SSW, is a sandy beach, 1.5 miles long covered with dark pine trees.

Asakawa Ko, a small harbor, is entered N of Ajiro Saki. It is protected by breakwaters and a light stands on the head of the E breakwater.

The harbor affords temporary anchorage, in depths of 5 to 20m, sand, except during winds from between NE and SE.

There is a quay to the W of the root of the E breakwater with a depth of 4m alongside.

Nasa Saki, on the S side of the mouth of Kaifu Gawa, is a wooded headland, 99m high. An islet, 68m high, is in front of the headland and is remarkable for its tall trees.

6.5 **Chino Saki** (33°35'N., 134°22'E.), 0.5 mile S of Nasa Saki, is a narrow 177m headland projecting E.

Takega Shima, 3 miles SW of Chino Saki, is a black 98m high thickly-wooded island. From the S it is visible for 20 miles.

Kannoura Ko, the largest port on this part of the E coast of Shikoku, is not suitable for large vessels, but has a quay with depths of 3 to 5m alongside that can berth vessels up to 1,000 gt. Vessels up to 500 gt can use the limited anchorage. Good holding ground, hard mud, is found in depths of 4 to 12m.

Kusu Shima, about 0.3 mile WSW of Takega Shima, is a wooded island 59m high at tree top level.

Senbonga Mine (33°29'N., 134°12'E.), about 7.5 miles WSW of Takega Shima, is a 922m high mountain rising conspicuously above surrounding highlands.

Shozoku Toge, almost 3 miles WSW of Senbonga Mine, is a 1,083m high mountain.

Onsaki Yama, about 2.8 miles SE of Senbonga Mine, is a 692m high wooded mountain. A small depression on its W slope makes it easily identifiable from the S. A large red bare spot, about 1.2 miles NE of the summit, is visible from the E or S.

Shijuji San, about 4 miles N of Muroto Saki, is a 383m high wooded cone-shaped hill; an indentation on the W slope makes it easily identifiable from a distance.

Along the coast between Matsuga Hana and Muroto Saki, four lights are shown as indicated on the chart.

Muroto Saki (33°14'N., 134°11'E.), the S point on the E half of Shikoku, is a headland jutting S. A light is shown from Muroto Saki.

Caution.—A chain of above-water rocks and rocks which dry at low tides stretches from NE of Tsu Shima to S of the island.

There are numerous submerged rocks dangerous to navigation surrounding O Shima, Tsu Shima, and Deba Shima. There are fish havens E and W of O Shima. Vessels should refer to the chart. There is a stretch of water, 1.2 miles long, between Deba Shima and Hotoki Saki to its N, but the navigable channel, with depths of more than 10m, is narrowed to only about 0.3 by a 0.25 mile long ridge extending S from Hotoke Saki. This makes it unsuitable for large vessels.

6.6 **Kobarino Shi** (33°39'N., 134°26'E.), a reef 8.7m high, is SE of Kobari Saki at the E side of the entrance to Mugi Ko. There are also many other dangerous rocks along the entire coast to the NE.

There is a scattering of dangerous rocks offshore from Ajiro Saki, at the S side of the entrance to Asakawo Ko.

There are many submerged rocks and rocks which dry at low tide within a 0.5 mile radius of Muroto Saki, but outside of that area the water is deep and safe.

A sunken wreck is 0.6 mile ESE of Matsushitaga Hana, S of Kannoura Ko.

Submarine cables extend from Deba Shima N to the shore at Mugi Ko, and an underwater water pipe extends NW from Deba Shima to the mainland.

Tosa Wan

6.7 Tosa Wan is a large open bay, roughly semicircular in shape, with about 66 miles of shoreline between Muroto Saki and Ashizuri Misaki (32°43'N., 133°01'E.). The NE shore of the bay is fairly smooth, while the NW shore has deep inlets at Kochi Ko, Uranouchi Wan, and Susaki Wan. The W shore has several large and small coves. The land behind the coast, except for a plain in the Kochi area, is generally mountainous, with mountains and hills pressing against the shoreline.

The 20m curve runs generally about 1 mile from the shore E of Shirano Hana, at the head of the bay, except near Muroto Saki. West of Shirano Hana, the 20m curve is generally no more than 0.5 mile offshore except where there are inlets. There are no dangerous reefs in Tosa Wan more than 1 mile offshore, except in the vicinity of Susaki Wan.

Aspect.—Conspicuous mountains in this area are Shijuji San, Shozoku Toge, and Akiba San, on the NE side of the bay; Sekko San, Yahazu Yama, and Irazu Yama, on the NW side of the bay; and Gozaishormori, Imano Yama, and Shirao San, on the W side of the bay.

The principal lights are at Muroto Saki, Hane Saki, Tei Saki, Kochi, Shirono Hana, Okitsu Saki, Ino Misaki, Nishido Saki, Nuno Saki, Kubotsa Saki, and Ashizuri Misaki.

There are only a few dangerous detached reefs in the bay, which include Taka Bae, at the entrance to Aki Gyoko on the NE bay shore; Ishiga Hae and other reefs on the S side of the Ko Shima outside of Susaki Wan; and Asa Bae, off Shiwa Saki.

Fixed fishing nets are found (mainly from October through August) between Hane Saki and Tei Saki on the NE bay shore. Numerous fish havens lie up to 5 miles offshore between Kochi Ko and Muroto Saki. Fish havens are also found offshore along the entire bay.

Wave recording buoys are moored in Tosa Wan in position 33°15'N, 133°30'E and position 33°09'N, 133°39'E.

Depths.—Limitations.—Vessels up to 50,000 gt can berth at Susaki Ko, while vessels up to 5,000 gt can be berthed at Kochi Ko. Vessels of 200 to 300 gt can berth at Murotsu Ko and Kamikawaguchi Ko.

Anchorage.—Susaki Ko is the only harbor on the S coast of Shikoku that can provide shelter for large vessels.

Muroto Saki to Simo-Ryuzu Saki

6.8 The 34-mile coast between Muroto Saki and Simo-Ryuzu Saki has few coves or inlets. Between Muroto Saki and the mouth of Nahari Kawi (33°25'N., 134°01'E.) there is a 13-mile stretch of rocky shores and stone beaches, then W to Simo-Ryuzu Saki there is a series of sand beaches. Except for the fairly broad plain W of Tei Saki (33°31'N., 133°46'E.) and the flatlands near the river mouths, the terrain in this area is mountainous right up to the shoreline.

The 10m curve is close to the shore, generally within about 0.3 mile. There are no dangers outside the 10m curve except for Taka Bae (33°29'N., 133°54'E.), off the mouth of Aki Kawa, and Sambommatsu Reef (33°31'N., 133°37'E.), E of Kochi Ko.

Murotosaki Ko is a small fishing port about 2 miles NNW of the light at Muroto Saki. It is limited to vessels under 100 gt.

Gyoto Saki, 4.5 miles NW of Muroto Saki, is a rocky headland, 120m high, topped by dark woods.

6.9 Onigamori, 7.2 miles N of Muroto Saki, is a 650m high mountain. Kasagi Yama, about 2 miles W of Onigamori, is a 598m high mountain.

Hane Saki, about 10.4 miles NW of Muroto Saki, is a headland marked by a light.

Tono Hama, about 16 miles NW of Muroto Saki, is marked by a light.

Kamino Mine, about 17 miles NW of Muroto Saki, is a 632m high mountain.

Aki Gyoko, about 4 miles W of Kamino Mine, is a small fishing port used only by local vessels. Taka Bae, a 2.3m reef, is about 1 mile S of the port.

Tei Saki, about 7.5 miles W of Aki Gyoko, is a headland marked by a light. Taiho San, a wooded hill 106m high and 1 mile to the NE, is prominent.

Akiba Yama, about 5 miles N of Tei Saki, is a wooded hill with a sharp peak. This hill is 509m high at tree-top level.

Kongo San, about 4 miles NW of Tei Saki, is 287m high at tree-top level.

Kochi Ko (33°30'N., 133°34'E.)

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6.10 Kochi Ko (Koti Ko), a port of entry, is at the head of Tosa Wan. Kochi Chi, the center of which is NW of the harbor, is the largest city on the S coast of Shikuko.

The port lies in the estuary of Kagami Kawa and is entered between a breakwater extending E from Kami-Ryuzu Saki and a breakwater extending SE from Tanesaki Hama, which lies on the N side of the harbor entrance. A light stands at the head of each breakwater. A light stands at the E end of a detached breakwater, 0.23 mile ESE of the S breakwater light. Another detached breakwater lies 0.4 mile N of the S breakwater.

Winds—Weather.—Winds are predominantly between the W and NW at night and in early morning. By 1400, winds between S and E are about as frequent as the westerlies in winter, and in summer the westerlies predominate. The average winds here are light and in July, 81 per cent of those observed at 0600 and 1800 were below 3 knots.

Tides—Currents.—Spring tides rise 2m and neap tides rise 1.5m. Offshore, the flood tide sets SW and the ebb tide sets NE, both at a rate of less than 0.5 knot. At the harbor mouth, the flood tide sets W and the ebb tide sets E, reversing at approximately HW and LW and attaining a maximum rate of 1.1 knots.

Depths—Limitations.—The least charted depth in the fairway is 7m. Mariners are advised when navigating the entrance channel, that the depths are occasionally less than charted. The fairway is continually being dredged. The entrance is winding, long, and narrow, subject to strong tidal currents, and storms cause drifting sands.

There are seven wharves in the harbor with general depths of 3 to 8m. The No. 2 Quay at No. 7 Wharf however, is 240m long with a depth alongside of 12m; vessels of up to 30,000 dwt can be accommodated.

A designated traffic route runs from the entrance at the breakwater to Wharf No. 1 at the head of the port. Kochi Fairway is the S part of this traffic route and navigation control is in effect in this fairway.

Ushioe Wharf has a length of 390m, a depth alongside 7m, and a capacity of 5,000 gt. Higashi Ushioe Wharf has six berths, with lengths of 260 to 315m, and a depth alongside of 7m. These berths can accommodate vessels of 3,000 and 5,000 gt. Nida Logs Wharf has lengths of 130m and 140m, with depths of 5m and 7m alongside. This wharf can accommodate vessels of 5,000 and 2,000 gt. The largest vessel accommodated was 5,000 gt, with a 6.5m maximum draft, at the public wharves.

The Urati Ohashi Bridge spans the harbor entrance from a point E of Iso Saki to the N side of the port, with a vertical clearance of 39m. Three overhead cables run from the midslope on Obata Yama, on the E side of the port, to the W side. The lowest cable has a vertical clearance of 45m.

A submarine pipeline is laid across the narrows close S of the overhead cables.

Aspect.—Simo-Ryuzu Saki, a headland marked by a light, and the white buildings of Katsurahama Health Center to the W, are all good marks for incoming vessels. A white signal station on the summit of Shiro Yama is prominent.

Pilotage.—Pilotage is not compulsory but necessary unless master is well acquainted with the locality. Pilots are arranged for in advance and board in position 33°28.5'N, 133°35.2'E.

Vessels over 1,000 gt, or tankers over 500 gt, intending to enter Kochi Channel should report its ETA to the harbormaster by noon on the day preceding its arrival. Vessels intending to depart through the same channel should report the planned time of getting underway to the harbormaster by noon on the day preceding the departure.

Signals.—The Katsurahama Signal Station is at the foot of the breakwater at the harbor entrance and guides entering vessels. The Urato Signal Station provides navigation control for departing vessels.

Anchorage.—The quarantine anchorage is 1 mile SSE of Simo-Ryuzu Saki.

Caution.—Shoals close to the Tanesaki shore are marked at their outer edge by lighted buoys. A reef, 3.8m deep, is on the inner side and near the middle of the harbor entrance S breakwater. A lighted buoy marks the reef. Ferries cross the fairway regularly from the mouth of Nagahama Kawa to the shipyard N of Tanesaki. Submerged pipes and cables are inside the harbor. A dumping ground is about 1 mile SE of Simo-Ryuzu Saki.

A wave recorder lies 1.3 miles SW of Shimo Ryuzu Saki and a submarine cable connects it to the shore 0.2 miles W of Shimo Ryuzu Saki.

Simo-Ryuzu Saki to Okitsu Saki

6.11 This 27-mile stretch of coast has many covers and inlets, including Uchiura Wan and Susaki Wan. The shoreline consists mostly of steep cliffs except for a straight sand beach extending 7 miles between Simo-Ryuzu Saki and Hagi Saki. The land behind the shoreline is almost entirely high mountains with a few plain areas.

The water along this coast is generally deep close-in, but there are some dangerous reefs about 1 mile from the shore in some places.

The only good anchorage is at Susaki Wan. Uchiura Wan has shoals across its entrance preventing access and other inlets can only serve as temporary anchorages when the winds are from the W to N.

In many places near the headlands along this coast fixed fishing nets may be found up to 1 mile offshore, especially from December through May.

Shirono Hana (33°26'N., 133°28'E.), 7 miles SW of Simo-Ryuzu Saki, is a cliffy 115m high headland marked by a light.

From Shirano Hana to Ko Shima, at the E side of the entrance to Susaki Ko, there are several rocks and reefs extending up to 1 mile offshore.

Higashi-Kuwata Yama and Nishi-Kuwata Yama, about 3.2 miles N of Suski Ko, are twin hills, one 675m high and bare and the other 769m high and wooded, are on an E/W axis, have a horseback profile, and are visible from a distance.

Torigata Yama (Yahazu Toge) and Irazu Yama, about 12.5 miles WNW of Susaki Ko, are twin mountains, one 1,459m high with a sharp peak and the other 1,336m high with a double peak, are on a N/S axis and are conspicuous from a distance.

Susaki Ko (33°23'N., 133°18'E.)

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6.12 Susaki Ko is entered through Susaki Wan, which offers the only good anchorage for large vessels on the S coast of Shikoku. The bay interior divides into two inlets, Nomi Wan, extending to the E, and Susaki Ko, extending to the N. Along the E side of the bay is Nomi Hanto, a peninsula extending S. Off the S side of peninsula is Ko Shima with the islands of Nakano Shima and He Shima to the W of the tip of the peninsula. Mountains press close to the shore all around the bay, making the coast a series of cliffs. The center of the bay is quite deep, but the area around the above-mentioned islands and off the headlands of the W shore is marked by extensive reefs.

Susaki Ko, at the head of Susaki Bay, is a port of entry. The port is in a long and narrow inlet extending N. Rimmed with hills protecting it from winds, it is the best harbor on the S coast of Shikoku. In bad weather, most vessels sailing in the Tosa Offing take shelter here. Several times a year strong NE winds give trouble to vessels in port.

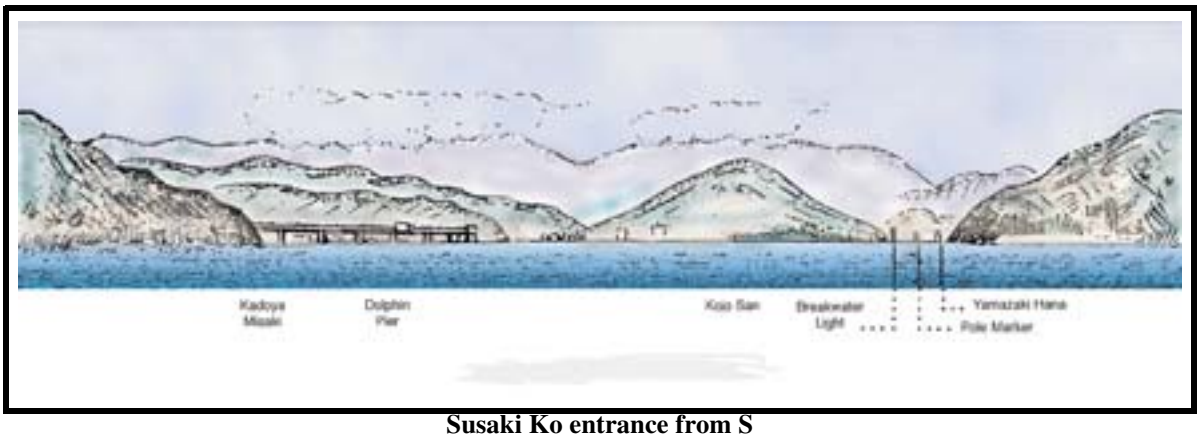
Near the entrance to the port and near Ishiga Hae (33°19'N., 133°19'E.), there are many fishing boats.

There are seiches here, with periods of from 18 minutes to 40 minutes and with amplitudes of 0.2m.

Winds—Weather.—There are many rainy days from April to June and in September. Many stormy days are in August and September. Fog is prevalent in March and April.

Depths—Limitations.—The harbor entrance is 0.8 mile wide, but after passing Yamasaki Hana, marked by a light, the channel suddenly narrows to 250m, then widens again as it penetrates inland. Depths within the port are 6 to 16m, mud bottom; the channel depth limitation is 8.4m. Vessels of up to 15,000 dwt may be berthed at the public wharves. Nittetsu Mining dolphins will berth a vessel up to 50,000 dwt, with a maximum draft of 14m.

A detached breakwater 0.4 mile S of Yamazaki Hana Light.



Susaki Ko entrance from S

A light is shown from the E end of the breakwater.

The maximum tidal range is 2m; the minimum is 0.25m.

Alongside berths lie at dolphins and quays within the inner harbor. The principal berths are:

1. Minatomachi Quay (NW part), with a length of 730m and depths alongside from 4.0 to 10.0m.
2. Daibo Quay, with a length of 165m and depths alongside of 7.0 to 9.1m.
3. Michi-Tetsu Dolphin Pier, with a length of 350m and depths alongside of 8.3 to 13.3m.

Aspect.—In addition to the mountains discussed above in the port description, Ko Shima, on the E side of the outer harbor, is very conspicuous because of its sharp peak. Kojo San, 143m high and close N of the city, and two radio towers on the S side of the city are good marks for entering the port.

Pilotage.—Pilotage is not compulsory but advisable. The pilot boards in position 32°26.0'N, 131°42.0'E Pilots can be contacted by telephone (81-889-4231-31). Vessels should send an ETA on departure from last port, 10 days, 4 days, 48 hours, and 24 hours prior to arrival.

Anchorage.—Vessels should anchor clear of the reef extending about 0.2 mile NW from Konaga Saki.

Susaki Ko has a good anchorage, in 10 to 12m, with Kojo San bearing 257° and Fujiga Hana (Hushiga Hana), at the head of the harbor, bearing 347°.

Kure Ko—Futanashima Light

Directions.—Proceed toward Futanashima Light in Kure Ko on a bearing of 310° from S of the Isshi Haye (Ishiga Hae) Lighted Buoy. Once the latter light bears 054°, change course and head toward the summit of Kojo San, N of Susaki, on a course of 002°. After entering the harbor and passing Yamasaki Hana, change course to 069° and head toward the silo about 0.5 mile NE of that point. When a tank situated 600m NE of the point is abeam to starboard, change course to 045° and head toward a tank 400m NNE of Shibu Saki (33°23'N., 133°18'E.). Finally, proceed on a course of 349° toward two silos on Fujiga Hana and enter the anchorage.

Caution.—In the E approach, Tsuboishi Baye, a rock that dries 7m, about 0.7 miles E of Ko Shima, is the outermost danger of a string of rocks that stretches NNE to the shore. Between Ko Shima and Isshi Haye there is a string of several charted dangers.

Coastal Features (continued)

6.13 Hiuchigamori (33°17'N., 133°12'E.), about 7.5 miles SW of Susaki, is a wooded hill, 590m high, with a sharp conical peak. It is highly visible except from S of Otsu Saki.

Shiwa Saki (33°13'N., 133°15'E.), about 10 miles S of Susaki Ko, is a pine-covered 130m high headland identifiable from a distance.

Okitsu Saki (Okitu Saki), 4.5 miles SSW of Shiwa Saki, is a sheer-cliffed headland on the E side of a peninsula jutting to the SE. The highest point is a wooded 218m high hill, Misaki Yama. The peninsula appears as an island from a distance.

Gozaisyo Mori, about 3.8 miles WNW of Okitsu Saki, is a 658m high wooded hill with a sharp peak. It is conspicuous except when seen from N of Okitsu Saki.

Asa Bae, a reef with a depth of13.9m, lies 1 mile E of Shiwa Saki.

From Okitsu Saki to Ashizuri Misaki the headlands of Okitsu Saki, Ino Misaki, and Nuno Sakijut lie SE from the shore. Each headland has a bay on its SW side. The mountains on this stretch of coast come close to the water's edge and the coast is mainly cliffy and rocky. Rocks and reefs lying close to the shore are numerous along this stretch of coast, but dangerous reefs less than 10m deep are not found more than 1 mile offshore. Good ports and harbors are few. Kamo-Kawaguchi Ko can only handle vessels up to 200 tons. Shimonokae Ko, Iburi

Ko, Tanoura Gyoko, and Kubotsu Gyoko are used only by local vessels.

Ishi, a detached rock 7.1m high, is 0.6 mile SSW of the W side of Okitsu Saki. Rocks, 4.2 and 17m high, lie 0.6 mile ENE and 600m W, respectively, of Okitsu Saki.

6.14 **Ino Misaki** (33°01'N., 133°05'E.), 10 miles SW of Okitsu Saki, is a headland marked by a light. A 152m hill is 900m WNW of the light. Inland, mountains become gradually higher N of the point.

Naidanoshi, a rock 17m deep, is about 4.3 miles SW of Ino Misaki.

Ishimiji Yama, just over 7 miles W of Ino Misaki, a 411m high hill with a sharp peak, is a good mark for coastal shipping.

Shimanto Kawa, the largest stream on the S coast of Shikoku, empties into the sea about 7.5 miles SW of Ino Misaki.

Tsurura Yama, about 9 miles SW of Ino Misaki, is a conspicuous 471m high hill.

Nuno Saki, about 11 miles SSW of Ino Misaki, is a 96m high headland marked by a light.

Kubotsu Saki, about 4.5 miles S of Nuno Saki, is a headland marked by a light with an auxiliary light which illuminates Yusuga Bae, a reef 440m to the ENE.

Ashizuri Misaki (Asizuri Misaki) (32°43'N., 133°01'E.), the S tip of Shikuko, is a black-cliffed headland marked by a light; a marine weather broadcasting station is at the light. A temple, with a thick grove behind it, is at the summit of the point. The point is reported to be a good radar target at 26 miles.

A floating fish haven lies about 14 miles SE of the light. Another light is shown close W of the lighthouse.

Many rocks and reefs are found in the vicinity close offshore of Ashizuri Misaki.

Shirao San (Siao San), about 1.5 miles NNW of Ashuzuri Misaki, is a 433m high wooded hill with a round top.

Shirataki San, about 2.3 miles NNW of Ashizuri Misaki, is a 451m high hill. Seen from a distance, it appears to combine with Shiroa San above into a remarkable saddle-shaped prominence which, on a clear day, can be seen 30 miles offshore.

There are many fish haven obstructions along this part of the coast that extend as far as 4 miles offshore. Vessels should refer to the chart and navigate with caution.

Ashizuri Misaki to Komo Saki

6.15 In the central part of the 30-mile stretch of coast between Ashizuri Misaki and Komo Saki, Kanae Saki bulges out S and Oshime Hana juts to the SE. West of Oshime Hana is Oki-no-Sima and a scattering of other islands. Between these islands and Komo Saki, to the N, is Sukumo Wan, a bay which penetrates deeply inland. The land behind the shoreline is made up of thickly-forested mountains, but there are few peaks to serve as good landmarks. The coastline generally has deep water close-to, but dangerous rocks are found outside of Shimizu Ko and on both sides of the entrance to Sukumo Wan.

Aspect.—Shirao San (Sirao San), Shiratiki San, Imano Yama, Ohora Yama, and Oki-no-Sima are good marks when viewed from the S.

Principal lights are at Ashizuri Misaki, Usubae Saki, Tosa-Simizu Ko, Kanae Saki, Kashiwa Shima, Tosa-Oki-no-Sima, and Komo Saki.

Caution.—There are many dangerous reefs outside of Simizu Ko and numerous islets and rocks are scattered among the islands on the S side of the entrance to Sukumo Wan. Many dangers are also found in an area stretching for 2 miles SE from Komo Saki, at the N end of this segment of the coast.

A fishing ground extends from Simizu Ko to Oshime Hana. Outside of Sukumo Wan, fishing boats using purse seines and lights operate at night all year.

Vessels up to 450 gt can berth and ships up to 1,000 gt can find anchorage at Simizu Ko, which is a good shelter port. Asizuri Ko lies approximately 1 mile NW of Simizu Ko, though caution is necessary in entering the harbor as its central and interior portions are fraught with dangers. Sukumo Wan offers shelter from N and SE winds for large vessels and several smaller bays afford shelter for smaller craft.

6.16 The coast between Ashizuri Misaki and the island of Okina Shima faces the Pacific Ocean to the S and is well-indented with many small inlets, including the fishing port of Shimizuko and the Komome Hakuchi anchorage.

The 20-mile stretch between Ashizuri Misaki and Oshime Hana is washed by ocean surf and is made up mainly of high cliffs, except for some sand and stone beaches in the inlets. High mountains rise immediately behind the shore.

There are many rocks and reefs close-to along this part of the coast, but the water usually deepens rapidly beyond their outer periphery.

Usubae Saki (32°44'N., 132°58'E.), 2.8 miles W of Ashizuri Misaki, is a headland with three peaks; the highest peak is 126m high. The point is marked by a light. Usa Bae, a reef close SW of the light, is illuminated by an auxiliary light. The waters around the reef deepen sharply beyond its limits. When ocean currents move close to shore, the sea becomes very rough at the point.

6.17 **Shimizu** (Simizu) (32°46'N., 132°57'E.) is a deep-sea fishery base. Vessels up to 2,000 gt can anchor here. The port is said to accommodate a large number of vessels up to 100 gt. There are many rocks and reefs near the harbor entrance.

Shimizu Ko breakwater extends E from the W entrance point of a small bay entered 0.75 mile NW of Oura Hana. A light stands at the E end of the breakwater.

For vessels mooring at the Marine Pollution Prevention Facilities, there is a signal station. When the Designation Flag is being displayed over the International Code Flag F, the vessel should reply with the Answering Pennant over the International Code Flag Y and wait until completion of operations at the Waste Oil Station.

Kurakake Yama, 1.8 mile N of Usabae Saki and at the E side of the entrance to Shimizu, is 116m high and has a sheer cliff on its W side, conspicuous when viewed from the W.

Takatori Yama, just N of Shimizu, is a sharp wooded peak 304m high.

Imano Yama, about 10 miles NW of Usabae Saki, is an 865m high conspicuous hill.

Kanae Saki, midway between Ashizuri Misaki and Oki-no-Sima, is a red-cliffed headland marked by a light at this tip and backed by forested mountains. A light is shown about 4 miles NE of Kanae Saki.

There is a small harbor protected by N and E breakwaters S

of Kanae Saki.

Ho Saki, 2.3 miles W of Kanae Saki, is a steeply-cliffed headland with pines growing close to the water. A small 93m high hill is just ENE of the tip of the point.

Ohora Yama, about 6 miles NW of Ho Saki, is a 465m high wooded hill with a sharp secondary treeless peak on its S side; it is highly visible from seaward, reportedly having been seen at a distance 48 miles to the SSW.

6.18 Oshime Hana (32°46'N., 132°38'E.) is a headland at the seaward end of a mountain spur extending SW; a white cliff on the S side is remarkable. Ko Shima, a rocky 51m high rocky islet, is close SW.

Kashiwa Shima, on the NW side of Oshime Hana, is a round-topped 145m high islet marked by a light on its summit; the islet connected to the mainland by a bridge. A crumbling cliff on its S side might cause it to be confused with Oshime Hana.

Biro Shima, about midway in the passage between Oshime Hana and the island Oki-no-Sima, is a cliffy round-topped 141m high islet.

Aka Bae, a reddish odd-shaped 21m high rock, is close SE. A rock, 4.3m high, is located SSW of Aka Bae.

Oki-no-Sima, about 3 miles SW of Oshime Hana, is a highly conspicuous 404m high island, which has been reported to be recognizable from 45 miles to the SE. Except for some pebble beaches, steep cliffs surround the entire island. The island is marked by lights on its N, W, and SW sides

Sukumo Wan

6.19 Sukumo Wan is a large bay between Kashiwa Shima, Oki-no-Sima, Hime Shima, and Uguru Shima to the S, and Komo Saki to the N. The bay shore has many curves and inlets and is backed by mountains.

Depths within the bay are more than 50m for the most part, and even at the head of the bay between Shira Saki (Shiro Hana) and Kuro Saki, there are depths of 70m in places. Depths in most of the bay's head range from 11.4 to 24m. The bay has been swept of mines.

Channels between the islands S of the bay entrance are generally deep and safe, but when visibility is poor, care should be taken to avoid the islets and rocks fringing the channels. The entrance channel has a least depth of 9.8m.

Winds—Weather.—West to NW winds prevail during the winter, resulting in many days during which the handling of even small boats is difficult. In summer S winds prevail, resulting in high waves which reach the head of the bay. Fogs are infrequent, and even when fog moving S through Bungo Suido reaches N of Sukumo Wan, little of it appears within the bay and entry is not hindered.

Tides—Currents.—The flood tide sets NE and the ebb tide sets SW. Reversals occur within 1 hour after HW or LW, with velocities seldom exceeding about 4.5 knots.

Anchorage.—The area at the N head of the bay provides good anchorage for large vessels. Inlets between Hanazura Saki and Kuro Saki provide good shelter for smaller vessels.

6.20 Eboshi Saki (32°45'N., 132°33'E.), at the N end of Oki-no-Sima, is a wooded cape which appears black from a distance. A light is shown on the NE side of the island.

Hadaka Shima, just ENE of Eboshi Saki, is a 28m high rock islet with pine trees.

Futanarabi Shima, 1 mile NE of Eboshi Saki, is a 49m high rock islet with twin peaks.

Hime Shima, 2 miles W of Oki-no-Sima, is a 157m high wooded cliffy islet with a sharp peak.

Rocks lie up to 1.3 miles NNW of Hime Shima; the highest is 25m high.

Sannose Shima, midway between Oki-no-Sima and Hime Shima, is a 51m high island surrounded by rocks.

Uguru Shima, 3.5 miles NW of Oki-no-Sima, is a 251m high island with a sharp peak visible for a considerable distance. A light is shown on the cape.

Many reefs, rocks, and other dangers are between the above islands and islets and Oki-no-Sima.

Underwater cables extend from Oki-no-Sima NE to the Shikoku mainland and NW to Uguru Shima.

On the E side of Sukumo Wan, **Shira Saki** (Shiro Hana) (32°51'N., 132°40'E.), about 5.5 miles NNE of Kashiwa Shima, is an 87m high white rock headland with grass-covered round top and marked by a light.

6.21 Sukumo (32°56'N., 132°44'E.), which is the local port for Kozukushi Ko, is about 3.5 miles NE of Shira Saki. The harbor penetrates inland for 1 mile and has a sand and mud bottom with depths of 10 to 39m. Protected from winds by the surrounding hills, the harbor provides good anchorage for vessels up to 1,000 gt. Vessels up to 300 gt can be accommodated at a pier with a depth of 3.5m alongside.

Kuro Saki, about 5 miles W of Sukumo, is a cliffy headland with many rocks at its foot. A pine-topped 358m high hill, at the rear of the headland, is remarkable from a distance. Several charted rocks and islets are W of Kuro Saki and front the inlets in the NW part of Sukumo Wan.

Komo Saki, about 6.5 miles W of Kuro Saki, is a steep-sided headland marked by a light; this headland appears black. To the E are fallen cliffs in the middle of which is Hanazura Saki, a high-ridged 75m cape. Several charted rocks, islets, and other dangers extend S and SW from Komo Saki. A dangerous wreck lies 2.5 miles W of Komo Saki.

North of Komo Saki, the W coast of Shikoku and Bungo Suido is described in Pub. 159, Sailing Directions (Enroute) Japan, Volume II.

Kyushu—East Coast

6.22 Tsurumi Saki (Turumi Saki) (32°56'N., 132°05'E.) forms the W arm of the S entrance to Bungo Suido. A light, 14m high, stands at an elevation of 196m on Tsurumi Saki. The S side of this headland is mainly sheer cliffs.

Caution.—Caution is necessary because this headland and Sen Saki, about 7 miles to the SW, are easily mistaken for each other.

6.23 Yoko Shima, about 2 miles SW of Tsurumi Saki, consists of three conspicuous densely-wooded islets. A light is shown from the N islet of this group.

Hazako Gyoko, the bay about 1 mile W of Yoko Shima, can provide anchorage during N winds; a swell frequently runs into

the bay from the SE.

Yonozu Ko, about 2 miles W of Yoko Shima, has two small ports.

Anchorage.—Anchorage can be obtained in about 20m, mud, off the ports with good shelter during the winter Northwest Monsoon. Four vessels of about 5,000 gt each have anchored simultaneously in the S part of the bay. Motokoshi Yama, a 582m sharp summit W of the bay, is a fairly conspicuous feature when entering the bay, as are the headlands mentioned above.

Okiguro Shima, just over 2 miles SSW of Yoko Shima, is a cliffy and densely-wooded islet. A light stands at the E end of the island.

Sen Saki, about 3 miles SSW of Yoko Shima, is a precipitous and almost treeless headland which can easily be mistaken for Tsurumi Saki to the NNE. A group of rocks, usually marked by breakers, extends about 0.4 mile E from Sen Saki.

Nyuzu is entered across a bar 2 miles NW of Sen Saki. It is difficult to enter, even for small craft with local knowledge.

Moto Yama, about 10 miles SW of Tsurumi Saki, is a thickly-wooded 270m high hill on Montana Hana, a steep-sided peninsula. A conspicuous wooded islet lies on the reefs extending from the peninsula.

Submarine cables are laid from a position about 1.3 miles W of Montana Hana to Fuka Shirra.

Sehira Yama, about 2 miles W of Moto Yama, is a 392m high double summit on the E slope of the N and lower summit.

6.24 **Kamae Ko** (32°47'N., 131°56'E.) affords anchorage to small vessels, with local knowledge, in 7.8 to 10m, mud or sand. A light stands on Suzumegase Hana, the E entrance point.

Inokushi Ko (32°48'N., 131°54'E.), to the W of Kamao Ko, affords anchorage for small vessels with local knowledge, in 10.1 to 20.1m, mud.

Submarine cables run from Fuka Shima NNE to the coast near Sehira Yama and NNW from Fuka Shima to Yakata Shima (32°46'N., 131°55'E.).

Fuka Shima (Huka Shima), about 15 miles SW of Tsurumi Saki and almost 3 miles offshore from the mainland, is an island of mainly sheer cliffs; it is divided into N and S parts by a sandy isthmus. The N summit is 98m high and the S summit is 83m high and is marked by a light.

Tomasu Saki, about 4 miles WSW of Fuka Shima, is a precipitous 92m high headland, densely covered with pine trees; from some directions the headland appears as an islet.

Taka Shima, S of Tomasu Saki and in the entrance to Furue Ko, is a dark wooded islet.

Furue Ko affords anchorage to vessels, with local knowledge, in 5 to 14.6m, mud, sand, and shells.

Shimanoura Shima, just S of Taka Shima, is a relatively large island surmounted by several sparsely-wooded hills; the E and S sides of the island are cliffy. The island is marked by a light.

Caution.—No attempt should be made to pass through the channel between this island and the mainland without local knowledge.

6.25 A light stands on Gojo Se, an islet located about 0.4 mile SW of Shimanoura Shima.

Shimanoura Ko, on the NW part of Shimanoura Shima, can provide anchorage for small vessels up to 1,000 gt, in 11 to 17.8m, mud, in the central part of the harbor. Two radio towers are at the head of the harbor.

Eno Take is a rocky 728m high mountain, about 9 miles W of Shimanoura Shima; from the SE, its summit appears flat, but from E it is steep-sided and of a peculiar shape.

Shimage Bae, about 5 miles SW of Shimanoura, is a detached flat-topped rock usually marked by breakers; it should not be approached within 0.5 mile. It is surmounted by a light.

Totoro Ko (32°31'N., 131°41'E.), about 32 miles SW of Tsurumi Saki, is the headquarters of a fishing fleet. Anchorage is available for vessels under 500 gt, in about 4.9m, but swells enter the anchorage during strong N winds.

6.26 **Mi Saki** (32°29'N., 131°44'E.) is a conspicuous headland with a precipitous cliff surmounted by a clump of pine trees; two buildings are on its NE slope. There are fishing nets in the vicinity of the headland during the winter.

Tomi Yama, about 1 mile SW of Mi Saki, is the highest grassy hill in the vicinity; it is 308m high and has several radio towers.

Biro Shima, about 1.6 miles S of Mi Saki and about 1.5 miles offshore of the mainland, is a well-wooded islet marked by a light; a conspicuous rock, 52m high, is close off its N side.

A sunken wreck, dangerous to navigation, lies 1.3 miles NE of Biro Shima.

Hososhima (32°26'N., 131°40'E.)

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6.27 The port of Hososhima is in Ozue Wan, a bay about 37 miles SW of Tsurumi Saki. The port consists of a town and a harbor area in two sections. The N section, known as Hososhima Kayogo Ko, is an artificial basin in the SW corner of the bay. Shirahama Ko lies on the NW side of Maki Shima. Shirahama Ko is sheltered by a breakwater projecting N from the NW side of Yo Shima, which lies close off and is connected to Kannon Saki, the NE extremity of Maki Shima.

Winds—Weather.—The wind is usually S in spring and summer, N in autumn, and W in winter. It is reported that the sea is usually calm from January to July. Local weather signals are displayed at the town.

Hososhima Coast Guard Station may be contacted for information regarding tsunami and typhoon safety measures.

Tides—Currents.—The MHW interval is 6h 18m. Spring tides rise 1.8m and neap tides rise 1.5m. Seiches, with uniform periods of about 10 minutes, occur in the port. The rise and fall may be 0.2m in calm weather and 0.6m during storms.

Depths—Limitations.—The draft limitation in the channel is 10m. The maximum permissible draft is 9.7m with a LOA of 170m.

Depths decrease gradually from 28m in the entrance to Ozue Wan, to about 11.9m in the anchorage area N of the entrance to the artificial basin. The least charted depth in the central part of that basin is 9.5m.

The depth in the entrance of the natural harbor is 18m in mid-channel, and in the middle of the outer part of harbor depths are 13 to 15m. The inner part of the harbor is within the 10m curve and has depths of 6.8 to 9.7m in its central part.

North Port (Industrial Port) can accommodate vessels up to

Photo courtesy of Japan Coast Guard

Hososhima Ko

10,000 gt with drafts up to 10m. South Port (Commercial Port) can accommodate vessels having drafts of up to 6.8m and up to 5,000 gt. Shirahama Port has depths alongside from 5 to 13m for vessels of 40,000 gt. Vessels of up to 43,000 dwt, with a maximum draft of 9.8m and length of 200m can be accommodated. For further berthing information refer to the table titled **Hososhima—Berth Information**.

Ikui Bae (32°27'N., 131°42'E.), two rocks 6.1m high and marked by a light, is in the middle of the entrance to the bay; Kame Se and Hira Se, 0.25 mile N and 0.3 mile S of it, respectively, have depths of 4.8 and 10.7m. Huna Se, a rock 18m deep, is 0.6 mile ENE of Ikui Bae. Yurugi Bae, 2m high, lies 0.2 mile NNE of Yo Shima.

Hososhima—Berth Information

Berth	Length	Depth	Maximum Vessel		Remarks
			Draft	Size	
Industrial Port					
No. 1	140m	10.0m	8.8m	10,000 dwt	—
No. 2	220m	10.0m	8.8m	10,000 dwt	Ro-ro.
No. 3	180m	5.5m	5.0m	2,000 dwt	—
No. 4	180m	5.5m	5.0m	2,000 dwt	General cargo.
No. 5	130m	7.5m	7.0m	5,000 dwt	General cargo.
No. 6	185m	10.0m	9.6m	10,000 dwt	—
Hyuga Refinery's Wharf	260m	10.0m	9.8m	34,000 dwt	Petroleum products.
Sugar Plant Wharf	150m	10.0m	9.6m	15,000 dwt	Sugar.
Commercial Port					
No. 2	250m	7.5m	6.8m	5,000 dwt	—
No. 3	540m	4.5m	—	700 dwt	—

Hososhima—Berth Information					
Berth	Length	Depth	Maximum Vessel		Remarks
			Draft	Size	
No. 4	180m	4.5m	—	700 dwt	—
Hososhima Industrial Port Terminal					
No. 8	90m	5.5m	5.0m	2,000 dwt	—
No. 9	260m	7.5m	7.0m	5,000 dwt	—
No. 10	185m	10.0m	9.3m	10,000 dwt	Containers.
No. 11	150m	7.5m	—	—	Under construction.
No. 12	180m	4.5m	—	700 dwt	—
No. 13	180m	5.5m	—	700 dwt	—
No. 14	260m	13.0m	—	40,000 dwt	—
No. 15	130m	7.5m	—	5,000 dwt	—
No. 16	170m	10.0m	—	10,000 dwt	Under construction.
No. 17	260m	13.0m	—	—	Under construction.

Takanaga Se, a rock swept to a depth of 13.5m, is the outermost of several dangers extending N from Kannon Saki and is about 0.6 mile N of that point.

The approach channel to the N Industrial Port basin is marked by aids.

Aspect.—Approaching from the N, the cliffs along the coast between Mi Saki and Ozue Wan, Tomi Yama, Biro Shima, and Nab Saki Light are good landmarks. Approaching from the S, Hososhima Ko Light and **Komeno Yama**, which rises 192m on the S side of the harbor, are the most conspicuous landmarks.

The seaward ends of the two peninsulas that form the natural S or commercial harbor are precipitous cliffs of columnar structure. The shores of the harbor rise to hills from 98 to 198m high, which are covered with coarse gross.

Pilotage.—Pilotage is not compulsory but is available from sunrise to 1 hour prior to sunset. Pilots board at the quarantine anchorage in position 32°26.0'N, 131°42.0'E, about 1 mile SE of Kannon Saki. During adverse weather conditions, the pilot may board inside the breakwaters. The pilots require a 48-hour and 24-hour advance notice of the ETA. The Hososhima Pilot Association is responsible for pilotage in this harbor.

Contact Information.—See the table titled **Hososhima—Contact Information**.

Hososhima—Contact Information	
Pilots	
Call sign	Hososhima Hoan
Telephone	81-982-5229-62
Facsimile	81-982-5229-62
Port Authority	
Telephone	81-985-2671-89
Facsimile	81-985-3244-59
E-mail	kowan@pref.miyazaki.lg.jp

Anchorage.—Ozue Wan is exposed to the E, but in fine weather vessels with local knowledge can obtain anchorage, in about 14.6m, about 0.4 mile SW of Oto Shima (32°28'N., 131°40'E.).

The outer natural harbor of Hososhima Ko affords anchorage to several vessels, in about 14.6m, but the holding ground is not good and strong NE winds send in a heavy sea rendering this part unsafe.

The E part of the inner natural harbor affords anchorage for small vessels, in 4.6 to 7.8m, sand. This anchorage is somewhat sheltered from onshore winds, but is unsafe during winter when W winds sometimes blow from the head of the harbor with gale force.

Anchorage has been obtained outside the natural harbor, with Hososhima Ko Light (32°25'N., 131°44'E.) bearing 217°, distant about 1 mile. The position was found to be sheltered and safe anchorage from winds between the W and N; however, a typhoon in the vicinity of Okinawa gave rise to a heavy swell and the anchorage became unsuitable.

A quarantine anchorage, a circular area with a 0.2 mile radius, is centered 0.8 mile NE of Hososhima Ko Light.

Directions.—To enter Syogyo-Ko, pass on the N side of the Hososhima Ko port lighted buoy, situated in the middle of the port mouth, and enter the port area passing along the center line of the entrance channel. Mid-channel courses to the inner harbor are recommended.

To enter Kyogyo-Ko, pass to the N of Lighted Buoy No. 1, situated about 0.5 mile S of Gto Shima. From there, change course to the SSW to proceed between Lighted Buoy No. 3 and Lighted Buoy No. 4, then proceed mid-channel between Lighted Buoy No. 7 and the embankment, situated N of the lighted buoy.

Caution.—There are many fixed fishing nets in the bay, especially in the vicinity of Take Shima and Otu Shima. Vessels should note the plotted positions of the fish havens on the chart are approximate.

When berthing at the wharves it is advisable to use the bow anchor in case it becomes necessary to leave the harbor during strong NW winds.

6.28 Taka Mori Yama, about 5.5 miles SW of Kannon Saki, is 342m high and has a sharp peak.

Osuzu Yama, 823m high, about 12 miles WSW of Kannon Saki, 823m high, is the highest mountain in the area and forms a good landmark from E.

Toriyama (32°10'N., 131°32'E.), a village with houses on the beach and on a cliff, is visible from seaward.

Omaru Kawa, about 2.5 miles SSW of Toriyama, has a large barn-shaped factory and several chimneys near its mouth. The river can be entered by small vessels in calm weather.

The tower at position 31°57'N, 131°25'E is 36m high and conspicuous.

Miyasaki Ko (31°54'N., 131°28'E.) lies at the mouth of Oyodo Kawa. Lighted buoys are moored E of the entrance.

An aero light is shown 1.5 miles SSW of the entrance to Oyodo Kawa, and a conspicuous stone tower, 36m high, stands 4.5 miles NNW of it. There are a large number of oil tanks situated 0.5 mile NNW of the river mouth.

Shirio Ko, a new harbor, is entered 1.5 miles N of the river mouth. It is protected by two breakwaters. A lighted tower stands at the head of each breakwater. The fairway into the harbor is dredged to a depth of 9m.

6.29 **Oryuzako Byochi** (31°48'N., 131°29'E.) affords anchorage to small vessels, in charted depths of 5.5 to 11.9m; it is safe and comparatively calm with winds from S, W, and NW, but dangerous with winds from any other direction. Tosaki Hana Light (31°47'N., 131°29'E.) is shown from the point of land close S of Oryuzako Byochi.

There are numerous fish haven obstructions in this area and a submarine cable runs E from the coast about 2.8 miles above Oryuzako Byochi.

Uchiumi (31°45'N., 131°28'E.) is a small natural harbor with berthing facilities for small vessels. The E side of the harbor is protected on its E side by a chain of reefs. A breakwater has been constructed along this chain of reefs, and a light stands on a spur extending SW from near the S end of it.

Odono Se, a shallow reef with a dangerous submerged rock, is about 4.5 miles ENE of Uchiumi and about 3.5 miles offshore of the mainland.

Kinchaku Shima (31°44'N., 131°28'E.) is surmounted by a conspicuous clump of trees.

6.30 **Aburatsu** (Aburatu) (31°35'N., 131°24'E.) has a very small outer and inner harbor protected by breakwaters. The largest vessel that has entered the harbor and berthed alongside is 1,300 gt, but anchorage for larger vessels can be obtained outside the harbor.

Aburatsu Port
http://www.m-port.gr.jp/aburatsu/shisetsu.html

Winds—Weather.—With the exception of S winds during the summer, NW or WNW winds of low velocity are prevalent throughout the year. However, from July to October, the port area is frequently affected by storms including typhoons. Wind velocities of 45 knots from the WNW have been recorded in December; SSW winds of 79 knots in September during the typhoon season have been recorded.

From March to June, the sea is reported to be generally calm. Bad weather occurs at times, particularly in August and September. From October to December, the sea is usually calm unless the wind is NE.

Precipitation is highest from April to June, the rainy season, with about 500mm of rain.

The average temperature in August, the warmest month, is 27°C and the lowest in January, the coldest month, is 8°C.

Local weather signals are displayed.

Tides—Currents.—The MHW interval at Aburatsu is 5 hours 58 minutes; spring tides rise 1.8m and neap tides rise 1.5m.

The tidal currents in the approaches to the harbor flow N on the rising tide, between O Shima and the coast to the W, and passes between the N end of that island and Obushi Hana; during the falling tide, the tidal current flows in the opposite direction; the rate is about 0.5 knot. The direction of the current is sometimes influenced by the direction of the wind.

Depths—Limitations.—The approach to the harbor from the E and S has depths of about 10.1m. There are depths of 5 to 12m at the wharf in the outer harbor.

The outer harbor anchorage depths are from 11.9 to 15.5m; inner harbor anchorage depths are from 6.1 to 7m.

Aspect.—The hills on the peninsula forming the E side of the harbor are conspicuous because of their serrated appearance. Radio towers on the summit of a hill about 0.6 mile N of Obushi Hana are also conspicuous.

Photograph Courtesy of Japan Coast Guard
Aburatsu Ko

Pilotage.—Pilotage can be arranged through the Pilotage Association at Hososhima with 24 hours notice. Pilots boards 0.5 mile WSW of Kurasaki Hana Light (located at the end of O Shima) in position 31°30.4'N, 131°24.5'E.

Contact Information.—See the table titled **Abaratsu—Contact Information**.

Anchorage.—Anchorage for small vessels can be obtained,

in depths of 6.1 to 7m, sand, N of the E breakwater.

Abaratsu—Contact Information	
Port Authority	
Telephone	81-985-267-189
Facsimile	81-985-324-459
E-mail	kowan@pref.miyazaki.lg.jp

Deep-draft vessels must anchor outside the harbor, in 11.9 to 15.5m, either between Obushi Hana and I Saki or between I Saki and the N extremity of O Shima; in either case, E winds send in a heavy swell and render these anchorages unsafe.

Directions.—A vessel approaching from the E, with the range lights on I Saki in line bearing 263.5°, should continue on this course to pass between Jako Se on the N and Nanatsu Bae on the S. After clearing these dangers, alter course N toward the light on the head of the E breakwater.

A vessel approaching from the S, between O Shima and the mainland W, should steer with the light on the E extremity of I Saki and the light on Nagasaki Hana in line bearing 002°, which leads between Yabe Se and a 8.2m patch about 0.4 mile E of Kozumi Se. A vessel of deep draft should navigate with caution.

Caution.—Care should be taken when entering the harbor, as there is a danger of being set towards the W breakwater.

6.31 O Shima (31°33'N., 131°25'E.), a relatively large island 206m high, affords some shelter to Aburatsu Ko and the small bays to the S. The E side of the island is cliffy. Mizu Shima, consisting of three rocks almost joined together, is about 0.8 mile SE of Kurasaki Hana, the S extremity of O Shima.

Yaba Se, a reef with a depth of 4.6m, is about 0.2 NW of the W extremity of O Shima. A light stands on the summit of Kurasaki Hana. It is a good mark for vessels heading S.

No Se (31°30'N., 131°24'E.), marked by a light, is the E of a line of dangers extending ENE from **Gion Saki**, which rises 191m.

Tonoura Ko, entered N of No Se and Gion Saki, affords sheltered anchorage, in 6.9 to 11.0m, mud.

There are several off-lying islands extending as far as 1 mile offshore between O Shima and Toi Misaki.

Toi Misaki (31°22'N., 131°32'E.) is a hilly headland with bare slopes; it is marked by a light and is reported to be a good radar target at 18 miles.

A light stands at the head of a breakwater projecting ENE from the shore about 2 miles NNW of Toi Misaki Light.

Takabatake Yama (31°26'N., 131°20'E.), 5 miles N of Toi Misaki, is 517m high.

Shibushi Wan (Ariake Wan)

6.32 Shibushi Wan (Ariake Wan) (31°22'N., 131°10'E.), a relatively large bay, is entered between Toi Misaki and Hi Saki, about 12 miles to the SW. The head of the bay is a sandy beach on which the sea breaks almost continually.

Caution.—Fixed fishing nets may be encountered along the coast near the entrance to Shibushi Wan.

Toi Misaki Light

6.33 Northwest side of Shibushi Wan.—Anchorage, sheltered from W and N winds, can be obtained by vessels with local knowledge, in 18.3 to 25.6m, in the bay on the W side of Toi Misaki.

Shira Se, a reef with a depth of 5m, lies about 0.4 mile from the E coast of this bay.

Fukushima Ko (31°26'N., 131°12'E.) affords anchorage, sheltered from N winds, outside the mouth of Fukushima Gawa, in 18.3 to 20.1m, but local knowledge is essential. Fukushima Ko is entered between two breakwaters, with a light on each head.

Depending on the height of the tide, vessels up to 500 tons can berth in Fukushima Ko. Local weather signals are displayed at the town of Imamachi on the N side of the entrance to the river.

A light stands on Bindare Shima, situated 1.3 miles S of the entrance to Fukushima Ko.

6.34 Southwest side of Shibushi Wan.—Hi Saki (31°17'N., 131°08'E.) rises to a 238m high treeless summit; the point is marked by a light. The Tokyo University Space Observatory, from which rockets are fired for observation several times yearly, is 3.25 miles SW of Hi Saki. Details of the firings and impact area forecast are published in Notice to Mariners and are also broadcast.

Uchinoura Wan, a small bay on the SW side of Shibushi Wan, is entered between Hi Saki and Ko Saki, a headland 3.25 miles NNW. The bay is exposed to NE winds and the depths in its center are quite deep for anchorage, but vessels with local knowledge can obtain anchorage, in 23.8 to 25.6m, near its head. Local weather signals are displayed at the town of Uchinoura Ko, which overlooks the bay. Uchinoura Ko is a small fishing port, which is protected by two breakwaters. A light stands at the head of the E breakwater.

Sekiyu Bichiku Kichi Sea Berth (31°21'N., 131°03'E.) consists of a platform flanked by dolphins and oriented E-W; there is a depth of more than 20m alongside. The berth is connected by a pipeline laid WNW to an oil storage area. Lights are shown from the platform and from the extremities of the berth.

The oil storage area, about 1 mile square, is situated offshore al-

Shibushi Ko

most 1 mile WNW of the berth. A light stands at the SE corner of the storage area. A bridge, marked by a light, connects the SW corner of the storage area to the shore to the W.

6.35 Biro Shima (31°26'N., 131°07'E.) is a conspicuous islet in the NW part of Shibushi Wan. A submarine cable and wave meter lie NW, W, and SW of Biro Shima. Fish haven obstructions also lie W of this island.

Shibushi (31°28'N., 131°06'E.) (World Port Index No. 62224), in the N part of Shibushi Wan at the mouth of Mae Gawa, consists of a town, a small inner harbor having depths of up to 5.2m, and an outer harbor consisting of three large concrete jetties. A light is shown near the entrance to Mukogawara. Shibushi is a major port for grain import.

Depths—Limitations.—The channel to the harbor is dredged to a depth of 14m. The fairway to the inner harbor has a least depth of 10m.

Jetty No. 1 and Jetty No. 2 have been constructed on the SE side of the mouth of the Mae Gawa. Jetty No. 1 is the northernmost and has depths of 5 to 10m alongside, suitable for vessels up to 15,000 gt. Jetty No. 2 has depths of 6 to 7.4m and lies SW of No. 1 Jetty.

The approach to Jetty No. 3 has depths of 10 to 13m.

There are eight berths along the third jetty, SW of Mae Gawa. Depths alongside this jetty range from 5.5 to 13m.

Aspect.—Biro Shima is a good landmark for vessels approaching Shibushi. A railroad bridge and a white chimney in the town are conspicuous.

Pilotage.—Pilotage is not compulsory, but is recommended. Pilots are available at position 31°25.0'N, 131°05.5'E. There is no night berthing or unberthing.

Contact Information.—See the table titled **Shibushi—Contact Information**.

Anchorage.—Shibushi Wan has depths of approximately 22m W of Biro Shima, suitable for anchoring, however, most of the bottom is rock and the area is exposed to winds between the E and S.

Shibushi—Contact Information	
Telephone	81-992-6077-07
	81-994-7316-51
Facsimile	81-992-6077-17

A quarantine anchorage is situated about 0.5 mile W of Kuchiwano Hana, the N extremity of Biro Shima.

East Coast of Kyushu (continued)

6.36 Koyamada Wan (31°13'N., 131°01'E.), about 7 miles SW of Hi Saki and with a beach of white sand at its head, is exposed SE, but in calm weather it affords anchorage with local knowledge, in about 18.3m, sand.

To Saki, a small bay about 4 miles SW of Koyamada Wan, is suitable for temporary anchorage only.

The mountains between Kannon Saki and O Ura, about 11 and 14 miles SW, respectively, from Hi Saki, are conspicuous. O Ura has a conspicuous white sand beach.

Haya Saki (31°02'N., 130°43'E.), about 4 miles NE of Sata Misaki, is a rocky headland; one of the above-water rocks lying within 0.3 mile of it has a pointed summit.

Odomari Wan (31°01'N., 130°41'E.), about 2.5 miles NE of Sata Misaki, is a small harbor affording anchorage to a small vessel with local knowledge, in about 7.3m, sand, good holding ground.

Shelter is good in winter, from April to October, because it is exposed SE and a vessel should put to sea at the first indication of a SE wind. Tidal currents are strong in the approach.

At the head of Odomari Wan, there is a dip in the range of

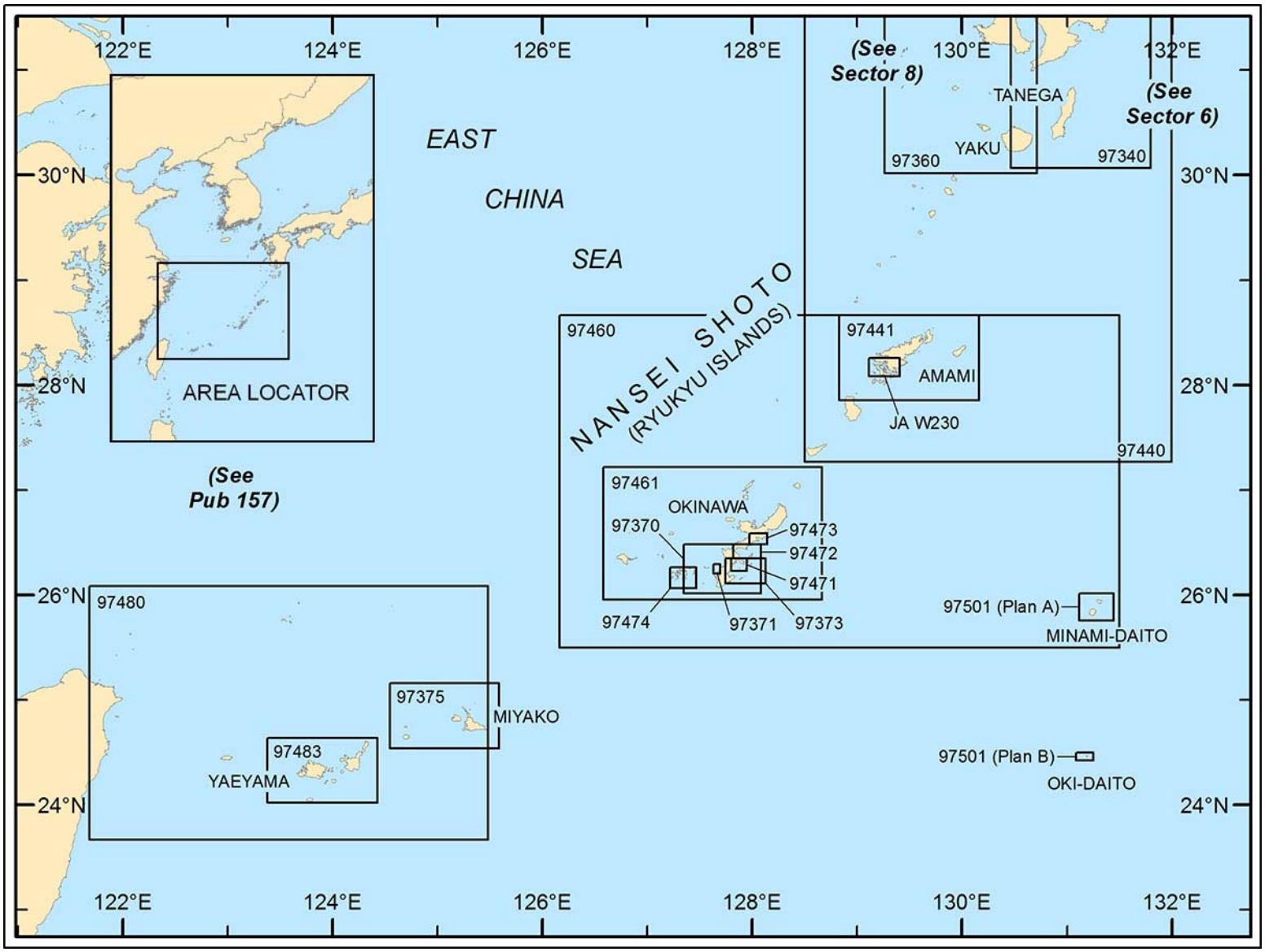
hills extending S, so that from a distance the land to the S may appear as an island.

Sata Misaki (30°59'N., 130°40'E.), the southernmost point of Kyushu, is described in paragraph 8.2.

Osumi Kaikyo

6.37 Osumi Kaikyo is a wide strait separating the N of the Osumi Gunto islands from the S end of the Kyushu mainland.

Approaching the strait from the E, the Kyushu coasts between Hi Saki and Sata Misaki are radar conspicuous, as is the N end of Tanega Shima and Mage Shima, although they are low. Approaching the strait from W, **Kaimon Misaki** (31°11'N., 130°32'E.) and the N islands of O Sumi Gunto are conspicuous.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR 7 — CHART INFORMATION

SECTOR 7

NANSEI SHOTO (RYUKYU ISLANDS) AND OFF-LYING ISLANDS

Plan.—This sector first describes Sento Shosho and Daito Shoto (Daito Shima) and other isolated islands, then Nansei Shoto (Ryukyu Islands), a chain of islands divided into five groups, Sakishima Gunto, Okinawa Gunto, Amami Gunto, Tokara Gunto, and Osumi Gunto are described, in that order, from SW to NE.

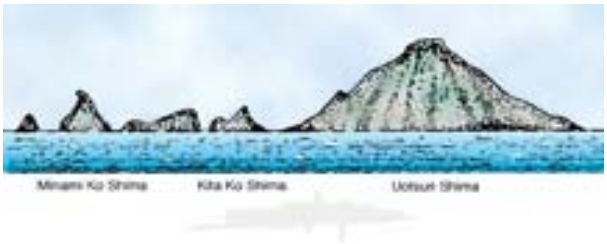
The islands of Nansei Shoto are on an arc of a circle, with its convex side toward the Philippine Sea, between a position off the NE coast of Taiwan and the SE extremity of Kyushu, and thus forms the SE boundary of Tung Hai or the East China Sea.

Kobi Sho

Off-lying Islands

7.1 Sento Shosho (Senkaku-Shoto) (25°47'N., 123°38'E.), an unmarked isolated group of islets and rocks, is about 83 miles NNE of Yonaguni Shima. The group is only visited during the fishing season.

Uotsuri Shima is a double summit with a ridge on which there is a pinnacle rock conspicuous from the NE. The S side is cliffy with visible strata. The islet has been reported to be a good radar target at 29 miles. A 1,400 gt vessel has anchored off a sandy shore on the NW side of the islet.



Uotsuri Shima from E

Anchorage.—Anchorage may be obtained in a small area, in 36 to 45m, coarse coral and sand, about 0.8 mile offshore on the W side of Kobi Sho, and also in 45m, on the N side of the islet.

Tide rips form in the vicinity of Tobi Se, about 1 mile SE of the SE extremity of Uotsuri Shima.

Okino-kita Iwa, Okino-minami Iwa, and Minami-ko Shima are islets and rocks E of Uotsuri Shima.

7.2 Kobi Sho (25°56'N., 123°41'E.), about 17 miles NE of Uotsuri Shima, is the summit of an extinct volcano, the E side of which is a conspicuous vertical cliff, 53m high; all sides of the slopes are covered with palm trees and undergrowth. The shores of the islet are littered with large blocks of lava.

Akao Sho (Sikibi-sho) (25°54'N., 124°34'E.), an isolated islet about 60 miles E of Uotsuri Shima, resembles a junk under sail. The islet is formed of lava with no trees; it is fringed on all sides with a low flat shelf, broken in places and from which rise very steep cliffs. At its N end, there are some conspicuous pointed rocks. The islet is reported to be a good radar target at 20 miles.

Akao Sho has been reported to lie 0.8 mile NE of its charted position.

Caution.—Large patches of discolored water and breakers were reported (1949) about 76 and 80 miles N of Kobi Sho. A dangerous wreck is about 42 miles NNW of Kobi Sho, and an undersea volcano is about 68 miles WNW of the islet, causing areas of discolored water. Tide rips and breakers were also observed in the same area.

Discolored water, resulting from suspected volcanic activity, was reported (1987) in the vicinity 11 miles SSE of Tori Shima in Amami Gunto.

7.3 Daito Shoto (Daito Shima) (25°10'N., 131°15'E.) consists of three isolated islets, two of which are about 4 miles apart; the third islet more than 80 miles S of the first two.

The tidal currents in the vicinity of Daito Shima are hardly perceptible. The current is W at a rate of about 1 knot near the two N islands, and NW at a rate of about 0.8 knot near Oki-daito Shima, the S island.

Oki-daito Shima (24°28'N., 131°11'E.), the S islet, has a treeless N half, brownish in color, and a cultivated S half. Heavy seas always run off the NW extremity of the islet. Two conspicuous, 15m high, chimneys are on the W side of the islet. The islet has been reported to be a good radar target at 17 miles. It is fringed with coral reefs, but there is deep water about 0.2 mile offshore. Tide rips are formed off the NW extremity.

7.4 Minami-daito Shima (25°50'N., 131°15'E.), about 80 miles N of Oki-daito Shima, has a low center area surrounded by a cultivated ridge 30 to 61m high. The coast is limestone cliffs 9.1 to 15.2m high. Three white monuments on a slope on the W side of the islet, and a chimney and a warehouse are good landmarks from offshore. Discolored water was reported in 1963 off the NW end of the islet. Two mooring buoys are laid off the NW end of the island.

Small vessels with local knowledge can moor off the principal landing place on the W side of the islet about 23m offshore,

with two bower anchors down and with hawsers to shore so as to keep at right angles or parallel to the shore.

A predicted depth of 857m, 5 mile radius, is centered on position 26°01.0'N, 131°19.0'E. This predicted depth is derived from remote-sensed gravity data and could fall anywhere within the area.

Fish havens lie 3.5 miles W and 1.5 miles, respectively, S of the island.

Kita-daito Shima, about 4 miles NNE of Minami-daito Shima and marked by a light, is of similar formation.

Daijingu Yama, a hill and a chimney on a hill on the NW end of the islet, are good landmarks.

Small vessels with local knowledge can anchor off the W side of the islet with sterns secured to a mooring buoy. Mooring buoys are also laid off the N and S coasts of the island.

7.5 Sakishima Gunyo (24°30'N., 124°30'E.) has two principal islands, Yaeyama Retto and Miyako Retto. Trees grow on both islands, but on the level parts of it sugar cane is cultivated. Houses on the islands have red tile roofs.

Tides—Currents.—Tides, which are weak, are often disguised by the current, which is N on the rising tide and S on the falling tide.

Caution.—Numerous submarine cables lie between Sakishima Gunto and Okinawa Gunto.

The reefs which surround the islands of the Sakishima Gunto group are in most places covered with seaweed, and mariners are advised to exercise caution, especially in poor light conditions, in the vicinity of the island because dangers cannot not be easily seen.

7.6 Yonaguni Shima (24°27'N., 123°00'E.) is tree covered and hilly at both ends, but cultivated where it is level. The island is reported to be a good radar target at a distance of 22 miles.

A light stands on Iri Saki, the W extremity of Yonaguni Shima; another light stands on Agori Saki, the E extremity.

Nagai Se, a submerged rock almost 1.5 miles NW of Agari Saki the E extremity of Yonaguni Shima, is sometimes marked by breakers. A shoal, with a depth of 16.5m, lies 2 miles of Agari Saki.

Fish havens lie about 4.5 miles WSW and 5.5 miles SW, respectively, from Iri Saki Light.

Anchorage.—Temporary open anchorage can be obtained for large vessels, except during the Northeast Monsoon, in 18.3 to 36.6m, coral and sand, about 0.4 mile offshore from Sonai, a village on the N side of the island.

Iriomote Shima (24°20'N., 123°50'E.) has been reported to be a good radar target at 28 miles. The coral reefs surrounding the island are sometimes marked by breakers.

In 1979, a countercurrent to the Kuroshio Current, setting SW, was reported between Yonaguni Shima and Iriomote Shima, with marked rip currents in the vicinity of position 24°15'N, 123°16'E.

Iriomote Shima

7.7 South side of Iriomote Shima.—Yaeme Saki (24°18'N., 123°40'E.) is a cliffy headland surmounted by a grassy hill with a dome-shaped summit. Okinokami Shima, an islet about 8.5 miles SW of Yaeme Saki, is a breeding place for sea birds.

Ochimizu Saki, 3.5 miles SE of Yaeme Saki, is faced by a high cliff and marked by a waterfall.

Kanokawa Wan, a small bay on the E side of Ochimizu Saki, has a high cliff on the E side of its entrance conspicuous because of its strata. A rock, awash, is in the middle of the bay; the sea breaks on it in rough weather.

Anchorage.—Vessels with local knowledge can obtain anchorage near the head of Kanokawa Wan, in about 20m; this anchorage is protected from all but S winds, but when the wind is from that direction it becomes untenable. Strong winds blowing down from the hills also make the anchorage unsafe.

Ubara Saka, about 5 miles E of Ochimizu Saki, is backed by a rather conspicuous peak, 420m high.

Haimi Saki, about 4.5 miles ESE of Ubara Saki, is a low point with a few pine trees.

A light stands at the head of a breakwater situated 0.8 mile NNE from Haimi Saki.

Hateruma Shima (24°03'N., 123°47'E.), an off-lying island about 12 miles SSW of Haimi Saki, is flat-topped and densely wooded.

A light stands close off the NW side of the island and two beacons mark rocks 0.3 mile offshore.

7.8 West side of Iriomote Shima.—Funauke Ko is entered between Saba Saki (24°21'N., 123°42'E.) and Hokabanare Shima, about 1.3 miles NE. The seaward side of the last point is conspicuous steep cliffs with horizontal strata. Montonariya Saki, about 2.3 miles ESE of Saba Saki, is a low but conspicuous point with red cliffs.

Anchorage.—Funauke Ko affords anchorage to large vessels with local knowledge, in about 55m, mud, off the village of Funauke; small vessels anchor closer to the head of the inlet. During S winds, the harbor is subject to fierce winds that descend from the mountains. There are several mooring buoys for small vessels in the harbor.

Iriomote Ko, the next inlet N of Funauke Ko, has a reef at its entrance and affords anchorage only to small vessels with local knowledge.

Submarine cables run from the W side of Funauke around Hoka-Danare Shima, and into Iriomote Ko. Another submarine cable runs from Iromote Ko, around the N side of Iriomote Shima, to Nagura Wan.

Unari Saki, the NW point of the island, has a flat summit.

Urauti Wan, on the S side of Unari Saki, affords anchorage sheltered from NE winds, in a depth of 12m, to small vessels.

7.9 North side of Iriomote Shima.—Hatobanare Shima (24°25'N., 123°49'E.), about 3 miles ESE of Unari Saki, is flat tree-covered off-lying islet, 9.1m high, with two or three houses.

Tedo, a 442m high mountain about 5 miles SE of Unari Saki, has a 56m high waterfall that is conspicuous from seaward.

Hatoma Suido leads between the reefs of Hatoma Shima (24°28'N., 123°49'E.) and Iriomote Shima. Though the edge of the coral reefs can be distinguished in the daytime from the color of the water, caution is necessary because there are some sunken rocks close to them that cannot be seen. On the S side of the fairway, there is a bank of white coral, 3.3m high, about

2 miles E of Nishi Saki (24°26'N., 123°47'E.) that is conspicuous when the sun is behind a vessel.

Hatoma Shima (24°28'N., 123°49'E.), 3.5 miles NE of Unar Saki, is an off-lying island marked by a light.

A submarine water pipeline lies across Hatoma Suido from the light on Hatoma Shima to the coast of Iriomote Shima near Uebaru. Submarine cables lie 0.5 mile W of this pipeline. One cable runs across Hatoma Suido, the other is marked by a beacon on its N end.

A channel marked by beacons leads through Hatoma Suido towards Hatoma Shima Light, marks the SW entrance to the lagoon.

A submarine water pipeline is laid across Hatoma Suido SSW from the vicinity of Hatoma Shima Light.

A submarine power cable is laid about 0.5 mile W of the water pipeline.

Ubanare Shima (24°22'N., 123°57'E.), close offshore of Nobaru Saki, the NE point of Iriomote Shima, has some palm trees on it.

Islets between Iriomote Shima and Ishigaki Shima

7.10 **Aragusuku Shima** (24°13'N., 123°56'E.) consists of Shimochi, 20m high, on the SW and Uechi, 14m high, on the NE.

Kuro Shima, about 2 miles E of Uechi, is 12.2m high, with palm trees dotting its rocky shores and cultivated land in its interior. A light is shown from the S point.

Kobama Shima, about 4 miles N of Kuro Shima, is covered with grass. A light is shown from the SW extremity.

Kobama Komon, the only channel through the reefs between Irimote Shima and Ishigaki Shima, leads between the former island and Kobama Shima; it is very tortuous.

Anchorage.—Kobama Komon affords anchorage, sheltered from either monsoon, to small vessels with local knowledge, but the tidal currents in it are strong.

Kayama Shima, about 0.8 mile NE of Kobama Shima, is also covered with grass.

Taketomi Shima, about 4 miles E of Kobama Shima, is flat, partly wooded, and partly cultivated.

Ohara Passage, a narrow channel marked by numbered beacons, leads to Taketomi Shima. The channel entrance is marked by Beacon No. 21 (21°24.2'N., 123°55.7'E.), about 2.5 miles E of Haemi Saki.

A submarine power cable is laid between Taketomi Shima and Kobama Shima.

Several charted underwater cables connect the above islets and the islands of Iriomote Shima and Ishigaki Shima.

Ishigaki Shima (Isigaki Shima)

7.11 **Ishigaki Shima** (24°25'N., 124°12'E.) is fringed with coral reefs that are usually marked by breakers, but in calm weather, sunken rocks can be seen at a considerable depth. The villages on the island are all situated a short distance inland from the coast and are hidden by trees. Ishigaki Shima has been reported to be a good radar target at 32 miles.

South side of Ishigaki Shima.—Miyara Wan indents the S side of Ishigaki Shima; small vessels sometimes shelter in the bay during the Northeast Monsoon.

Southwest side of Ishigaki Shima.—The SW coast of Ishigaki Shima consists, for the most part, of a sandy beach.

Caution—A danger area in the vicinity of Ishigaki Shima exists within an area bounded by a line joining the following positions:

a. 24°14'N, 124°06'E.
b. 24°25'N, 124°06'E.
c. 24°25'N, 124°20'E.
d. 24°14'N, 124°20'E.

7.12 **Ishigaki** (24°20'N., 124°10'E.) (World Port Index No. 62520) is a small natural harbor on the SW coast of Ishigaki Shima, with anchoring and berthing facilities for small vessels. This port can accommodate vessels of 5,000 gt.

The entrance to the inner harbor lies between the N and S breakwaters, each with a light at its head. An area of reclaimed land extends E from the root of the S breakwater protecting the quays from the S. An outer detached breakwater, with a light on its SW head, extends NE across the inner harbor entrance.

A light stands at the head of an inner harbor breakwater, about 0.4 mile NE of the SW extremity of the outer detached breakwater.

Ishigaki Light

Tides—Currents.—The MHW tide interval in the outer harbor is 6 hours 39 minutes; spring tides rise 1.5m and neap tides 1.3m.

A tidal current crosses the channel leading to the inner harbor; caution is advised. A relatively strong current of 2 to 3 knots setting W alongside the wharf on the rising tide sometimes makes berthing difficult.

Depths—Limitations.—Two quays lie on the N side of the inner harbor. The depths alongside the berths range from 3.5 to 9.5m.

Aspect.—Several chimneys, a white harbor office building, a white-domed weather station, and a concrete radio tower are conspicuous.

Pilotage.—There are no pilots, but local channel guides are available on prior request.

Regulations.—As a rule, night entry into the harbor is prohibited. The inner part of the channel is narrow, so that when a

vessel is coming out, an inbound vessel cannot proceed beyond Lighted Buoy No. 6. When all the berths at the embankment are occupied, vessels cannot proceed beyond Lighted Buoy No. 6. It is recommended that vessels awaiting passage through this waterway anchor in an area between Lighted Buoy No. 4 and Lighted Buoy No. 6. The water depth is 10m here and the flag signals at the terminal building can be seen. The signals of the harbormaster, displayed from the top of the roof of the Harbor Terminal Building, must be obeyed.

Anchorage.—Anchorage can be obtained by small vessels with local knowledge, in 23m, sand and shells, with Minanosoko Mori bearing 007° and distant nearly 2 miles.

A vessel with a draft of 6.4m anchored in 53m, sand and shells, with Kannon Saki bearing 084°, distant 1.75 miles, and O Saki, a point about 3.3 miles NNW of Kannon Saki, bearing 005°, distant 3.25 miles.

A submarine pipeline runs across Ishigaki Hakuchi, between Taketomi Shima and Ishigaki Shima. Submarine cables also are laid across Ishigaki Hakuchi N of the pipeline.

Directions.—The waterway starts at a point about 1 mile SSW of Kannon Saki. From the sea buoy, the channel runs ESE. The waterway is marked by buoys and lighted buoys. The area from Lighted Buoy No. 6 up to the embankment to the E is a narrow dredged waterway 6 to 8m deep and about 100m wide. White coral reefs line both sides of the channel and are reported to be easily recognized except in bad weather or at night.

Vessels heading N should steer for the position bearing 305° and 6 miles from Kannon Saki Light (a point where Ogan Misaki bears 058° and O Saki bears 096.5°). From this position vessels should steer a course of 135°, sighting the sea buoy on the port bow. Change to a course of 114° at a point where the sea buoy is abeam and the Kannon Saki Light bears 020°, about 1.2 miles away. This course should reach a point close N of Lighted Buoy No. 6 from here; the heading may be made toward the embankment. Mariner should consult the latest chart to locate the shallow areas in this waterway.

Caution.—Several fish havens lie in the waters surrounding Ishigaki Shima.

A floating fish haven, marked by a lighted buoy with a radar reflector, lies approximately 13 miles SSE of the S coast Ishigaki Shima.

Coral reefs on both sides of the entrance channel are visible since the water in the vicinity is relatively clear.

7.13 Nagura Wan is entered between Kannon Saki (24°22'N., 124°07'E.) and O Saki, about 3.25 miles NNW.

Anchorage.—Nagura Wan affords anchorage to vessels with local knowledge during the Northeast Monsoon, but it is not a safe anchorage; during the Southwest Monsoon, the sea breaks in the bay.

Vessels should refer to the chart for exact location of the submarine cables in this area. Several cables extend SE from O Saki, run around Yarabu Saki, and then run to Iriomote Shima, Taiwan, Okinawa Shima, and to Miyako Shima.

Yarabu Saki (24°26'N., 124°04'E.), about 1.3 miles NW of O Saki, is faced with black cliffs. Yarabu Take, a peak about 1 mile NE of Yarabu Saki and covered with a dense growth of trees, is dark and conspicuous.

7.14 North side of Ishigaki Shima.—Ogan Misaki (24°27'N., 124°05'E.) is marked by a light; close off it is a vertical-sided rocky islet, 30m high.

Ishi Saki, about 2.5 miles NE of Ogan Misaki, is marked by a rounded hill; it is bare of trees and difficult to identify.

Kabira Wan (24°27'N., 124°09'E.) affords safe anchorage to very small vessels, but local knowledge is essential.

During W winds, open anchorage can be obtained NE of the entrance of Kabira Wan, but care must be taken to avoid the reef off the village of Fukai (24°27'N., 124°12'E.).

Hirakubo Saki, the N point of Ishigaki Shima (24°27'N., 124°19'E.), is a cliffy point which rises to an elevation of 92m, with low land on either side of it. A light stands on Hirakubo Saki.

The E part of the Sakishima Gunto group is an archipelago called Miyako Retto.

7.15 West part of Miyako Retto.—Tarama Shima (24°39'N., 124°42'E.) and Minna Shima, about 4 miles N, are very low and care must be taken when navigating in their vicinity at night or in thick weather. Tarama Shima is formed of coral and Minna Shima of white sand. There is a small woodland at the E end of Minna Shima, the remainder being covered with palm trees, so that it appears green.

Yabi Se (24°47'N., 124°46'E.) lies about 4.5 miles NE of Minna Shima and is an extensive coral reef with a least depth of 8.7m. There is a deep channel between Minna Shima and Yabi Se.

A submarine cable lies between the S side of Minna Shima and the N side of Tarama Shima. There are depths of less than 18.3m between these islands. Submarine cables also lie between Tarama Shima and Okinawa Shoto.

Miyako Shima (24°45'N., 125°20'E.), on the E side of Miyako Retto, has an undulating surface; the island is partly cultivated, and on it are some pine woods. The two tanks charted in position 24°46'N, 125°20'E are conspicuous. Miyako Shima has been reported radar conspicuous at 17 miles.

An aero radiobeacon transmits from a position near the center of Miyako Shima.

Caution.—A danger area, due to mines, exists within the area bound by a line joining the following positions:

a. 24°46.0'N, 125°17.1'E.
b. 24°46.0'N, 125°04.0'E.
c. 24°35.0'N, 125°04.0'E.
d. 24°35.0'N, 125°29.0'E.
e. 24°55.0'N, 125°50.7'E.
f. 25°03.0'N, 125°43.0'E.
g. 24°47.4'N, 125°23.7'E.

This area is considered safe for normal surface navigation outside the 10m bottom contour. For additional information see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

7.16 West side of Miyako Shima.—Kurema Shima (Kuruma Shima) (24°43'N., 125°16'E.) should not be approached within 1.5 miles of its S side, nor within 2.25 miles of its SW or W sides, because of sunken rocks and coral reefs.

Sarahama (24°50'N., 125°14'E.) is a village on the NE side of Irabu Shima. The red roofs of the houses in the village are visible from seaward.

Sarahama Ko, consisting of a small basin protected by two breakwaters, lies in about the middle of the NE side of Irabu Shima. A light stands on the breakwaters.

Irabu Shima lies 2.25 miles off the W coast of Miyako Shima. Nagayama Ko, a small sugar exporting harbor, lies at the S extremity of Irabu Shima. The approach channel, entered about 2 miles S of Shimoji Shima, is marked by red and black beacons. Pilotage is essential.

Shimoji Shima (Simozi Shima) is close SW of Irabu Shima; there are some black cliffs and a conspicuous rock on its SW side.

Vessels without local knowledge should not enter the area between the W coast of Miyako Shima and a line connecting the extremity of the coral reefs extending W from Kurema Shima and S from Shimoji Shima.

Ikema Shima (24°56'N., 125°16'E.) has at its SE end a conspicuous dome-shaped hill, 27m high. A light stands on the NW side of the islet.

A light stands on a breakwater, 1.25 miles SE of Ikema Shima Light.

A fish haven lies 14 miles W of Ikema Shima Light.

7.17 Hirara (24°48'N., 125°17'E.) (World Port Index No. 62510) is on the W coast of Miyako Shima; it consists of a town, a small natural harbor with anchorage for large and small vessels, and berthing facilities for small vessels.

Hirara Ko is open NW, but affords shelter from both wind and sea between NE and SW through S.

Tides—Currents.—The mean high water interval at Hirara Ko is 6 hours 49 minutes. Spring tides rise 1.8m; neap tides rise 1.3m.

Depths—Limitations.—No. 1 Wharf extends NW from the front of the town at the inner end of the harbor. There are depths of 2 to 6m alongside on the NE side of the wharf and a depth of 7.5m on its SW side. Four basins protected by breakwaters are formed in the reclaimed land, N of No. 1 Wharf.

No. 2 Wharf, with depths of 6.5 to 9m alongside, lies 183m SW of No. 1 Wharf.

No. 3 Wharf, with a depth of 7.5m on its NE side, is SW of No. 2 Wharf.

No. 4 Wharf, with a depth of 4.5m, is close E of No. 3 Wharf.

Shimozaki Wharf has a length of 170m, with depths alongside of 10m.

Mud and sand spoil ground disposal sites and are situated 0.4 mile N of Naga-Saki, 1 mile W of Irihianna Saki, and 0.5 mile N of Shimo Saki.

Aspect.—There are few conspicuous landmarks in the vicinity of the Port of Hirara because the land is level and low, however, the following can be identified, as follows

1. The NW extremity of Irabu Shima and the top of the cliff on the SE end of the island.
2. The dome-shaped hill and the light structure on Ikema Shima.
3. Irihanna Saki and Sedo Saki (Miyo Saki).
4. Ogami Shima.
5. A chimney about the middle of the town of Hirara.
6. Two telecommunication towers, painted red and white, with parabolic antennas, E of downtown Hirara.

Anchorages.—The recommended anchorage for large vessels, in 53m, fine sand and shells, lies with the summit of Ogami Shima bearing 055°, about 4.5 miles. Another anchorage for large vessels is available at a point where the Ikema Shima Light bears 011°, the tip of Irihianna Saki bears 051°, the outer edge of the E side of Irabu Shima bears 183°, and the N end of Irabu Shima bears 248°. The depth here is 53m and the bottom is mixed sand and shells.

The recommended anchorage for small vessels, in 26m, mud, lies with the 89m cliff at the SE end of Irabu Shima bearing 260°, about 3 miles; to reach this position vessels must maneuver between the rocks in the vicinity of Shimo Saki. This is the quarantine anchorage.

When the Northeast Monsoon is blowing strongly, the only good anchorage, in 36.6m, sand and shells, lies with the summit of Irihianna Saki bearing 105°, distant about 0.8 mile. However, care should be taken in avoiding the spoil ground and submarine cable in the vicinity.

Directions.—Vessels approaching from the N should stay clear of Yaye Bise (Yaee Bisel) and approach on a line bearing 138°, between the telecommunication tower, 84m high, with a parabolic antenna and a radar dome at the center of Miyako Shima near Nobara Take. When Ikema Shima Light is abeam, alter course to 120° and head towards Nakamo Hanare, which lies 1.1 miles NNE of Shimo Saki. By following this course it is possible to reach the anchorage recommended for large vessels. There are no particularly conspicuous marks for vessels intended to enter this port; vessels should confirm their position by the landmark.

Under no circumstances should a vessel enter the foul area lying off the W coast of Miyako Shima between Irabu Shima and Shimoji Shima, on the NW, and Kurema Shima and its projecting reefs, on the SE.

Caution.—There are a number of detached coral patches, some of which are white and easily distinguished, but others are black and difficult to see; furthermore, undiscovered dangers may exist, and because of the nature of the bottom, the flukes of the anchor sometimes becomes wedged between the rocks. South of Shimo Saki, which lies about 4.5 miles S of Irihianna Saki (24°55'N., 125°17'E.), the bottom is in places white and the rocks black.

Vessels should note Miyako Shima and the adjacent islands have been reported to lie 1.1 miles W and 0.1 mile S of their charted positions.

7.18 North side of Miyako Shima.—Yaye Bise (Yae Bise) (25°01'N., 125°17'E.) is a dangerous area consisting of extensive coral reefs; in rough weather the reefs are marked by breakers, but in calm weather they constitute a very serious danger at HW. Great caution should be exercised when navigating in their vicinity. Yaye Bise is marked by beacons, all of which are about 3m high.

Ogami Shima (24°55'N., 125°20'E.) is a conical islet with trees on its summit; it is the most conspicuous feature in the vicinity.

Fude Iwa, about 4.8 miles NE of Ogami Shima, resembles a floating turtle when seen from the E and forms a good landmark; it is on an extensive reef and is marked by a light.

Okinawa Gunto

7.19 Okinawa Gunto (26°20'N., 127°30'E.) consists of the principal island of Okinawa Shima together with a number of islands and islets to the N and W. The group is reported to be a good radar target at 17 miles.

Caution.—Several fish havens lie in the waters surrounding these islands, some are charted, others of a temporary nature are not.

7.20 Kume Shima (26°20'N., 126°47'E.), the W of the Okinawa Gunto group, is elevated in its N and S parts, so that from the E or W it appears at a distance as two islands. Both the N and S sides of the island are cliffy, but the E and W ends are low. Kume Shima has been reported radar conspicuous at 27 miles.

Kume Shima Light (26°21.7'N., 126°42.7'E.) stands 1 mile E of the W extremity of Kume Shima.

Gima Ko, on the SW side of Kume Shima, is only available to small vessels with local knowledge.

Shimajiri Saki, the S extremity of Kume Shima, consists of shingles; it is surmounted by a conspicuous pointed hill, 65m high.

Tonobara Iwa is an islet about 1.5 miles SSE of Shimajiri Saki; its S side is a conspicuous cliff.

Ogame Se, the coral reef extending E from the E side of Kume Shima, is always marked by breakers. The N side of the reef covers at HW, and the S side is awash.

Ogan Misaki lies at the end of Ogame Se, about 6.5 miles E of Kume Shima. This reef is marked by a light.

Nakazato Gyoko, a small fishing harbor, is situated about 0.3 mile NW of Sonami Saki. The entrance is marked by a buoy and the harbor is protected by a breakwater. A light stands at the head of this breakwater.

A submarine cable runs from a wave meter on the sea bed, in the vicinity of the harbor entrance, to the shore SW.

The velocities of the tidal currents off this reef exceed 3 knots and tide rips occur.

Shimajiri Wan, entered about 1 mile NE of Shimajiri Saki, is only available to vessels with local knowledge. In rough weather, its whole surface is covered with breakers, because of the number of sunken rocks in it.

Tori Shima (26°36'N., 126°50'E.), about 15 miles N of Kume Shima, is a rocky islet faced with a cliff on its N side, its S side being somewhat sloping. At either end of the islet there is a pointed rock, and between them the surface is almost flat, so that from certain directions the islet has the appearance of a steam vessel; from E or W, it appears as two rocks. Tori Shima is frequented by vast numbers of birds, whose cries in the morning and evening are stated to have been heard at a distance of 1 or 2 miles. Tori Shima has been reported radar conspicuous at 25 miles.

7.21 Irisuna Shima (26°23'N., 127°06'E.), about 15 miles E of Kume Shima, has on it two flat circular knolls covered with palm trees. At the N end of the islet there is a flat sandy beach on which are two buildings. The velocities of the tidal currents in the channel between Irisuna Shima and Tonaki Shima, close E, sometimes exceed 3 knots and eddies occur. In a position about 4.5 miles S of Irisuna Shima, where the depths suddenly increase to over 183m, there are always eddies.

Tonaki Shima (26°22'N., 127°09'E.), about 3 miles SE of Irisuna Shima, is elevated at its N and S ends, so that from a distance it appears on certain bearings as two islets. The slopes of Nishimori, the N summit, are almost completely cultivated; O Take, the S summit, is rocky. Un Shi, a conspicuous black rock with two pointed summits, is 11.9m high, and lies close E of Gambaruno Saki, the S extremity of Tonaki Shima is 32m high, and close within it are three conspicuous pointed hills.

Anchorage.—Vessels with local knowledge can obtain open anchorage outside the reefs filling the bay on the E side of Tonaki Shima.

7.22 Aguni Shima (26°35'N., 127°14'E.) is located about 14 miles NNE of Tonaki Shima. The W portion of the island is a plateau; near the middle of the E edge of the plateau there is a woodland which is conspicuous from E, its top being at an elevation of 77m. A low flat rock, on the NW side of Fudesaki Saki, the SW extremity of Aguni Shima, is joined to the shore by a coral reef and is a conspicuous feature; it is marked by a light. Two sunken rocks, close SW of Fudesaki Saki, are always marked by breakers.

Anchorage.—Open anchorage, affording some shelter from winds between the N and E, can be obtained by vessels with local knowledge outside the reefs fronting the village of Hama, on the S side of Aguni Shima.

Aguini Ko, a local port, is enclosed by E and W breakwaters and is open to the S; a swell runs direct into the harbor. North of the entrance there is a small jetty; W of this jetty there is a quay, 30m long, with depths of 4.4 to 4.6m alongside. To the E of the jetty, there are berthing facilities for fishing vessels.

Submarine cables lie between the SW point of Aguni Shima and Kume Shima.

7.23 Kerama Retto is an archipelago within the Okinawa Gunto group extending from Yakabi Shima and Kuba Shima on the W, to Mae Shima, on the E. The islands are hilly; the summits of the hills are covered with dense forests and pine trees.

Tides—Currents.—In the various channels of Kerama Retto, the tidal currents flow continuously N or S for a period of about 6 hours at a rate that occasionally reaches 3 knots. The N current flows from 3 to 4 hours after LW; the S current flows from 3 to 4 hours after HW and to 3 to 4 hours after LW.

Tokashiki Shima (26°11'N., 127°21'E.) is the largest island in the Kerama Retto group. The island has two groups of hills on it, one in the N and the other in the S part. Akama Yama, the summit of the island, rises in the N group about 1 mile SE of Nu Saki (26°13'N., 127°21'E.). Takinomichi Yama and Omija Yama, which are conspicuous in the S group, rise about 1.8 miles and 1 mile N, respectively, of Aware Saki, the S extremity of the island; the former hill has a pine woodland on its summit. A light stands on the summit of the islet.

It was reported (1963) that a large group of lights in the vicinity of Akama Yama is very conspicuous and visible from a great distance at sea.

Kerama Kaikyo is the channel leading through Kerama Retto, between Tokashiki Shima and the islands to the W.

The E side of the strait is relatively free of dangers, but the W side has numerous charted dangers. The channel has a depth

of about 60m and has a navigable width of 0.8 mile.

The interior of the strait is a natural anchorage protected from all winds. At times, vessels from Naha Ko seek shelter from storms in this strait. In 1945, a typhoon struck the strait and several vessels dragged anchor and ran aground; therefore, it cannot be considered a safe anchorage under such severe conditions.

Submarine cables lie across Kerama Kaikyo, running from the S side of Zamami Shima to the NW side of Tokashiki Shima, and to the SW side of Okinawa Shima.

Tomumoya Sho consists of three shallow patches in the S approach to Kerama Kaikyo. The N patches are rocks that uncover at 1.8m and the S patch has a depth of 5.5m. About 2.3 miles WSW of Tomumoya Sho lies Shimo Sone. This is always marked by eddies and is a steep-to rock with a depth of 5.5m.

Mae Shima (26°13'N., 127°27'E.), the E island of the Kerama Retto group, is sparsely covered with trees and has a conspicuous conical summit. Hate Shima, about 1 mile to the N, is also conical. A light is situated on Hate Shima.

Rukan Sho (26°06'N., 127°32'E.), a reef about 13 miles SE of Mae Shima, is marked by a light, fitted with a radar reflector at its N point.

Keise Shima, about 9.5 miles N of Rukan Sho, is a group of three sand and pebble islands.

Okinawa Shima

7.24 The SW and NE parts of Okinawa Shima differ greatly in character; the NE part is rugged, mountainous, wooded, there are few inhabitants, and very little cultivated land, whereas the SW part is populous and consists of hills and plateaus which, except where there is a sparse growth of trees, are highly cultivated.

Caution.—Coral reefs fringe Okinawa Shima, especially the SW part, where conditions are favorable for rapid growth. The development of coral reefs greatly affects the bays and harbors of the island; for example, Naha Ko becomes so narrow it is difficult to enter or leave the harbor.

Caution should be exercised when approaching Okinawa Shima. A landfall should not be attempted during the hours of darkness or poor visibility. The presence of reefs and shoals fringing the island substantially reduces the effectiveness of radar.

A submarine exercise area is from 12 to 15 miles E of the N part of the SE side of Okinawa Shima.

The approaches to Okinawa Shima are known to have a high number of collisions between small boats as well as the stranding of small boats. Many marine incidents also involve fishing vessels. Many coral reefs and shoals lie in this area and even experienced mariners must proceed carefully.

Okinawa Shima—West Side

7.25 **Kiyan Saki** (26°05'N., 127°40'E.) is the SW point of Okinawa Shima; the ruins of an ancient castle are close E of the point.

Several fish havens lie within an area extending 19 miles from the coast to the WNW and E of Kiyan Saki Light. A fish haven lies 18 miles SW of the light.

Yoza Dake, about 3.5 miles NE of Kiyan Saki, is 168m high, flat-topped, and conspicuous. There are two tanks and a dome on its summit. A television tower stands 5.5 miles N of Yoza Dake.

Okaha Shima, a small islet about 3.5 miles NNW of Kiyan Saki, is always marked by breakers.

Muki is a reef located about 1 mile WNW of Okaha Shima. The depth here is 0.5m. A rock reef ledge extends about 0.8 mile from the N side of Muki. The waves break constantly over this reef.

Tokomasari Sho lies about 1.4 miles NW of Kiyan Saki and is a reef that uncovers.

Reference should be made to the chart for location of the fish haven obstructions off this coast.

Senaga Shima (26°10'N., 127°39'E.), about 6 miles N of Kiyan Saki, is conspicuous and is surrounded by sandy beaches, from which it rises in rocky steps to a conical hill.

Omine Yama (26°11'N., 127°39'E.) is a conspicuous isolated 27m hill, with several large pine trees on it. A fish haven lies 1.5 miles SW of Omine Yama. A beacon marks the W extremity of Ose reef, lying 1.25 miles W of Omine Saki.

Naha Ko (26°13'N., 127°41'E.)

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7.26 Naha Ko, the primary large harbor in Nansei Shoto, is on the S part of the W coast of Okinawa Shima. It consists of the city, which is the principal city of the island, an outer harbor, and inner harbors with anchorage and berthing facilities for large vessels.

Winds—Weather.—The outer harbor is exposed to winds from the W to N, but the seas are reduced by the numerous coral reefs. The wind is usually from the N or S; from November through March, the winds are from NW through NE most of the time. The wind is from the E for the greater part of April and May, and from the S from June through August. The velocity of the prevailing wind is a gentle to moderate breeze. A maximum wind velocity of more than 96 knots from the E to NE has been recorded at the harbor.

The rainy season lasts from the first of May to the last of September, with a monthly average of 215mm. December through February is the driest period, with an average monthly rainfall of 125mm.

When strong W to N winds exceed 25 knots, traffic movements in the outer harbor becomes difficult.

Tides—Currents.—The MHW interval at Naha Ko is 6 hours 52 minutes; spring tides rise 2m and neap tides rise 1.4m.

The tidal currents on the rising and falling tides, respectively, flow NE and SW in the approach to the harbor, and N and S across its entrance; they turn from 1.5 to 2 hours after HW and LW, and at springs attain a rate of 1.8 knots.

West of Jijaka Se and Kanno Se, the flood current sets NNE with a velocity of 2.3 knots, and the ebb current sets SSW with a velocity of 2 knots.

In the vicinity of the sea buoy, the flood current sets NE at a maximum rate of 1.5 knots, while the ebb current sets SW at a maximum rate of 1.5 knots.

At the breakwater in To Kuchi entrance, the flood current sets NE at a rate of 1 knot, while the ebb current sets SSE at a maximum rate of 1 knot.

Courtesy Japan Coast Guard

Naha Wharf Chiku

Courtesy Japan Coast Guard

Shinko Chiku

Courtesy Japan Coast Guard

Urasoe Wharf Chiku

Depths—Limitations.—The depths in To Kuchi, the main channel, and in the main harbor are maintained by dredging and are sufficient to accommodate deep-draft vessels. It is advisable that mariners endeavor to obtain the most recent depth information before entering port. There are no restrictions as to the length or beam of vessels entering Naha. The depth limitation in the channel is 11m. The largest known ship to moor at a port wharf was 115,875 tons, with a draft of 8.5m. Vessels exceeding 30,000 gt, however, should consult with the Maritime Safety Agency.

The bay has three waterways; Miyako Kuchi, To Kuchi, and Yamato Kuchi. It is advised that vessels refrain from navigating through Miyako Kuchi, unless well-experienced in the conditions of the area. To Kuchi affords the easiest navigation, and most vessels choose this waterway. Vessels should navigate with caution and note the location of the shoals in this area. Yamato Kuchi runs between the NW part of Inan Bise and Jijaka Bise. This waterway is used by vessels up to 5,000 gt. Vessels not experienced in navigating this area should not proceed at night.

Depths alongside the berths in this harbor range from 3 to 14m.

Okinawa Oil Supply Jetty, situated outside the harbor entrance 0.5 mile W of Miegusuku, is a dolphin berth, with a depth alongside of 6.4m.

A small basin, having depths of about 4m, lies close S of Miegusuku. Naha Wharf Quay No. 1 to Quay No. 7 lie on Naha Wharf, situated on the NE side of the inner part of the har-

Naha Military Port

bor. The quays are commercial berths having depths alongside of 5 to 9m. Naha Wharf is also used by the ferries commuting to the mainland and by passenger and coastal vessels. Gunko Quay, having 11 berths reserved for military traffic, lies on the S side of the basin and has depths of 4.6 to 10.3m alongside. Vessels having a maximum draft of 6m are reported to be accommodated at the military pier (2010). The channel to the pier has depths of 7.8 to 12.5m.

The newer port of Naha Shin Ko (26°14'N., 127°41'E.), also known as Aja Port, is situated 1 mile N of Okinawa. Shinko Wharf lies on the N side of Shinko and is divided into two basins. Berth No. 1 and Berth No. 2 have depths of 7.5m and 4m, respectively. Quay No. 3 and Quay No. 4 have alongside depths of 7.5m. Vessels up to 20,000 dwt may berth at Quay No. 5, Quay No. 6, and Quay No. 7, in depths of 11m. Quay No. 9 and Quay No. 10 have alongside depths of 14m and can accommodate vessels of up to 40,000 dwt.

Urasoe Wharf, on the E side of the basin, is dredged to 7.5m and lies NE of Shinko Wharf. Aja Fishing Harbor lies on the SW side of the basin.

Aspect.—Miegusuku (Miyegusuku) (26°12'N., 127°40'E.) has a signal station and a white marker.

Sojun Yama, a hilltop close NE of Miegusuku, is 46m high and a hotel just a little farther E are both easily seen.

A conspicuous hospital stands on the NE side of Sojun Yama and conspicuous hotels stand 0.2 mile N and 0.3 mile ENE of the hospital.

A television tower, 51m high and painted red and white, lies 0.5 mile ENE of Miegusuku.

A lighted range leads through To Kuchi and are shown from the head of the harbor. It has been reported that during late afternoon, the range may be obscured by vessels moored inside the harbor. A port control tower in position 26°14'N, 127°41'E stands on top of a large rectangular building. Both the control tower and the building are painted white and red horizontal stripes.

An international airport is situated 1.5 miles WSW of Naha. Medical facilities are available close to the port.

Pilotage.—Pilotage is compulsory for vessels exceeding 300 gt and entering the Naha Wharf. Pilotage is not compulsory for vessels bound for Shinko Wharf. Pilots board in position 26°14'N, 127°38'E. Naha Pilots should be contacted 1 hour prior to arrival.

Berthing is normally carried out during daylight hours only. Unberthing can be undertaken at any time.

Regulations.—Vessels over 500 gt must send notice of arrival by noon, one day prior to arrival.

Signals.—Vessels entering into or departing from Naha Port must show the following signals:

1. Entering Naha Wharf—Second Substitute over N flag.
2. Entering Shinko Wharf—Second Substitute over S flag.
3. Entering Tomari Wharf—Second Substitute over T flag.
4. Entering Urasoe Wharf—Second Substitute over U flag.
5. Departing via Toukuchi—First Substitute over T flag.
6. Departing via Yamatokuchi—First Substitute over Y flag.

Contact Information.—See the table titled **Naha—Contact Information**.

Anchorage.—The outer anchorage is within a W semicircle, the diameter of which is 3 miles long in a N-S direction and is centered at Naha Ko Lighted Entrance Buoy.

The inner anchorage is E of a line connecting Monnan Se, Kanno Se, and Jijaka Se. Anchorage with relatively safety can be made here, but the area is surrounded by coral reefs and the bottom is dangerous, therefore, anchorage without pilot assistance and/or local knowledge is not recommended.

Naha—Contact Information	
Pilots	
Call sign	Naha Pilots
VHF	VHF channels 12 and 16
Telephone	81-98-868-1613
Facsimile	81-98-868-9785
Port Authority	
Telephone	81-98-868-4544
Facsimile	81-98-862-4233
E-mail	kumiai@nahaport.jp
Tugs	
PV (Tug)	VHF channels 13, 16, and 17

The Quarantine Anchorage lies close W of the Middle Breakwater, Kanno Bise, and Zizyaka Bise. A submarine cable for a wave meter lies N of this anchorage.

Attention must be paid to the installation of five standard anchorage areas. These anchorages have been installed for the purpose of securing passages for ships as well as anchorage areas for vessels carrying dangerous cargo. For detailed information on these areas, contact the Port Director.

Taking refuge at Naha Ko is dangerous during rough weather, especially when a typhoon is approaching; large ships take refuge at Oshima Strait, N of the Nanse Islands, while ships of less than 1,000 gt take refuge at Unten Port; also, ships are reported to take refuge at Agonoura Port in the Kerama Kaikyo.

Caution.—The charted shoals can usually be identified by the color of the water, however, at times during the rainy season, because of muddy water flowing out of the inner harbor, the sea becomes white and has the appearance of shoals, especially in the vicinity of Sakibaru Saki.

It has been reported that the reef Jijaka Se (Zizyaka Bise) extends farther W than charted.

There is a dangerous wreck approximately 1 mile N of Jijaka Se.

Near the entrance of the main inner harbor there is a tendency for a vessel to be set toward Miyegusuku on the falling tide.

It is reported that the S tidal current sometimes flows off the reefs into the fairway with such force as to inconvenience a vessel entering or leaving.

Okinawa Shima—West Side (continued)

7.27 **Kuju Saki** (26°16'N., 127°43'E.) is a low scrub-covered point, close off which is a rocky islet, 9m high. Two chimneys, with red and white bands and having heights of 164m and 174m, stand 0.5 mile E of Kuju Saki.

A channel, marked by lighted buoys and buoys, leads to Makiminato, an islet 0.75 mile E of Makiminato Saki. The channel entrance is marked by Lighted Buoy No 2, moored 1 mile NNW of Makiminato Saki.

A light stands on the head of Ginowan Ko Breakwater, situated 1.1 miles NE of Makiminato Saki.

Sunabi (26°20'N., 127°45'E.) is a village backed by a conspicuous row of rocks with a serrated outline.

Kadena Airport Aero Light is shown at an elevation of 96m from a position 1.5 miles NE of Sunabi.

Zanpa Misaki (26°26'N., 127°43'E.) is a conspicuous, flat-topped, and grassy cape on which are a few rocks with palm trees among them and a light. A tank tower about 3 miles S of Zanpa Misaki is conspicuous. Sakimi, the conspicuous ruins of an ancient castle, with pine trees on its walls, stands about 2.5 miles SE of Zanpa Misaki.

Nago Wan (26°34'N., 127°56'E.) is exposed to winds from between the SW and W. Fixed fish traps are laid along the shores of Nago Wan between Onna, a village about 8.5 miles

NE of Zanpa Misaki, and Awa, a village about 2 miles E of the N entrance point of the bay. Anchorage can be obtained about 0.5 mile offshore, abreast the village of Okaneku at the head of the bay. A breakwater, with a light at its head, fronts Okaneku. The quays in the harbor have depths alongside of 2 to 4.6m. A submarine cable lies 0.2 mile ENE from the coast at a point 3.5 miles WSW of Okaneku.

Sesoko Byochi (26°38'N., 127°53'E.) affords anchorage for small vessels sheltered from winds from all directions, in 9.1 to 20m. A good berth is in 18.3m, sand and shells, with the summit of Sesoko Shima bearing 318° and distant 0.75 mile. In this position, the tidal currents are appreciable, but good protection is afforded against NE winds. The N entrance of this anchorage is almost blocked by reefs and should not be attempted; the S entrance is recommended.

A bridge, with a vertical clearance of about 22m, spans Sesoko Byochi.

Caution.—A number of live cannon shells have been found in this anchorage. Vessels should seek information from the port of Toguti Ko before anchoring here.

7.28 **Toguchi Ko** (26°40'N., 127°53'E.) provides sheltered anchorage, in 12.8 to 18m, in the N part, and an anchorage, in 6.8 to 22m, off the inner harbor in the S part, except during W to NW winds. The reefs in the N part of the harbor are usually marked by breakers.

Iigusuku Yama (26°43'N., 127°49'E.) rises on the E part of Ii Shima; it has the appearance of a hat from ENE. A light, 11m high, stands on the W extremity of Ii Shima.

Bise Saki (26°43'N., 127°53'E.) is low and has a serrated outline.

Unten Ko (26°41'N., 128°01'E.), off the SW side of Kouri Shima, affords anchorage, in about 22m, in the outer part. It is exposed to N winds, and the swinging room is restricted.

The inner anchorage, off the village of Unten, in 14.6 to 16m, mud bottom, is a safe anchorage for small vessels.

Submarine cables are laid across the channel between the SW extremity of Kouri Shima and the main island. A submarine power cable runs N from the mainland coast 2.5 miles W of Kouri Shima. A bridge, with a vertical clearance of about 37m, crosses the river in the vicinity of Kuganima Sachi (26°40'N., 128°00'E.).

Pilotage.—A pilot can be arranged from the Naha Pilotage Area by telephone (81-980-5301-18).

Hedo Misaki (26°52'N., 128°16'E.) is the termination of a level promontory and is faced by a cliff, 30m high. On this promontory stands a pine woodland, and about 1.3 miles S of the cape there is an isolated, rocky hill, 246m high, both of which are conspicuous. At the foot of the hill stands a conspicuous monument resembling a large house built of chalk. A light stands on the W side of Hedo Misaki.

Okinawa Shima—East Side

7.29 On the S part of the E coast there are several bays. Because there are many islands, islets, and rocks in the vicinity of the entrances to these bays, there is shelter from winds and waves and the depth of water allows for anchoring large vessels; however, because of the great number of dangers within the bays caution is necessary.

From Ari Saki, the S extremity of Okinawa Shima, to Chin Saki (Kin Misaki), about halfway along the E coast of the island, the coast is indented to form the two large bays, Nakagusuku Wan and Kin Wan (Chin Wan). Coral reefs extend well-offshore from these bays.

From Chin Saki to Kaata Wan, about 16 miles farther N, there are several smaller bays, but most of these entrances are blocked by coral reefs so that large vessels are only able to enter Ora Wan (Oura Wan).

The remaining portion of the 21 miles of coast from Kaata Wan to Hedo Misaki has few indentations and is generally gently shelving. Because of coral reefs the coast should be approached no closer than 0.5 mile, but farther out it is steep-to.

Tides—Currents.—Within 3 miles offshore of the E coast of the island, the flood tide flows S or SW and the ebb tide in the opposite direction. Off Adaka Shima the rate does not exceed 1 knot. More than 3 miles offshore the flood tide generally seems to be N.

During the ebb tide, the current pushes a vessel towards Tsuken Shima.

The water tower in position 26°09'N, 127°47'E is prominent.

7.30 **Tsugen Shima** (Tsuken Shima) (26°15'N., 127°57'E.) is surmounted by some conspicuous pine trees. A radio tower close N of the light on the island is reported to be more conspicuous than the light. An obstructed fish haven lies about 2 miles W of the light.

Heanza Banare (26°21'N., 127°57'E.), about 5 miles N of Tsugen Shima, has a conspicuous chimney on its SE side. A small white tank, with five large green tanks extending NW from it, is reported to be prominent close SW of the chimney.

Okinawa Sekiyukiti is comprised of two parts, Nakagusuku Wan and Kin Wan, and is divided here into those two parts for description. There are numerous berths and facilities within these ports, most of them belong to and are for the exclusive use of oil companies.

Nakagusuku Wan (26°16'N., 127°55'E.)

World Port Index No. 62505

7.31 Nakagusuku Wan, sometimes called Buckner Bay, is a big wide open bay occupying the S half of Kin-Nakagusuku Ko. The port facility here is sometimes referred to as Nishiara. The bay becomes more shallow farther in and reefs extend offshore for a considerable distance. In particular, there are many rocks awash and covered rocks for about 6 miles S from the N corner of the inside the bay that form an obstruction in the roadstead.

There are four channels to the entrance of this bay. They are, from the S, Kudaka Kuchi, Tachii Kuchi, Tsuken Kuchi, and Hamahiga Kuchi. The preferred channel is most often Tachii Kuchi, which is approximately 2 miles wide and has a depth of 55m.

This port handles the crude oil and product for Okinawa Prefecture.

Winds—Weather.—Nakagusuku Wan is exposed to winds between the NE and SE. Violent squalls occur occasionally in the bay and vessels should provide for this contingency.

At Baten Ko, the MHW interval is 6 hours 22 minutes.

Okinawa Navy Pier

Spring tides rise 2m and neap tides rise 1.5m. On the E side of Baten Ko, there is a gap in the coastal reef leading to a small basin; buoys mark the entrance.

Depths—Limitations.—For crude oil vessels, a single anchor leg type mooring (SALM) capable of handling vessels from 90,000 to 270,000 dwt is established in approximate position 26°14.2'N, 127°49.9'E, about 2.5 miles offshore. The depth of water at the buoy position is about 25m. Vessels may remain at the berth in winds up to 50 miles per hour.

A product pier is connected to the shore and has two berths; one berth is for vessels up to 65,000 dwt the other berth is for small vessels up to 4,000 dwt. The depth at the pier is about 14.3m.

A refinery pier, with two dolphin berths at its T-head, is situated 4 miles SSW of Kuba Saki and is suitable for vessels up to 250,000 dwt.

A fairway dredged to depth of 10m extends from the breakwater to the inner harbor, Nakagusuku Shinko. There a number of shoals that lie close to the fairway. There are four berths at the inner harbor with alongside depths of 5.5 to 11m; vessels of up to 40,000 dwt can be accommodated.

Aspect.—The water towers standing 1.25 miles SSW and SE of Baten Ko are conspicuous.

Yonabarn Wan, the SW part of Nakagusuku Wan, is sheltered by hills on its S and W sides and affords anchorage in summer.

Several fish havens lie in Yonabarn Wan.

A light stands on the W end of a breakwater at the entrance to a small harbor lying 0.6 mile W of China Saki.

In the Tachii Kuchi entrance, the flood current sets in at a small rate and the ebb current sets out at a rate of 0.75 knot. In Kudaka Kuchi, farther S, the currents attain a rate of 1 knot. Strong currents have been reported in the bay with a set toward the island of Tsuken Shima.

Kuba Saki (26°17'N., 127°49'E.), at the middle of the head of Nakagusuku Wan, rises to a hill 175m high, covered with pine trees, and conspicuous; a ruined castle is on the W side of the hill. A light stands on the head of a breakwater, extending SW from a reclaimed land, about 0.6 mile NNW of a television tower.

The charted aerial beacon 5 miles NW of Kuba Saki is prominent.

A large building, with a chimney on its roof, is about 2.5 miles NNE of Kuba Saki.

A television tower, on the E end of a sand spit about 2.5 miles NE of Kuba Saki, and the white buildings and white chimney of a sugar mill about 2 miles farther NE are prominent. Another light stands 1.5 miles ESE of the television tower. Two water towers standing 1.25 miles SSW and SE of Baten Ko are conspicuous.

A lighthouse on Katsuren Saki (26°17'N., 127°55'E.) is also prominent, although care must be taken not to confuse the light structure with any of the surrounding white structures. A lighted buoy is situated about 2.5 miles in a SE direction within Touken Kuchi.

Pilotage.—Pilotage is compulsory for inbound vessels only. Normally vessels will be expected to enter Nakagusuku Wan through the Tachii Kuchi entrance and pick up the berthing master inside the bay, S of Tsugen Shima (Tsuken Shima). Berthing masters request vessels keep S of the buoy marking Chikuniga Shoal.

A pilot can be employed by ships entering and leaving White Beach Gunko on the W shore of Katsuren-Hanto. The pilot will be dispatched from Naha; the boarding positions are either 26°15.0'N, 127°54.6'E (1.5 miles W of Tsuken Shima Light) or 26°25.2'N, 127°57.9'E (0.5 mile E of Kin-Nakagusuku Ko Kin Buoy No. 2).

Tugs are available. Berthing is carried out in daylight only; unberthing is carried out 24 hours.

Regulations.—The ETA at the refinery pier should be confirmed 72 hours, 48 hours, 24 hours, and 12 hours before arrival. A vessel awaiting a berth should anchor 4 miles E of the refinery pier after embarking the berthing master. Berthing

at the SBM and pier is restricted to daylight hours; unberthing may be carried out any time of day or night.

Contact Information.—See the table titled **Nakagusuku—Contact Information**.

Nakagusuku—Contact Information	
Pilots	
Telephone	81-988-6816-13
Facsimile	81-988-6897-85
Port Authority	
Telephone	81-988-6623-95
Facsimile	81-988-6624-68
E-mail	aa062006@pref.okinawa.lg.jp
Web site	https://www.pref.okinawa.jp/site/doboku/kowan/index.html

Anchorage.—Nakagusuku Wan affords good anchorage to large vessels, in 21.9 to 36.6m, sand and shells, around the center of the bay. Vessels should note, in the area around the center of bay, a high swell may intrude if winds from the ENE or ESE continue for 2 or 3 days. Traffic between the ship and land becomes impossible.

Entrance into the sea area within 50m of the hazardous cargo berths is prohibited to vessels not equipped with spark prevention screens in their funnels, vessels handling naked fire, and vessels on which fire control administration is insufficient.

The quarantine anchorage lies N of Kutaka Shima, as indicated on the chart.

7.32 Katsurin Wan (Katchin Wan) is sheltered by the hills on Katsuri Hanton (Katchin Hanto) on its NE side, and by the reefs N of Tsuken Shima on its E side; it affords good winter anchorage, in 14.6 or 16.5m, to vessels with local knowledge.

Depths—Limitations.—A channel, dredged to 13m in 1996 and marked by lighted and unlighted buoys, leads to a wharf at the head of Katsurin Wan.

Aspect.—A television tower stands at the end of a spit extending ESE from the W shore of Katsuren Wan. A radome, with a radio tower nearby, stands about 0.4 mile NW of Katsuren Saki. A light stands 1.5 miles ESE of the television tower and a conspicuous white chimney stands 1 mile NW of Katsuren Saki Light.

Yonabaru Wan is sheltered by hills on its S and W sides, and affords anchorage in summer.

Baten Ko (26°10'N., 127°47'E.) is sheltered, except from the N, and affords good anchorage in summer, but it is only available to small vessels.

Yonabaru Ko is open E, and is therefore not a good anchorage, however, it is much used by local small vessels.

In the interest of safety, ships will not enter the restricted area unless so directed by the berthing master.

Caution.—It is reported (2015) that vessels entering Nakagusuku Wan through Tachii Kuchi should pay particular attention to stay clear of Uhu Bisi reef, located immediately S of the channel in approximate position 26°12'N, 127°57'E.

Kin Wan (Chin Wan) (26°25'N., 127°54'E.)

World Port Index No. 62495

7.33 The port of Kin Wan (Chin Wan) consists of several towns and a large open bay with anchoring, mooring, and berthing facilities for large vessels.

Winds—Weather.—Northeast winds cause a considerable swell within the bay. When typhoons are imminent, all cargo operations cease and vessels are required to vacate berths and are recommended to proceed to sea.

Depths—Limitations.—The sea berths can handle vessels of 500,000 dwt and 150,000 dwt, and have depths of 31m and 27m, respectively. Product berths range from 10,000 dwt to 60,000 dwt, with depths from 9.1 to 15.2m.

An oil terminal, cement works, and shipyard are situated on the SW side of Ishikawa Dakae at Ishikawa.

Aspect.—Onna Take rises 363m on the N side of the bay, about 5 miles WNW of Kin Saki (Chin Saki); there are three pointed summits between 0.5 mile and 1.25 miles E of this mountain that show up well from seaward; farther SE, the mountains gradually decrease in elevation and on them are plantations of pine trees. The village of Kin is situated among these plantations, but is conspicuous from seaward.

A light stands at the head of Kin Wan, 6.5 miles WSW of Kin Misaki.

Ishikawa Take rises 224m on the isthmus at the head of the bay. A conspicuous dome, the charted position of which is approximate, is located on the S side of this hill.

A water tank stands in a position nearly 2.5 miles NW of Kin Saki; the tank was conspicuous (1962) from at least 2 miles seaward.

A fish haven lies 1 mile SE of Kin Saki. Several fish havens lie in Kin Wan.

Kuro Se, 20m high, is a conspicuous rock that lies about 0.5 mile E of Kin Saki.

Pilotage.—Vessels should steer for position 26°26'N, 128°04'E, off the E coast of Okinawa Shima; from that point steer due W passing the buoy marking the N side of Mengui Sho (approximate position 26°24.7'N., 128°02'E.), abeam to port, 1.25 miles distant. The berthing master will board vessels (150,000 dwt or more) to the port when they are abeam of the buoy. If circumstances prevent this the vessel should continue on a W course for 1 mile past the buoy, then alter course to 233°. About 3.3 miles on this last course should bring the vessel approximately to the inner pilot station at 26°24'N, 127°58'E.

Vessels are advised to send their ETA at least 72 hours, 48 hours, and 24 hours in advance. The ETA should be confirmed at least 12 hours before expected arrival.

Berthing operations are permitted during daylight hours only, however, unberthing may take place at any time of the day or night.

Anchorages.—For mammoth vessels, in order of arrival, anchorage can be taken, as follows:

1. Anchorage M1—26°24'09"N, 127°57'41"E.
2. Anchorage M2—26°24'49"N, 127°58'15"E.
3. Anchorage M3—26°25'29"N, 127°58'40"E.
4. Anchorage M4—26°26'08"N, 127°59'05"E.

Japanese Coast Guard MSA approval is obtained by the ves-

sel's agent.

For vessels of 50,000 to 150,000 dwt, anchorage can be taken, as follows:

1. Anchorage S1—26°23'38"N, 127°57'29"E.
2. Anchorage S2—26°23'14"N, 127°57'14"E.
3. Anchorage S3—26°22'50"N, 126°22'31"E.

The Products Anchorage is an area bounded by a line joining the following positions:

a. 26°22'00"N, 127°56'29"E.
b. 26°22'13"N, 127°56'33"E.
c. 26°22'00"N, 127°57'19"E.
d. 26°21'51"N, 127°57'05"E.

The holding ground is good in these anchorages, however, the depths vary from 40 to 53m.

Depths in the product anchorage vary between 18 and 22m.

The quarantine anchorage, marked on the chart, lies WNW of Ike Shima.

Owing to the existence of underwater pipelines, telephone cables, and obstructions, anchoring is prohibited anywhere SE of a line joining the following two positions:

a. 26°22'31"N, 127°58'08"E. (the NE dolphin of Sea Island).
b. 26°21'37"N, 127°56'44"E. (the NE dolphin of Berth No. 3 on the Products Pier).

For berthing, masters of vessels are requested to have the propeller submerged and the vessel in a reasonable trim for ship handling purposes.

Okinawa Shima—East Side (continued)

7.34 There are several shoal patches a short distance outside the barrier reef, therefore, caution must be exercised not to approach Henoko Saki (26°31'N., 128°03'E.) too closely.

Oura Wan (Ora Wan) (26°32'N., 128°04'E.) is entered between Henoko Saki and Abu Saki, about 2.5 miles ENE. Abu Saki is backed by a pine grove; the tops of the trees reach an elevation of 48m, and as there are no other trees in the vicinity, the grove is conspicuous.

Anchorages.—The recommended anchorage for large vessels in Oura Wan is in 27m, fine sand and mud, off the village of Nabigo.

The recommended anchorage for small vessels, in 5.5 to 7.3m, fine sand and mud, lies about 0.3 mile S of Matsu Saki.

The anchorages become unsafe during bad weather. In 1981, a vessel anchoring in position 26°30.15'N, 128°05.45'E, offshore of Oura Wan, lost an anchor because of coral heads. This would indicate the charted bottom characteristics cannot be depended upon and anchorage in that area is not recommended.

7.35 **Teniya Saki** (26°34'N., 128°09'E.) is a conspicuous narrow point, 1 mile NE of Banno Saki; several pointed rocks are 0.25 mile SE.

Ginan Saki (26°38'N., 128°14'E.) has been reported radar conspicuous at 11 miles.

Aha Ko (26°43'N., 128°18'E) has a conspicuous rock, 32m high, close off the S entrance point of the cove.

Adaka Shima (26°44'N., 128°20'E.) always has eddies within about 1 mile seaward of the reefs extending from the island.

Anchorage.—Temporary anchorage, protected from winds from the W through N, to NE, can be obtained, in 12.8 to 18.3m, between the reefs off the village of Ada and those on which lies Adaka Shima, but local knowledge is essential.

Aka Saki (26°49'N., 128°19'E.) is a reddish point, about 183m off, which is a conspicuous rock connected to the coast by an exposed rock shelf, 8.8m high.

Iheya Retto

7.36 The Iheya Retto is composed of five islands, Iheya Shima, Izena Shima, Gushikawa Shima, Noho Shima, and Yanaha Shima, together with various above-water rocks and islets. The group is centered about 19 miles WNW of Hedo Misaki, the N point of Okinawa Shima.

Iheya Shima (27°03'N., 127°59'E.), the largest and northernmost of the group, is surrounded by coral; two small harbors on the SE coast are for small vessels only. The island from E or W appears as a row of islands, because of its several peaks separated by deep valleys. Aha Take, the 211m S peak, is sharp and stands out at a distance. Gayo Take, the highest peak, is 294m high and about 1.1 miles NE of Aha Take.

Several rocks extend seaward from the N tip of the island, which is marked by a light and strong tide rises occur about 2.5 miles offshore.

Gushikawa-Hokuro, a channel with a depth of 10.9m, lies between the S end of Iheya Shima and Gushikawa Shima; the channel has strong tide rips often making navigation for small vessels impossible during the winter. The flood tide flows W and the ebb tide E.

A submarine cable is laid between Iheya Shima, S extremity, and Izena Shima.

Noho Shima, close W of the S tip of Iheya Shima, is a flat-topped island; several rocks that uncover are W of the island and there are tide rips S of them.

Gushikawa Shima, SE of the S end of Iheya Shima, is a low, long, and narrow islet surrounded by coral.

Izena Shima has a 129m summit; Ona Yama, in its NW part, has a heavy growth of trees and is conspicuous. There is a wharf with charted depths of 5.4 to 5.8m in the vicinity of the light shown from the E side of the island.

A fish haven lies 1 mile W of the SW point of the island.

Yanaha Shima, the S island of the Iheya Retto group, is surrounded by coral.

Amami Gunto

7.37 The Amami Gunto group of islands extend in a NE-SW direction between Okinawa Gunto and Tokara Gunto, and consists of Amami-O Shima, Kakeroma Shima, Yoro Shima, Uke Shima, Kikaiga Shima, Tokuna Shima, Okinoerabu Shima, Yoron Shima, Tori Shima, and other smaller islets.

There are several types of poisonous snakes in the islands as well as poisonous sea snakes in the surrounding waters.

Inhabitants engage in agriculture, fishing, and textile-making. Products include sugar, fish, sweet potatoes, and some copper.

Winds—Weather.—Most of the precipitation in the islands group is in the SW part, decreasing farther NE. There is generally little fog, although, an occasional thick fog might occur in the vicinity of Amami-O Shima between March and June.

Yoron Shima

7.38 Yoron Shima (27°03'N., 128°27'E.) is comparatively flat, cultivated, and has a few trees on it. The coasts of the island consist mostly of cliffs of coral and white sand beaches. About the middle of the S side of the island, is a conspicuous steep cliff. A light stands on Aka Saki, the SE extremity of Yoron Shima.

Chabana Ko, on the NW coast of Yoron Shima, is much encumbered by reefs, but provides anchorage and berthing for small boats. There is a 5.5m dredged channel, marked by lighted buoys, leading to Chabana Ko.

There are tide rips off the SW side of Yoron Shima.

A submarine cable extends to a point about 35 miles ENE of Yoron Shima.

Okino-Erabu Shima

7.39 Okino-Erabu Shima (27°22'N., 128°35'E.) is a wooded island. The SW coast is mostly low coral cliffs, the N coast is mainly cliffs, and the SE coast is low.

Inobe is a village on the N coast of Okino-Erabu Shima in a position about 4 miles SW of Kunigami Saki, the NE extremity. Temporary open anchorage, during SE winds, can be obtained on the seaward side of the reefs fronting the village.

A mole extending 400m NW from the shore provides, on its SW outer part, a quay that is 160m long, with an alongside depth of 8m. Range lights lead towards this port. The port and anchorage should only be used by vessels with local knowledge.

Radio towers, reported to be conspicuous, stand 2 miles WSW of the NE end of the island and 1.5 miles NNE of O Yama. A domed building is reported to stand close N of the latter tower.

Kunigami Saki (27°27'N., 128°43'E.) is very low and marked by a hill, 61m high, covered with pine trees that show up well from most directions.

This point is marked by a light and an aeronautical radiobeacon. A fish haven lies about 8.5 miles SE of Kunigami Misaki Light.

Saotsue Yama (27°23'N., 128°37'E.) rises 135m on the SE coast of Okino-Erabu Shima; it is a somewhat conspicuous hill covered with large pine trees.

Wadomari Ko (27°24'N., 128°40'E.) is a small harbor protected by a breakwater on its S side and a detached breakwater S of it. Range lights, in line bearing 282.8°, are available for entering the harbor through an opening in the reefs. A wharf, with a depth of 7.5m alongside and 150m in length, fronts the shore at China Gyoko and is joined to it by a causeway extending E. There is a directional light, with the center of the white sector bearing 026°, situated 0.1 mile N of the wharf. Room to maneuver off the wharf is very restricted, owing to the reef. A small landing quay is situated 0.5 mile N of the wharf.

Tides—Currents.—Near the N side of the island, the flood tide flows W and the ebb flows E; farther out it is confused and variable.

Near the S side of the island the flood tide flows E and the ebb SW, but these currents are unstable and affected by the winds and sea currents and sometimes they will flow E or SW all day at a rate of up to 2 knots.

Anchorage.—Cargo and passenger vessels over 1,000 gt usually anchor about 0.3 mile offshore, in 20.1 to 25m. This is a temporary anchorage for vessels with local knowledge.

A submarine cable is laid from the coast close NE of Wadomari to Tokuno Shima.

Tokuno Shima

7.40 Tokuno Shima (27°45'N., 128°58'E.), a mountainous island, has Isen Saki as its S point.

Inutabu Misaki, on the W coast of the island about 5 miles NW of Isen Saki, has a gradual slope on its SE side, but close NE of it there is a steep and conspicuous cliff rising abruptly from the waters edge. Tide rips occur about 1 mile SW of the point, especially at springs. A radio tower stands on Inutabu Misaki and a multi-story building stands 3 miles E. Both are reported to be conspicuous.

Inutabu Take, about 3.8 miles ENE of the cape, is a pointed wooded peak at the S end of a spur of the central chain of mountains, and appearing isolated, is a conspicuous mark.

Hetono Ko (27°49'N., 128°54'E.), about 5.5 miles N of Inutabu Misaki, is a small bay marked by a light; a small pier in the bay can accommodate small vessels.

Aspect.—There is a white light on a mountain on the S side of the entrance of the bay. A shrine near the light is clearly visible during the day. A submerged rock lies approximately 600m WSW of the shrine, and a breakwater, approximately 150m long, extends N 140m E of the rock. The village office, approximately in the middle of the village (27°49'N., 128°55'E.), is a landmark.

Anchorage.—Temporary anchorage, with shelter from E winds, can be obtained by large vessels, in 25 to 30m, sand, about 0.3 mile WNW of the S entrance point of the harbor, but the depths are greater than 100m at a distance of 0.3 mile off the entrance. To avoid the shoal on the S side of the entrance, the anchorage should be approached from NW.

A submarine cable laid from a pattern of large buoys off of Tokuno Shima is landed at a point between Arumi Wan and Kawata Wan. An area of 0.1 mile centered over the cable to a distance of 23 miles offshore is designated a submarine cable protective area.

There are wide rocky reefs along the N and S shores of the harbor, but vessels can reach the pier safely by entering the harbor with the E extremity of the pier bearing 090°. Vessels entering the harbor from the S must be careful of a shoal lying about 0.3 mile WSW of the above-mentioned shrine. Floating fish havens are occasionally set on the SW side of the island.

7.41 Kuro Se (27°53'N., 128°54'E.) are two rocks, each 4.7m high, lying close inshore; from certain directions they are somewhat conspicuous.

Kanami Saki (27°53'N., 128°59'E.), the NE point of Tokuno Shima, is a spur descending NE from a conspicuous hill, 251m high.

Tombara Iwa (27°55'N., 129°00'E.) is a group of four rocks; the highest has a reddish pointed summit. Tide rips occur N and S of these rocks.

Small vessels with local knowledge can obtain temporary anchorage during N winds, in less than 36.6m, rock and shingle, within 0.4 mile of the coral reef off the village of Omona-

wa (27°40'N., 128°58'E.). A submarine cable is laid from the coast close E of Omonawa to Okino-Erabu Shima.

Kinen Saki (27°40'N., 129°00'E.) is low and flat, and close to its S side there is a somewhat conspicuous rock.

Kametsu Hakuchi, a small partially-sheltered gap in the reefs, lies off the village of Kametoku, about 1.3 miles N of **Kongan Saki** (27°43'N., 129°01'E.). The gap is about 183m wide with depths of 7 to 23m. An 11m patch lies nearly in the middle of the outer part of the harbor. The inner harbor is protected by two breakwaters. A light stands at the head of the inner S breakwater.

Anchorage.—Small vessels with local knowledge can obtain temporary anchorage in fine weather, in 7.3 to 22.9m, somewhat sheltered from W winds, in Kametsu Hakuchi.

Fairly safe anchorage, sheltered from S and W winds, can be obtained, in 6.9 to 11.4m, close S of the low point forming the N side of the bay at Ketoku (27°49'N., 128°59'E.).

San Ko (27°52'N., 128°58'E.) affords anchorage to small vessels with local knowledge, in 5.5 to 15.5m, sand, protected by mountains on its S, W, and N sides, but the holding ground is poor and the anchorage is exposed to NE and E winds which send in a swell; moreover, with SW winds, squalls descend from the mountains and raise a sea that causes vessels at anchor to roll heavily.

Io Tori Shima

7.42 Io Tori Shima (27°52'N., 128°14'E.), isolated from and well to the W of the other islands of the Amami Gunto group, is an active volcano faced on all sides by steep cliffs. The last severe eruption was in 1968.

Two conspicuous peaks rise on the island, the N, 211m high. The trees and undergrowth around the N peak are dead, the earth is of a yellowish-brown color, and large quantities of smoke rise constantly from its SW side. The S peak is sharp, and S of it is a dark red landslide that is very conspicuous from the N and S.

In 1985, it was reported that no smoke was being emitted from the volcano.

In 2001, it was reported that a strong sulfur odor could be smelled as far as 6.5 miles away.

A fish haven lies 33 miles W of Tori Shima

Anchorage.—Small vessels can anchor close to a landing place near the SW side of the island, in 23.8m, black sand and shells, with the S peak bearing 042° and distant about 0.4 mile.

Yoro Shima

7.43 Okachi Yama (28°02'N., 129°10'E.), the summit of Yoro Shima (28°01'N., 129°10'E.), is a good landmark.

Abujiri Saki (28°04'N., 129°10'E.), the N extremity of Yoro Shima, is faced with conspicuous reddish cliffs.

Yoroshima Kaikyo, a strait between Yoro Shima and Uke Shima to the E, is only available to small vessels with local knowledge.

Uke Shima

7.44 Okinokuwa (28°00'N., 129°15'E.) is a group of three above-water rocks lying off the S extremity of Uke Shima (28°01'N., 129°10'E.); the highest is conspicuous.

Kiyamanoko (28°01'N., 129°17'E.) is a conspicuous rock with some grass on its summit.

Naga Se, about 0.6 mile N of Kiyamanoko, is always marked by tide rips.

Tande Shima (28°03'N., 129°15'E.) and Kotande, farther N, lie on a shoal spit extending N from the middle of the N side of Uke Shima; heavy tide rips are formed in the vicinity.

Small vessels with local knowledge can obtain fairly-sheltered anchorage in either Ukeamuro or Ikechi, the two small bays on the N side of Uke Shima; these anchorages are better than those described below in Shodan Wan and Ikomo Wan.

Caution.—Submarine cables are laid from the coast NW of Ikechi to the S coast of Kakeroma Shima.

Ukeshima Kaikyo

7.45 Ukeshima Kaikyo (28°03'N., 129°15'E.) is a strait between Uke Shima on the S and Kakeroma Shima on the N.

Shodon Wan (28°04'N., 129°18'E.), on the N side of Ukeshima Kaikyo, affords fairly sheltered anchorage to vessels with local knowledge, but winds from the E and S send rollers into the bay.

Ikomo Wan (28°05'N., 129°15'E.), also on the N side of Ukeshima Kaikyo, is too deep to afford anchorage to any but small vessels, which, with local knowledge, can obtain landlocked anchorage in a cove on the W side of its head.

Submarine cables are laid from Ketomi in Ikomo Wan S to Uke Shima.

7.46 Ka Saki (28°04'N., 129°13'E.) is faced with conspicuous cliffs; on it is a round-topped mountain with a fairly conspicuous summit.

Sukomo Banare (28°07'N., 129°10'E.), an island N of the W entrance to Ukeshima Kaikyo, is faced with cliffs almost everywhere, and on its NW part are some trees.

Yu Banare, about 0.8 mile NW of Sukomo Banare, has a pointed summit.

Rocks and shoals are located N, NW, and W of Yu Banare and Sukomo Banare. Vessels navigating in these areas should refer to the chart.

Kakeroma Shima (28°07'N., 129°15'E.), on the N side of Ukeshima Kaikyo, appears to form part of Amami-O Shima. A ridge of wooded hills extends almost throughout its length.

Oshima Kaikyo

7.47 Oshima Kaikyo is a strait separating Kakeroma Shima from the SW coast of Amami-O Shima.

Kaitsu Saki (28°07'N., 129°23'E.) lies on the E side of the SE entrance of Oshima Kaikyo; a short distance N of it is a conspicuous black rock. A light stands on Kaitsu Saki.

Mutade Yama, about 0.8 mile N of Kaitsu Saki, is a conspicuous conical hill, the E side of which is faced with a steep cliff almost to its summit.

Koniya Ko (28°08'N., 129°19'E.) is a refuge harbor that comprises the whole area of the SE part of Oshima Kaikyo. Within the area, a number of coves lie on the NE and SW sides of the strait. The anchorage position is off Koniya in Koniya Hakuchi, as the other coves are too narrow, or, like the strait,

are too deep for safe anchorage.

Tides—Currents.—The MHW interval at Koniya Ko is 6 hours 47 minutes; spring tides rise 1.8m and neap tides rise 1.5m.

Depths—Limitations.—Small vessels can berth at Koniya Ko. A basin protected, from S by two short breakwaters, lies on the E side of the Central Wharf. A light stands at the head of each breakwater. Reclamation has been carried out 0.3 mile SE of the basin. Several radio masts in the town are conspicuous.

Anchorage.—Anchorage, with protection from winds between the N and E, can be obtained by vessels with local knowledge, in 29 to 31m, in Koniya Hakuchi, off the town of Koniya, but caution is necessary as the tidal currents are very strong in mid-channel, and shallow water extends for some distance offshore in the vicinity of Koniya.

7.48 Satsukawa Wan (28°10'N., 129°14'E.) offers good protection against winds from all directions, but because of great depths, is not a good anchorage for small vessels; however, it is reported usable by large vessels up to 10,000 dwt during typhoons and heavy weather.

Nake Some, a coral patch with a depth of 14.6m, lies 1 mile S of the N entrance point, to Satsuk Awa Wan.

Kuji Wan (28°12'N., 129°16'E.) is surrounded by wooded mountains and has four coves at the head of its N branch. Kuji Ko, the W of these, is a harbor of refuge. Small vessels, with local knowledge, can obtain anchorage in Kuji Ko, in 18.3 to 21.9m; the bottom is of broken coral, mud, and pebbles, and the holding ground is fairly good.

Amami-O Shima

7.49 Amami-O Shima (28°20'N., 129°26'E.) is mountainous, but there are no conspicuous peaks. Akagina Hanto, the NE part of the island, is joined to the main portion by a low isthmus, so that from N or S it appears as an island.

7.50 West side of Amami-O Shima.—Sotsuko Saki (28°15'N., 129°08'E.) is fringed with rocks extending a short distance offshore, the largest of which is pointed, 35m high, and conspicuous from N or S.

Caution.—Caution is necessary when approaching Amami-O Shima not to mistake Sotsuko Saki Light for Borose Saki Light (28°27'N., 129°32'E.).

7.51 Yakiuchi Wan is entered between Yadon Saki (28°16'N., 129°11'E.) and Kamma Saki, about 1 mile NNE.

Eboshi Yama (28°17'N., 129°12'E.), the summit of Edato Shima, is a fairly conspicuous pointed mountain, with a clump of trees on the W side of its summit. Aka Saki, the SE extremity of Edato Shima, is of a reddish-brown color and has pine trees on it.

Anchorage.—Amuro Wan, about 1.3 miles E of Yadon Saki, is exposed to wind and sea between the W and N, but affords temporary anchorage to small vessels with local knowledge, E of Naki Sone, in about 31m, sand.

Nagara Wan, about 3.5 miles E of Yadon Saki, affords anchorage to small vessels with local knowledge, in 18.3 to 36.6m, but the entrance, between shoals on either side, is only about 183m wide.

Taken Byochi, at the head of Yakiuchi Wan, affords the best anchorage, in 21 to 32m, mud, but local knowledge is essential.

7.52 Oto Yama (28°19'N., 129°16'E.) has a flat summit that is not conspicuous, but two or three summits on a ridge decreasing in height N from the mountain are conspicuous.

Tategami (28°20'N., 129°16'E.) is a rock, 64m high, and conspicuous from the E or W. When viewed from the N, the rock is difficult to distinguish because of the similarity in color to the cliffs behind it. A light is shown on the islet.

Naon (28°20'N., 129°19'E.) is a fishing village at the mouth of a river; about 0.3 mile N of the village there is a conspicuous, conical hill, 299m high.

Asan Saki (28°21'N., 129°19'E.) has a pointed summit and is covered with grass.

Yamatohama Wan (28°22'N., 129°24'E.) is only available to small vessels with local knowledge. Violent wind gusts blow down from the surrounding hills.

Miyako Saki (28°23'N., 129°24'E.) is a summit covered with dwarf bamboos and appears green.

Borose Saki (28°27'N., 129°30'E.) on which stands a light, is a grassy point, fringed with rocks.

7.53 Naze Ko (Nase Ko) (28°23'N., 129°30'E.) is a natural harbor. The new harbor, built on reclaimed land, is N of the Breakwater No. 1.

There is also a W breakwater situated on the W side of Naze Ko, 0.5 miles S of Tategami. A light is shown from its head. The E breakwater is situated on Yagi Shima, from which a light is shown at its head. The E side of the fairway is marked by a lighted buoy, which is moored on the edge of the reef fringing the E shore, 0.35 mile S of the E breakwater head.

Tides—Currents.—There is considerable precipitation here year round. Winters are warm and summers are not extremely hot. The MHW interval is 6 hours 50 minutes; spring tides rise 2m and neap tides rise 1.5m. There is a harbormaster.

Depths—Limitations.—Depths alongside range from 3.5 to 10m. The Central Wharf in the commercial harbor has depths alongside of 2.6 to 6.6m. The fishing harbor S of the Central Wharf has a quay with depths of 2.5 to 3.1m alongside. The largest vessel to enter Naze Ko is a passenger vessel of 48,000 tons.

Regulations.—Naze Ko port authorities should be contacted for instructions concerning typhoon and tsunami warnings, evacuations, and restrictions.

Contact Information.—See the table titled **Naze Ko—Contact Information**.

Naze Ko—Contact Information	
Harbormaster	
Call Sign	Kagoshima Coast Guard Radio
VHF	VHF channels 12 and 16
Telephone	81-997-5773-11
Port Authority	
Telephone	81-997-5773-32
Facsimile	81-997-5773-62

Naze Ko—Contact Information	
E-mail	oosima-k-kanri@pref.kagoshima.lg.jp
Web site	https://www.pref.kagoshima.jp/index.html

Anchorage.—The anchorage is open N and is dangerous when rollers sweep in that direction; the bottom, however, is mud and, except during N winds, the anchorage is good. The best position to anchor is off the village of Sadekuma, about 0.5 mile S of Yagi Shima, in 23 to 27m. Some vessels anchor, in 25m, with Tategami Light bearing 000° and the village of Sadekuma bearing 077°.

Anchoring is prohibited in the central area of the waterway and also in the area in front of Sinko-Ganpeki embankment.

Caution.—The harbor is fringed with reefs extending as much as 0.2 mile offshore; the edges of the reefs are steep-to and are usually marked by a change in the color of the water.

Because the entrance to Naze Ko is similar to many other places along this coast, vessels on the regular run to the port make for either **Sotsuko Saki** (28°15'N., 129°08'E.) or **Imai Saki** (28°29'N., 129°37'E.) and then follow the coast to the entrance to the harbor.

7.54 **Amai Saki** (Imai Saki) (29°28'N., 129°37'E.) has a conspicuous hill, 191m high, close W of it.

Kasari Wan is entered between Amai Saki and **Gamo Saki** (28°30'N., 129°39'E.), about 2 miles NE.

Tatsugo Hakuchi, on the W side of Kasari Wan, is exposed NE, but in it there are no tidal currents. The roadstead is protected from the S and W winds by mountains and hills, one of which, Odake, on its SW side about 2.5 miles SSW of Amai Saki, is covered with trees and is a conspicuous feature.

Akagina Ko, the E inlet at the head of Kasari Wan, is exposed NW, heavy seas are frequently experienced, and the inlet is only suited to small vessels with local knowledge. Tategami Iwa, on the W side of the entrance of Akagina Ko, is a black conical rock. Taka Dake, on the E side of Akagina Ko, is the highest hill in the vicinity; it is flat-topped and has some pine trees on its summit. Ogari Yama, about 2 miles S of Taka Dake, has a wedged-shaped summit.

Anchorage.—Uramur Ko, the W of the inlets at the head of Kasari Wan, affords anchorage to small vessels with local knowledge, in 11 to 27.4m, mud.

Akaogi Ko, the middle inlet at the head of Kasari Wan, affords anchorage in the middle of the W bight at its head, in 11 to 27.4m, sand, but it is exposed N, and the S shore being the low isthmus that joins Akagina Hanto to the main portion of Amami-O Shima, it is unsafe with S winds.

7.55 **East side of Amami-O Shima.—Isu Wan** (28°08'N., 129°23'E.) is entered between Kaitsu Saki (28°07'N., 129°23'E.) and Ma Saki, about 3 miles NNE; it is only available to small vessels with local knowledge.

Futatshuhanare Iwa (28°11'N, 129°26'E.) consists of two rocks; a short distance N of them is a conspicuous waterfall, 10m high.

Ichi Saki (28°13'N., 129°29'E.) is a crumbling cliff. Mi Se is a reef about 0.7 mile offshore from Ichi Saki.

Sumiyo Wan is entered between Ichi Saki and Nakahise Saki, about 7 miles NE; in its SW and NW corners, respectively, are Sumiyo Ura and Sutaru Ura, both of which are exposed to heavy rollers during E winds. West of the head of Sutaru Wan, there is a lagoon that can be entered by small vessels at HW in calm weather.

Anchorage.—With offshore winds, anchorage can be obtained, in 21 to 29.3m, sand, off the entrance of Sumiyo Ura, N of Tobira Shima. Small vessels with local knowledge can obtain anchorage in Sumiyo Ura, in 1.8 to 9.1m.

Nakahise Saki (28°19'N., 129°33'E.) should be given a wide berth. Ho Ze is a reef about 2.5 miles offshore from Nakahise Saki.

Sedan Iwa (28°28'N., 129°44'E.) is a rock awash that is usually marked by breakers.

Kasari Saki lies in position 28°32'N, 129°41'E. Hira Se and Tombara Iwa, a black rock, lie, respectively, about 1.25 miles E and 2 miles NE of Kasari Saki; heavy tide rips and eddies are formed in their vicinity.

Kikaiga Shima

7.56 **Kikaiga Shima** (Kikai Shima) (28°19'N., 129°59'E.) has been reported radar conspicuous at 24 miles.

There is a plateau at the NE end of Kikaiga Shima, from 73 to 79m high, SW of which and separated from it by a slight fall, is another one, from 197 to 210m high. The latter plateau is named Hyakuno Dai, and its SE side is cliffy. West of Hyakuno Dai, there are sandy hills from 31 to 61m high; the higher ground is treeless pasture land, but the lower levels are cultivated.

A conspicuous chimney stands on Situru Saki, the S extremity of Kikai Shima; a light stands 0.5 mile N of the point. A fish haven lies 8 miles N of Tonbi Saki and another lies 8 miles S of Situru Saki.

Somachi Ko (28°20'N., 130°00'E.) provides shelter from all except SE winds to small vessels with local knowledge. A small pier at the village of Somachi is about 79m long, with a depth of 4.7m alongside. Breakwaters extend S from Kyora Hana, the N entrance point and E from Naga Saki, the S entrance point. It can accommodate a vessel of about 300 gt.

At **Wan Ko** (28°19'N., 129°°56'E'.) is an unloading embankment, 90m long, with a depth of 5 to 7.2m alongside on the N end of the E shore. Further to the NW is an embankment, 135m long, with a depth of 7.5m alongside. This harbor is used by ferries of 1,500 gt. A light is shown from the NW end of the wharf.

A detached breakwater was constructed 0.2 mile WNW of the above breakwater.

A submarine cable is laid from a position about 1 mile E of Wan Minato to the area 2 miles W of Myogan Saki.

Ogame Sho (28°15'N., 129°53'E.), a reef about 2.5 miles SW of Kikaiga Shima, is marked by breakers in rough weather, and by a difference in the color of the water in calm weather.

A danger area extends S from Kikaiga Shima.

Sandon Iwa (28°45'N., 129°46'E.) is a small isolated group of rocks about 14 miles NNE of the N point of Amami-O Shima. The highest rock is 10m high, black, and conical.

Tokara Gunto

7.57 **Tokara Gunto** (29°40'N., 129°40'E.), a group of mountainous islands and islets, are of volcanic formation and all, except for Takara Shima (29°08'N., 129°12'E.) and Taira Shima (29°41'N., 129°32'E.), emit smoke; there are hot springs in the old craters. The coast of the group are mostly steep cliffs or rocky precipices from which the land rises abruptly and is covered with bamboo and a variety of trees. There is little arable land and there are no sheltered anchorages.

The group has been reported to be a good radar target at 21 miles.

The group of islands extend 95 miles NE from **Yokoate Shima** (28°48'N., 129°00'E.).

The inhabitants are engaged mainly in fishing and farming.

Winds—Weather.—The sea surface is generally tranquil during the summer monsoon. After the rainy season passes in June, there are many fine days with occasional onsets of heavy rainstorms. From mid-August, the wind gradually begins to go around to the N, then it becomes strong from September on and the seas run high.

Tides—Currents.—The main current of the Kuroshio strikes the W side of the islands and divides to N and S, causing tidal races at the N and S ends of the islands. It also appears that there is a confluence with a branch current in the vicinity of the SE side of the islands, which causes tide rips in the vicinity of their S end. If the wind direction is in opposition to the current direction the waves become strikingly higher and navigation by small craft becomes dangerous. The phenomenon is called Shiomakura (tide pillow) colloquially. It is reported that motor vessels with a speed of 5 knots have been unable to overcome the tidal races and rips at the N and S end of Kaga Shima.

The tidal current, in general, flows along the coastline of the islands, the flood tide flowing N to NW and the ebb tide flowing S to SE, but there many occasions when the pattern is confused because of the influence of sea currents. There are many locations where a counter current is generated, near to the coast of the islands because of the effects of such sea and tidal currents and in summer it is reported that there is the occasional onset of a tidal wave.

It is reported that the tidal current flows E through the Tokara Kaikyo and that its rate is 4 to 5 knots, when a WSW to W wind is blowing.

Yokoate Shima

7.58 The E part of **Yokoate Shima** (28°48'N., 129°00'E.) is the crater of an extinct volcano, but the W part is dormant. The entire island is surrounded by cliffs and is reported to be a good radar target at 20 miles.

Tidal currents are strong; eddies form between Yokoate Shima and **Kaminone Sho** (28°50'N., 129°13'E.), about 2 miles to the N. An obstruction has been reported 2.25 miles NNW of Kaminone Sho.

Takara Shima

7.59 **Takara Shima** (29°08'N., 129°12'E.) has a mountain near its middle covered with bamboo; the gentle slopes at the foot of the mountain are cultivated. A large radio tower stand on the highest point of the island.

Anchorage.—Takarashima Hakuchi, on the N side of Takara Shima, off the village of Maegomori, affords temporary open anchorage to small vessels with local knowledge, in 12.8 to 27.4m, but the depths increase very rapidly, and the tidal currents are very strong; it is only available during S winds.

Kuroyamano Se is a shoal with a depth of 6.9m, extending about 2.3 miles SE of Areki Saki, at the S point of Takara Shima. A light stands on Areki Saki.

Kotakara Shima

7.60 **Kotokara Shima** (29°13'N., 129°20'E.), very steep on its S side, is covered with bamboo; a house on the side of the hill is prominent. Oiwaya is a pointed wooded hill on the W side of the islet.

Ko Shima, about 0.8 mile E of Kotakara Shima, has a dome-shaped tree-covered summit. A pillar-shaped rock is on the NE side of the islet and a drying rock, usually marked by breakers, is close off the NW side of the islet. Several dangerous reefs E of Ko Shima are marked by breakers.

In 1982, submarine volcanic activity was reported in the vicinity of the 64m bank, 9 miles WNW of Kodakara Shima.

The position of Oki Zone, a reef about 4 miles NNE of Kotakara Shima, is indicated in rough weather by the condition of the water surface.

Two more areas of relatively shoal water lie along roughly the same latitude, 13 and 30 miles W of Oki Sone. In extreme weather conditions, the sea breaks over these features.

Akuseki Shima

7.61 **Akuseki Shima** (29°27'N., 129°36'E.), reported to be a good radar target at 26 miles, has its 587m summit on its W part. The summit is covered with trees and a range gradually decreasing in height and with clumps of bamboo on it trends SE. The coasts are almost all high cliffs and a village near some cultivated land is on the SW part. The island is marked by a light.

Tide rips occur off Nizumi Saki, the rocky SW point of the island. Large breakers have been reported in the area of Gogo Sone, an off-lying bank 26 miles W of Akuseki Shima, having a depth of 89m.

Suwanose Shima

7.62 On Take, the summit of **Suwanose Shima** (29°38'N., 129°43'E.), rises in the middle of the island and consists of volcanic debris and lava; no grass or trees grow on its upper half and its summit is comparatively flat, but there is a conspicuous rock on its NW part.

On the NE side of the mountain there are high cliffs separated by deep gullies, from the bottom of which smoke is emitted and the summit is nearly always obscured; eruptions and explosions sometimes occur. In 1955, brownish smoke from a seabed eruption was observed in a position about 5 miles E of Suwanose Shima.

Tomidachi Take, at the NE end of the range that traverses the island, is 540m high and conspicuous; Negami Take, at the SW

end of the range, is 354m high; though, there are several peaks between these two mountains and On Take, they are usually enveloped in clouds or smoke.

The S part of Suwanose Shima is high and, except on a hillock where there is a village and some cultivated land, it is overgrown with bamboo; the N side of the island is wooded.

Naga Saki is the S extremity of Suwanose Shima; tide rips occur off the point.

Tori Saki, the W extremity of Suwanose Shima, consists of dark red cliffs near which is a stream of stones and lava from an old crater.

Furusato Saki lies 0.2 mile NE of Tori Saki; after rain, there are several small waterfalls between Furusato Saki and Su Saki, the NE extremity of Suwanose Shima.

Su Saki, off which there are tide rips, ends in a pointed rock; on the E side of the point, the coast rises precipitously, and on this side is a waterfall.

Kiriishi Hakuchi is a small bay on the E side of Suwanose Shima, about 0.5 mile NNE of Naga Saki. Small vessels with local knowledge can obtain anchorage, sheltered from SW winds, over a bottom of sand. Caution is necessary because three submarine cables are laid from this part of the coast to the other islands of Tokara Gunto. Reference should be made to the chart.

Suwanose Suido, the channel between the islands of Akuseki Shima and Suwanose Shima, has the center of its axis along the approximate axis of the Kuroshio Current, which attains a rate of 2.5 knots.

Taira Shima

7.63 **Taira Shima** (29°41'N, 129°32'E.), with the highest of the hills at the S end of the island, is 114m high. There is a village on a hill on the W side of the island, near which is some cultivated land. The island is 246m high.

Dei Se is a group of rocks, of which the highest is 68m high, lying close off the S extremity of Taira Shima; the passage between these rocks and the island should not be attempted.

Nakano Shima

7.64 **Nakano Shima** (29°51'N., 129°51'E.) is separated from Suwanose Shima by Nakano Shima Suido. There is a strong E ocean current in the strait. O Take, the summit of the island, is the highest mountain in Tokara Gunto; sulfurous fumes are emitted from its summit and from places on its NE side. A range, gradually decreasing in elevation, extends E from a somewhat conspicuous mountain, 530m high, near its S extremity. The coasts of the island are mostly rocky precipices on high cliffs.

Hishagono Hana, the S extremity of Nakano Shima, is a cliffy headland, 184m high. About 1 mile E and NW of the headland there are cliffs from 104 to 183m high, the tops of which are densely wooded and over which are some small waterfalls. Otategami is a pillar-shaped rock, close inshore, about 0.2 mile NW of the headland; its summit is serrated and conspicuous from NW.

Maeno Hama is a small bay about 1.8 miles NW of Hishagono Hana, at the head of which is a wooded hill surmounted by the village of Sato; in the NW part of the village there is a white-washed school, standing at an elevation of 57m. The school is conspicuous when approaching from the SW. The shores of the bay are fringed with rocks, the outer edges of which are steep-to.

Anchorage.—Temporary anchorage can be obtained by small vessels with local knowledge, with the school at Sato bearing 039°, distant about 0.8 mile, but it is reported that, because of the strength of the tidal current, difficulty may be encountered in taking up this position.

7.65 Nohori Saki, the NW extremity of Nakano Shima, is a rocky point, about 21.3m high; close off it are some curiously-shaped rocks.

Kusazeno Hana, about 1 mile E of Nohori Saki, is a fairly level headland, 62m high, and at its extremity there is a large rock in the form of an arch.

Seri Misaki, the SE extremity of Nakano Shima, is flat-topped and about 37m high; close off it there is a pillar-shaped rock of the same elevation. Jinnyomu Take, about 0.4 mile NW of the cape, is 171m high and conspicuous.

Koyama Shima, a rocky islet about 30m high, with some bushes and grass on its summit, lies about 0.4 mile W of Seri Misaki.

Anchorage.—Small vessels with local knowledge can obtain temporary shelter, either E or W of Koyama Shima.

Gaja Shima

7.66 **Gaja Shima** (29°54'N., 129°32'E.) has been reported radar conspicuous at 20 miles. Ara Saki, the SE extremity of Gaja Shima, is of an ash-gray color.

Kobatategami, on the NW side of the island, is a conspicuous pillar-shaped rock, 122m high.

The remains of an abandoned village are situated on a cliff, about 60m high, on the N side of the island. Maetategami, N of the village, is very similar to Kobatategami and 103m high.

Ko Gaja Shima

7.67 **Ko Gaja Shima** (29°53'N., 129°37'E.) is uninhabited. Its cliffy sides rise vertically from the sea; on its summit there are a few trees. It is reported that the smell of sulfur is noticeable near its N end.

Ogamino Se, a detached rock with a depth of 4.6m, lies about 1.5 miles N of Ko Gaja Shima; it is always marked by breakers. There are tide rips in this area.

Kuchino Shima

7.68 **Kuchino Shima** (29°58'N., 129°55'E.) is separated from Nakano Shima by Kuchino Shima Suido, in which the strong E current sometimes produces tide rips. Mae Take, the summit of the island, is a dark, conical, wooded mountain, 628m high. Hikisui Take, nearly 1 mile SE of Mae Take, is 448m high and has a rocky summit. Kamakura Takerises about 0.4 mile E of Hikisui Take, and on its S side are some cliffs; on its summit is a conspicuous pillar-shaped rock, 277m high. Hirino Dake, at the N end of the island, is covered with bamboo. Tide rips occur off the S part of the E coast of Kuchino Shima.

Anchorage.—Maeno Hama, on the E side of the N end of Kuchino Shima, affords temporary anchorage, sheltered from winds between the S and W, to vessels with local knowledge, in 9.1 to 20.1m, mud and sand, about 0.3 mile offshore. Heavy seas are sometimes experienced at this anchorage.

The open bay on the W side has the shape of an isosceles triangle, with Hira Se and Maru Se as the north end of the mouth of the bay provides anchorage. This is Kuchinoshima Hakuchi and consists of Nisino Hama. This bay affords temporary anchorage, according to the wind direction, to vessels with local knowledge, in 8.6 to 43m. This anchorage is probably the best anchorage in the Tokara Gunto group.

Vessels should refer to charts of this area. Submarine cables are laid from Nisino Hama to Nakano Shima.

Nishinohama Gyoko, a small fishing harbor, lies at the head of the bay, and is protected by N and S breakwaters. A light stands on the S breakwater head.

Gunome Misaki, the W extremity of Kuchino Shima, is a rocky headland, in the form of the horn of a rhinoceros, 94m high.

Aka Se is a small rock, reddish in color, which lies about 100m E of the tip of Serii Saki (the N extremity of Kuchino Shima). Two isolated rocks lie on the NW side of this island.

Me Se, about 4 miles NW of Serii Saki, is marked by a change in the color of the water in its vicinity; the currents are strong.

Caution.—An area lying in the W approach to Tokara Kaikyo, extending about 45 miles NNW from Me Se, is volcanic, and depths are liable to considerable change.

7.69 Tokara Kaikyo is a strait leading between the N end of Tokara Gunto and the SW islands of Osumi Gunto. Hira Se, marked by a light, is on the SW side of the strait in position 30°03'N, 130°04'E. The largest and highest rock, close W of which there is a white rock, is near the SW end of the shoal and is 28m high.

Caution.—The areas around Hira Se, **Uwano Se** (30°12'N., 130°04'E.), with a least depth of 14m and usually marked by ripples, and **Nakano Sone** (30°18'N., 130°08'E.) should be avoided, as unknown shoals may exist in their vicinities. The Kuroshio Current has been reported to attain rates of 3 to 5 knots in the strait.

Osumi Gunto

7.70 **Osumi Gunto** (30°30'N., 130°00'E.) is the NE group of islands forming Nansei Shoto (Ryukyu Islands); it consists of two islands of moderate size and six smaller ones.

Yaku Shima—N coast

Miyanoura Dake (30°20'N., 130°31'E.) rises nearly in the middle of **Yaku Shima** (30°20'N., 130°32'E.); it is steep-sided and has two summits, NW and SE of each other. There are several other peaks, but they are nearly always enveloped in clouds, and cannot be seen when close inshore because of the coastal mountains.

7.71 **Southwest and northwest sides of Yaku Shima.—**Nano Se (30°14'N., 130°25'E.) is a group of rocks. The channel between these rocks and the coast should not be attempted.

Anchorage.—Small vessels with local knowledge can obtain anchorage, sheltered from winds between N and E, between Nano Se and a sandy beach SE of the mouth of Kurio Kawa; the tidal currents in the vicinity of Nano Se are very strong, and in bad weather, tide rips are formed within about 4 miles SW of the rocks.

Nose Hana (30°19'N., 130°24'E.) close inshore, about 0.3 mile SE of it, is a flat-topped rock, with a black summit that is somewhat conspicuous from NW.

Nagata Misaki (Mi Saki) (30°23'N., 130°23'E.) is a conspicuous, steep, rocky headland, 55m high, from which the land rises steeply to Kawara Take, 1,328m high, a mountain covered with a forest of black trees. It has been reported that in summer, during strong S winds, a S current often attains a rate of 2 knots about 1 mile W of Nagata Misaki. This is purely local and likely to be associated with dangerous seas including tide rips. A light is shown from Nagata Misaki.

Anchorage.—Vessels with local knowledge can obtain temporary anchorage, sheltered from winds between E and S, off the mouth of the river on which stands the village of **Nagata** (30°24'N., 131°26'E.). Submarine cables are laid from the W coast of Yaku Shima in this area to Kutinoerabu Shima and Kagoshima.

7.72 **Senzokuno Hana** (30°27'N., 130°28'E.) is a rocky point, surmounted by a somewhat conspicuous pointed hill, 194m high.

Isso Ko (30°27'N., 130°30'E.) is a small bay protected by a breakwater. A light stands at the E end of the N breakwater. It is exposed NW and has a conspicuous beach of white sand at its head. Pine trees on the white sandy beach at the head of the bay and the white building of a meteorological station are good landmarks when entering the harbor.

A pier, 110m long, is situated on the E side of Isso Ko opposite the breakwater; it can accommodate a vessel of 2,000 gt. Two mooring buoys are anchored off the head of the pier. A vessel of 353 gt berths regularly at the breakwater.

Anchorage.—Except with winds between the W and N, sheltered anchorage can be obtained by small vessels with local knowledge, in Isso Ko, in depths decreasing from 29m, sand; with strong W winds, better shelter can be obtained in Moto Ura.

Yahazu Yama rises on the peninsula, the N extremity of which is **Yahazu Saki** (30°28'N., 130°30'E.); it is a conspicuous dark hill, 142m high, covered with bushes, and with a double summit.

7.73 **Southeast and northeast sides of Yaku Shima.—**Between **Kuro Saki** (30°14'N., 130°27'E.) and **Komori Bana** (30°18'N., 130°39'E.) the coast is bold, with the land rising abruptly from the sea to heights of at least 30m, and then sloping back less steeply to the mountain ranges; most of these

more gentle slopes are cultivated.

Anbo Ko (30°19'N, 130°39'E.) is a local harbor. At the village of Anbo, there are berths that accommodate vessels up to 1,000 and 1,500 gt. The depths alongside range from 4 to 5.5m. Anbo Light stands on the N side of the harbor entrance; an auxiliary light mounted on it illuminates the outer edge of a reef, 400m SSE. Vessels should navigate with caution; the entrance to the port is narrow and the current velocity is high. A detached breakwater has been constructed 0.3 mile E of the light.

Haya Saki (30°22'N., 130°40'E.) is faced with rocky cliffs, 36m high, and surmounted by dwarf trees; it is backed by a grassy plateau extending to the foot of the mountains, which is conspicuous from N or S. A light stands on the top of the cliffs of Haya Saki.

Nana Se is a 2.8m high rock, about 2.3 miles WNW of Haya Saki.

Anchorage.—Vessels with local knowledge can obtain anchorage, sheltered from winds between the S and W, off the village of **Kusukawa** (30°24'N., 130°36'E.); this anchorage is sometimes used in summer, when anchorage off Miyanoura becomes untenable because of the sea raised by strong NW winds.

7.74 Miyanoura Ko (30°26'N., 130°35'E.) (World Port Index No. 62075) lies at the mouth of the Miyanoura Kawa. The N side of the harbor is formed by a breakwater. A submarine wave height gauge is moored about 0.3 mile NE of the base of the breakwater and is connected to the shore by a submarine cable. The submarine cable runs NE to Tanega Shima.

Aspect.—Goto Yama, about 0.8 mile S of the mouth of Miyanoura Kawa, is 255m high, has trees on its summit, but not on its sides, and is a conspicuous feature. Nataori Take, a wooded mountain, attains an elevation of 521m, about 1.3 miles NW of Goto Yama, and on the flat part of its shoulder, about 0.4 mile E of its summit, there is a conspicuous solitary pine tree, standing at an elevation of 200m. The white building and three chimneys of a power plant in the town are very conspicuous. On a clear day, a conspicuous white sandy beach at the mouth of Miyanoura Kawa, can be seen from 4 to 5 miles offshore.

Anchorage.—Vessels with local knowledge can obtain anchorage, sheltered from winds between the S and SW, in 7.3 to 14.6m, sand, off the mouth of Miyanoura Kawa; caution must be exercised, however, because shoals extend about 0.2 mile offshore in the vicinity of the mouth of the river.

Caution is also necessary because of a submarine cable close E of the mouth of the river.

Tsuka Saki (30°26'N., 130°34'E.) is a rocky dome-shaped point, 19.8m high, that is surmounted by some dwarf trees.

Moto Ura, close E of **Yahazu Saki** (30°28'N., 130°30'E.), affords anchorage to small vessels with local knowledge, sheltered from winds between the S and W, in depths decreasing from 14.6m in its entrance, to less than 5m within 0.1 mile of its head; the bottom is sandy, but the sea breaks with winds between N and E.

Tanegashima Kaikyo

7.75 Tanegashima Kaikyo (30°20'N., 130°47'E.) leads between the E side of Yaku Shima and the W side of the S end of Tanega Shima; vessels making use of it must exercise great caution to avoid the dangers SSW of Otake Zake, the SE extremity of Tanega Shima.

Tanega Shima

7.76 Tanega Shima lies with Zyoga Saki, its SW extremity in position 30°21'N, 130°52'E. The island has a fairly level ridge running through the greater part of its length, and there are few conspicuous landmarks. Takamineo Yama, the highest hill, rises about 18.5 miles NNE of Zyoga Saki, and for 3 miles S of it the ridge is of about the same elevation; it then falls and rises again to Nagayano, a plateau rising about 6 miles N of Zyoga Saki, S of which two or three spires gradually descend to the coast. With the exception of Nagayano, which is a moor, the entire island is thickly wooded.

Tanega Shima has been reported radar conspicuous at 17 miles.

7.77 West side of Tanega Shima—Kadokura Saki to Hako Saki.—The land SE of Shimama Saki (30°28'N., 130°51'E.) is level and cultivated; on it are some tall pine trees which are conspicuous from S and N. Heavy breakers are experienced in bad weather in the tide rip area W of the point. A light stands on the point. An obstructed fish haven lies close NE.

Shimama Hakuchi, a bay on the NE side of Shimama Saki, affords anchorage to vessels with local knowledge, in about 10.1m, sand, about 0.3 mile N of Ike Shima, a rock, 2.1m high, near the head of the bay. This anchorage affords fair shelter from all winds except those between the W and N.

Kutsuwa Saki, about 2 miles NE of Shimama Saki, is faced with steep cliffs.

Ara Saki (30°36'N., 130°57'E.) is about 8 miles NNE of Kutsuwa Saki; between them is a beach of white sand that is backed by a conspicuous white, sandy cliff.

Sumiyoshi Misaki (30°40'N., 130°57'E.) is a flat wooded point. Small vessels with local knowledge can obtain anchorage, sheltered from NW winds, in the bay on the E side of Sumiyoshi Misaki.

7.78 Nisinoomote Wan is entered between **Hako Saki** (30°43'N., 130°59'E.) and Ono Saki, about 0.8 mile NE. A breakwater projects N from Hako Saki. A light is shown at its head. A meteorological station, about 0.3 mile N of Ono Saki, and the town hall on the NE side of the bay, are useful landmarks. The S side of the bay is a sandy beach and on the same side of the head of the bay is a conspicuous cliff of red sand. Three submarine cables are at the head of Nisinoomote Wan; beacons stand on either side of the landing place.

Nisinoomote Ko, on the NE side of the bay, is a small artificial harbor, protected by breakwaters, in which there is a depth of 4m. Local weather signals are displayed at the meteorological station. A vessel of 1,000 gt berths regularly at one of the wharves, which vary from 100 to 200m in length, with depths of 3.4 to 4.1m alongside.

A new harbor lies on the S side of the reclaimed land S of the old harbor. Depths alongside the quays range from 4 to 7.5m. Vessels up to 5,000 gt can be accommodated.

Anchorage.—Nisinoomote Wan is exposed W, but affords good anchorage, sheltered from winds from other directions, in

5.5 to 9.1m, but local knowledge is necessary, and care must be taken to avoid the submarine cables.

Caution.—A covered rock, 4.2m deep, lies about 290m S of the light at the head of the W breakwater. A sunken ship lies about 260m SW of the light. In the central part of the bay are two obstacles, with depths of 2.2 and 2.6m.

Urata Wan (30°49'N., 131°03'E.) is a small bay; it is open N. Small vessels with local knowledge can obtain anchorage, sheltered from S winds, in 7.3 or 9.1m, sand, in Urata Wan.

7.79 East side of Tanega Shima.—Between **Kadokura Saki** (30°20'N., 130°53'E.) and **Otake Saki** (30°22'N., 130°58'E.), the coast consists for the most part of beaches of white sand, with two or three somewhat conspicuous points. Shimo-Nakano is a town situated about 2.3 miles NE of Kadokura Saki; E of it are some conspicuous white sand hills. A short distance W of Otake Saki there are some conspicuous red cliffs.

Tanegashima Space Center (30°24'N., 130°59'E.) is the largest rocket launch facility in Japan. The white assembly building and numerous metal frame towers are conspicuous from sea. Several rocket launches per year occur, with debris from the rockets falling into the sea ESE to SE of the launch complex. Vessels in the area should monitor navigational warnings for upcoming launches.

Otake Saki Light is shown from a conspicuous red cliff, nearly 1 mile NW of **Otake Saki** (30°22'N., 130°58'E.).

Hitotsu Se (Yoko Se) (30°21'N., 130°59'E.), a detached, black, cylindrical rock, is conspicuous from the N and S. A rock lies about 0.4 mile N of Hitotsu Se. Water breaks over this rock except when the sea is calm.

Genzaburo, about 2 miles SW of Ori Se, is a reef with a least depth of 4.5m. Another reef lies about 0.4 mile NE of Genzaburo. Several reefs and a wreck dangerous to navigation lie between Genzaburo and Nabewari.

Nabewari (30°17'N, 130°57'E) is a shoal marked by breakers, except at SW on very calm days.

Ori Se (30°20'N., 130°59'E.) is nearly always marked by breakers.

Schichijin Sho lies about 3 miles S of Nabewari. There is a rock here, with a least depth of 12.8m.

7.80 There are a number of above-water rocks off the NE side of O Saki (30°24'N., 130°59'E.), the outermost of which is red in color and somewhat conspicuous.

Hijiri Yama (30°25'N., 130°56'E.) has its summit is covered with trees; it is conspicuous from the E.

O Ura (30°28'N., 130°58'E.) affords anchorage to small vessels, in 5.9 to 15.1m, sand, but prolonged NE winds send in a heavy swell; the anchorage space is restricted, and there are so many dangers in the approach that local knowledge is essential.

Kumano Yama (30°28'N., 130°58'E.), a conspicuous hill covered with large trees, rises to an elevation of 99m to the tree tops, close to the coast, about 0.6 mile N of the N entrance point of O Ura.

7.81 Ori Se (30°31'N., 131°00'E.) has a depth of 0.9m; it is usually marked by breakers.

Mage Se (Magenose) (30°32'N., 131°02'E.) has a depth of 1.8m; the sea breaks over it in rough weather. An obstructed fish haven lies about 2 miles SW of Magenose.

Yama Se (30°33'N., 131°02'E.), a reddish pointed rock, 30m high, is conspicuous from S. Kuro Se, a flat-topped rock, 16m high, lies about 0.2 mile E of Yama Se. A rock, which dries, stands between Yama Se and the N edge of Mage Se.

Naka Se (30°34'N., 131°03'E.) has a depth of 0.9m; it is usually marked by breakers.

Yasumino Hana (30°36'N., 131°03'E.) is faced with steep cliffs; on it is a solitary pine tree that is conspicuous from the N or S.

Okuro Se is a conspicuous rock, 15m high, lying close off a small rocky point, about 0.6 mile N of Yasumino Hano. A dry exposed rock shelf stretches for about 0.2 mile SE of this rock.

Minato Ura (30°49'N., 131°04'E) is a cove. Shira Hae, a rock, with a depth of 5.9m, lies about 0.5 mile NNE of the E entrance point. The cove affords shelter to small vessels, with local knowledge, during E winds.

Kisika Saki is the N extremity of Tanega Shima. Reefs extend about 0.5 mile N of this point and a light is shown from the point.

Tide rips are encountered to the N of both Kisika Saki and Mage Shima.

Senohana is a rock with a depth of 7.3m that lies about 1.5 miles N of Kisika Saki. There are eddies in this area.

Mage Shima

7.82 Mage Shima (30°44'N., 130°51'E.) is covered with a thick growth of grass and there are but few trees. Though there are a few groups of sheds, the island is not permanently inhabited, but is frequented by fisherman during the season.

Anchorage.—Vessels with local knowledge can obtain open anchorage, in 12.8m, rocky bottom, with the summit of Mage Shima bearing 230°, the E extremity of the island bearing 194°, and Sata Misaki, the S extremity of Kyushu, slightly open N of the N extremity of Mage Shima. Vessels approaching this position from NW must exercise caution when rounding the N end of the island. A submarine cable is laid from this coast at a point about 0.8 mile SSE of the light on the N tip of the island. This cable runs E and ESE to Tanega Shima.

A depth of 17.4m lies about 7.3 miles SSW of this same light.

Kutinoerabu Shima

7.83 Kutinoerabu Shima (30°27'N., 130°13'E.) is thickly covered with bamboo; about 0.4 mile N of the pointed summit of the island is a sharp grassy peak, 632m high, that is a conspicuous feature. Shin Take and Furu Take are volcanoes rising a short distance, respectively, NW and SW of the summit of the island. The only cultivated land is in the vicinity of the houses.

Kutinoerabu Shima has been reported radar conspicuous at 24 miles.

7.84 South side of Kutinoerabu Shima.—About 0.5 mile S of **Mishima Saki** (30°27'N, 130°12'E) is a valley through which flows a river, the constant muddy outflow of which causes the surface water in the vicinity to assume a light yellow color.

Kutinoerabu Wan, entered between Mishima Saki and Taka Saki, about 0.5 mile WNW, is protected by a breakwater. A ra-

dio tower, 6.1m high, stands on the N side of the bay.

Anchorage.—Except with winds between S and W, good anchorage can be obtained, in 9.1 to 18.3m, fine sand, in the middle of Kutinoerabu Wan; N winds sometimes blow across the isthmus at the head of the bay.

Taka Saki is faced with a conspicuous, steep, black cliff and is surmounted by pine trees.

No Saki (30°29'N., 130°09'E.) is a dark cliffy point, covered with thickets of bamboo, and is conspicuous. There is a light on this point. At its extremity, there is a pillar-shaped rock, 30m high, that from N or S appears detached. There is a conspicuous, conical, detached rock, 33m high, about 0.3 mile NE of the point.

7.85 North side of Kutinoerabu Shima.—Jono Hana (30°27'N., 130°16'E.) is a conspicuous cliffy cape, with a pointed grassy summit. There are three conspicuous peaks, 258m high, nearly 1 mile WSW of Jono Hana.

Aspect.—A steep brownish cliff rises 65m, about 2 miles NW of Jono Hana.

Small vessels with local knowledge can obtain anchorage, sheltered from W winds, close SW of the outermost rock off Jono Hana.

Nishi Ura is entered between **Ori Saki** (30°29'N., 130°12'E.) and Kuro Saki, about 1 mile WNW.

Anchorage.—Nishi Ura affords anchorage to vessels with local knowledge, in depths decreasing from 16.5 to 14.6m; the bay is open N, and S winds sometimes blow across the isthmus at its head; the bottom is of sand and shells, and the anchorage cannot be considered safe.

Caution.—Submarine cables run from far inside this bay to Yaku Shima.

7.86 Iwaya Tomari is entered between Kuro Saki and Kitakame Hana, about 0.8 mile NW.

Anchorage.—Iwaya Tomari is open NE, but affords anchorage, sheltered from S winds, to small vessels with local knowledge, in 9.1 to 14.6m, sand and shells.

Kitakame Hana (30°29'N., 130°10'E.) is faced with a steep cliff and lies about 1 mile E of No Saki, to which it bears some resemblance, though it is somewhat the higher of the two. Yano Mine, which dominates Kitakame Hana, is covered with bamboo and conspicuous; it is 148m high and slopes S.

Take Shima

7.87 Take Shima (30°48'N., 130°26'E.) is covered with a dense growth of bamboo. Ombo Saki, the W extremity of the island, is surmounted by a conical hill, 69m high.

Anchorage.—Small vessels, with local knowledge, can obtain anchorage, sheltered from S winds, in about 23.8m, coral, rock, sand, and shells, in a small bay on the N side of Take Shima, but the anchorage is not good. Care is necessary to avoid the submarine cable.

Io Shima

7.88 Io Shima (30°47'N., 130°19'E.), with Io Take near its E end, is an active volcano, 706m high, from which smoke rises continuously. Yahazu Take rises to an elevation of 349m about the middle of the NW side of the island; it has a pointed summit and is a conspicuous feature.

Caution.—Because undiscovered dangers may exist in the waters around Io Shima and the sea in the area is discolored by sulfur outflow, the vicinity should be avoided.

7.89 Ioshima Ko (30°46'N., 130°17'E.) is a small bay in the W part of the S coast of Io Shima, the depths in which are too deep for anchorage. This port is used for shipping stone and bamboo. Fishing vessels of less than 100 tons use this port as a refuge. Two submarine cables run from the head of this bay.

Kuroshima Saki (30°46'N., 130°16'E.) is the W extremity of Io Shima, and in its vicinity are numerous rocks, one of the outermost of which is usually marked by breakers.

7.90 Sin-Io Shima (30°48'N., 130°21'E.), sometimes known as Shin To, is an islet of lava, 26.5m high, the result of an eruption in 1934. The surface water within about 0.2 mile of the SE extremity of Io Shima is reported to be of various colors.

There are several rocks and reefs on the NE side Io Shima; when navigating in this area vessels should proceed with caution and refer to the chart.

Groups of above and below-water rocks lie S and SE of the SE extremity of Io Shima. These depths are as shallow as 2.7m. Reference should be made to the chart.

Yu Se (30°45'N., 130°06'E.) consists of three islets of about the same height, the middle being 56m high, together with a rock, 2.1m high; when seen from NW or NE, the group resembles a pagoda or tower.

Kuro Shima

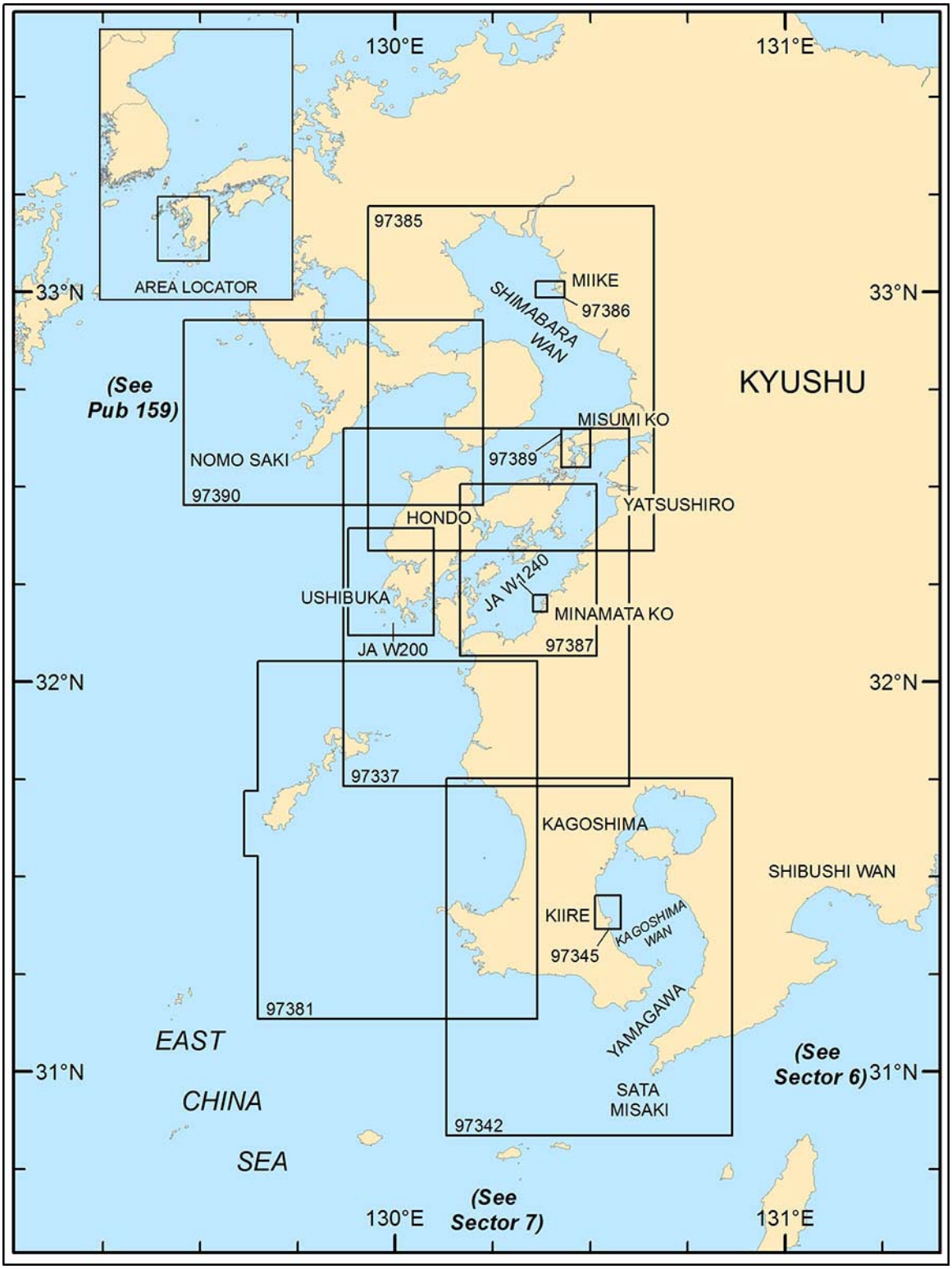
7.91 Kuro Shima (30°49'N, 129°56'E.) is mostly covered with a dense growth of bamboo, although it is cultivated in a few places. Earthquakes are a frequent occurrence.

Anchorage.—Temporary anchorage, sheltered from S and SW winds, can be obtained by vessels with local knowledge, in 21m, sand and shells, in the small bay close NW of Kaburi Hana (Kafuri Bana), the E extremity of Kuro Shima. Care is necessary to avoid the submarine cable.

Kusakaki Shima

7.92 Kusakaki Shima (30°51'N., 129°28'E.) is a group of about 17 bare and precipitous islets and rocks. Although the group would appear to be steep-to, vessels should not approach within 1 mile of any of the islets and rocks. Kusakaki Shima has been reported radar conspicuous at 10 miles.

Kusakaki-Kamino Shima, at the NE end of the group and marked by a light, is frequented by fisherman during the season.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **8** — CHART INFORMATION

SECTOR 8

SOUTHWEST COAST OF KYUSHU, INCLUDING OFF-LYING ISLANDS

Plan.—This sector describes the SW coast of Kyushu, from Sata Misaki (30°59'N., 130°40'E.), the S extremity, NW to Nomo Saki (32°34'N., 129°45'E.), at the SW end of Nagasaki Hanto. Uji Gunto and other off-lying islands and dangers, which are in the W approaches to Kagoshima Wan, are described prior to the coastal features.

Off-Lying Islands

8.1 **Uji Gunto** (31°11'N., 129°27'E.) is comprised of four conspicuous islets, namely, Uji Shima (Muko Shima), Ie Shima, Suzume Shima, and Same Shima.

Uji Shima rises at its N end to a conspicuous conical hill, and off its SE end is a small cone shaped island 57m high. Several pointed rocks, the largest of which is Nishitategami, 97m high, extends from the NW extremity of Uji Shima. There is a channel between Uji Shima and Ie Shima, which is sometimes used by fishing vessels for shelter during the summer. Suzume Shima consists of twin islets of equal height that open only from the N or S. Same Shima is a precipitous islet, whose summit, a white rock, rises in its NW part. By day, the positions of almost all the dangers in this vicinity can be identified but at night, this group should be given a wide berth. Vessels should not approach within 1 mile of these islands.

8.2 **Tsukura Se** (31°18'N., 129°45'E.) consists of four detached above-water rocks. From the N or S, the group appears as two pointed rocks; from the E or W, three are visible.

Sata Misaki (30°59'N., 130°40'E.), a conspicuous point, 85m high, is the southernmost point of Kyushu. This point, from which a light is shown, is a cliffy point backed by hills; it has been reported to be a good radar target at a distance of 12 miles. Owa Shima, a rocky islet, lies 0.1m S of Sata Misaki, and is connected to the point by reefs. Biro Shima, a wooded islet, 54.9m high, lies about 0.3 mile offshore, about 0.8 mile ENE of Sata Misaki.

The coast, 4.5 miles N from Sata Misaki to **Tatsume Saki** (Tachime Saki) (31°04'N., 130°39'E.) is fringed with rocks, but is comparatively steep-to.

Kagoshima Wan

8.3 Kagoshima Wan is a lengthy inlet entered between Tatsume Saki and Kaimon Misaki, about 9 miles NW. At its head, there is a landlocked bay that is separated from the S part of the inlet by Sakura Shima. Entry to this bay may be gained through, Nishi Suido, a deep channel to the W of Sakura Shima. Depths of over 180m are prevalent over a large portion of the inlet S of Sakura Shima.

Tides—Currents.—Enter into Kagoshima Wan on the rising tide and out of the inlet on the falling tide, turning within 0.5 hour before HW and LW. At the entrance, the turn occurs about the time of HW and LW and the N current attains a speed of 1.5 to 2 knots at springs. However, on the NW side of the entrance, within about 3 miles SE of Kaimon Misaki, the current flows NE on the rising tide and SW on the falling tide, maximum rate about 1.3 knots.

Caution.—Kan Se, an isolated rock with a depth of 1.5m, lies on a small shoal near the middle of the entrance of Kagoshima Wan, about 4 miles NNW of Tatsume Saki. The vicinity of the rock has been swept to a depth of 18m. It should also be noted that in calm weather the rock can be detected from a distance by discoloration; in bad weather, it breaks.

Due to the considerable size of the bay, the Caldera hills provide insufficient shelter to vessels seeking refuge from the frequent typhoons affecting the Kyushu coast. Yamagawa Ko affords refuge for small ships.

Kagoshima Wan—East Side

8.4 **Tatsume Saki** (31°04'N., 130°39'E.), located on the SE side of the entrance, is a steep, distinctive headland, 94m high. This point, from which a light is shown, and the coast on either side, is fringed with above-water and sunken rocks.

Tanisaki Bana (31°06'N., 130°41'E.), about 2.5 miles NE of Tatsume Saki, is a grassy headland, surmounted by trees and fringed with rocks. Small vessels with local knowledge can take anchorage in an area on the SW side of the headland, in a small bay, which affords shelter from winds from the E to S. On the NE side of the headland is a shallow cove with a sandy beach. Izashiki is a village at the head of the cove; local weather signals are shown here.

Ukitsu Bana, located about 1.8 miles NE of Tanisaki Bana, is a thickly wooded headland. Anchorage for small vessels with local knowledge may be taken in Okawa Byochi, on the NE side of the headland, sheltered from winds between the E to S. The village of (Ogawa, on the E side of the bight, is fronted by a stony beach. Vessels should note the location of the fish haven obstructions in these areas.

Koneshime Saki lies about 6 miles NNE of Ukitsu Bana. The O Kawa flows into the sea on the N side of Koneshime Saki. A shallow spit, whose edges are steep-to, extends about 0.8 mile NW from the N side of the river mouth. A breakwater extends WNW from the S of O Kawa.

The E coast of Kagoshima Wan, from the mouth of O Kawa, N about 14.5 miles to a white cliff near the village of Suwa, is fringed with reefs and shoals. The edges of these shoals are steep-to, extending about 1 mile offshore in places.

Oneshime Ko (31°15'N., 130°47'E.) is located about 2.3 miles NE of the mouth of O Kawa. Tidal currents are, for the most part, usually weak near Oneshime. Takasu Ko, is situated about 6.3 miles N of Oneshima Ko, and is a small port utilized mainly by local traffic.

8.5 **Furue Ko** (Kanoya Ko) (31°24'N., 130°46'E.), protected by breakwaters, within which the port area is shallow

and narrow. A new port is under construction on the N side of the N breakwater. It is reported that the waterway has already been dredged to a depth of 7.5m.

A submerged oil pipeline extends ENE to the shore, from a position 0.15 mile SW of the light on the S breakwater. The seaward end of the pipeline is marked by a buoy, near which are three mooring buoys.

Between Furue Ko and Suwa, about 3 miles NW, the coast is fronted by shoals. From Suwa the coast leads NW to Kazusa Bana, then about 5.5 miles N to the mass of lava that connects Sakura Shima to the E shore of Kagoshima Wan. Tarumizu, a village, lies 3.5 miles NW of Suwa. A light is shown from the S breakwater at Tarumizu Ko, the small harbor of Tarumizu.

Sakura Shima (31°35'N., 130°40'E.) became joined to the E side of Kagoshima Wan by a stream of lava as a result of an eruption in 1914. It has at its center an active volcano, 1,116m high, which is conspicuous from S.

Okoga Shima (Oki-Ko Shima), 37m high, lies about 0.6 mile SW of Mo Saki, the SW tip of Sakura Shima. A rock, which dries, 0.9m, lies close off the S end of the islet. In addition, a shoal projects 0.15 mile from the N side of the islet. There are numerous rocks and shoals surrounding Okoga Shima.

Kan Se, a reef which dries in spots, and has the remnants of a fort just above the water, lies in the narrows between Sakura Shima and Kagoshima Ko at the S end of Nishi Suido. Kan Se lies about 1.8 miles NW of Okoga Shima.

Nishi Suido is the channel heading between Sakura Shima and the mainland to the W, ultimately leading to the head of Kagoshima Wan. The shallowest part, with depths from 16.5 to 23.8m, lies between Kan Se and the mainland SW. The recommended channel through Nishi Suido lies to the W of Kan Se.

Submarine cables are laid across the N end of Nishi Suido.

Kagoshima Wan—West Side

8.6 **Kaimon Misaki** (31°10'N., 130°31'E.), the NW entrance point of Kagoshima Wan, is the steep-to SW tip of a rounded projection. This projection is crowned by Kaimon Take, a conspicuous extinct cone-shaped volcano, 924m high, the sides of which are densely wooded.

Shoals are scattered within 1.5 miles along the coast of the W shore and anchorage in the inner bay, N of Sakura Shima, is impractical if available.

The coast from Kaimon Misaki, 3.5 miles ESE to Nagasaki Bana, is indented by a bay. The village of Kawajiri (Kawashiri) is situated at the head of this bay, where local storm signals are shown. Nagasaki Bana, from which a light is shown, is the S extremity of a striking projection. A reef extends about 0.1 mile S of the point. Also a detached reef, with a depth of 2.7m, lies about 0.5 mile ENE of the same point.

Akamizu Bana is located 0.65 mile NE of Nagasaki Bana. It is marked by a hill on the slope of which is a prominent, single pine tree. A rock, which dries 1.8m, lies about 0.13 mile SE of the headland.

Chugamizu Wan (Chigogamizu Wan) is located between Akamizu Bana and Torinokuchi, about 2 miles NE. This bay has depths of less than 9.1m about 0.4 mile offshore. **Katchika Se** (31°10'N., 130°36'E.), with a depth of 2.7m, is located about 0.6 mile N of Akamizu Bana.

Torinokuchi is an abrupt headland, 205m high, about 0.3 mile NW of which is Take Yama (31°11'N., 130°37'E.), a hump-shaped conspicuous hill, 210m high. Matagoshi (Matagusu), a rock with a hole in it, and with some vegetation on its summit, lies about 0.4 mile ESE of Torinokuchi.

Kaigara Su (Kaigara Se) is a sandbank with depths of less than 5.5m. This extensive sandbank, which fringes the coast, projects about 1 mile offshore, and extends about 2.3 miles NE from a position about 0.4 mile E of Matagoshi. Kuchino Se, a detached rock, with a depth of 6.7m and steep-to on all sides, lies about 1.8 miles NE of Matagoshi.

8.7 **Yamagawa Ko** (Yamakawa) (31°12'N., 130°38'E.) (World Port Index No. 62230) lies on the W side of Kagoshima Wan, about 13 miles N of Sata Misaki.

Yamagawa Ko is entered between the N edge of Kaigara Se and Uno Se, which is at the S extremity of a shallow spit, extends about 0.3 mile S from the S side of the projection that terminates in Uyama Saki. The port consists of a town and a small natural harbor with anchorage and berthing facilities for small vessels. An L-shaped breakwater shelters the harbor; lights are shown from the head and elbow.

Winds—Weather.—Yamagawa Ko is a harbor of refuge. The velocity of the wind during a typhoon is lower in the inner part of the harbor. West winds of gale force enter the inner part through the valleys in the vicinity. Local weather signals are shown from a telecommunication tower standing about 0.2 mile S of Bandokoro Bana Light.

Tides—Currents.—The MHW interval at Yamagawa is 7 hours; spring tides rise 2.5m and neap tides rise 1.8m.

Depths—Limitations.—Due to the shoals in the approach to Yamagawa Ko, passage during bad weather or when there is a swell is dangerous. Local knowledge is necessary at all times.

The channel S of Uno Se is about 0.2 mile wide, with a least depth of 5.9m. On the E side of the inner port of the harbor, there is a quay, with a depth of 4m alongside.

Vessels of 1,000 gt or less can obtain shelter in the inner part of the harbor.

Aspect.—Identifying the entrance of the harbor from the S is difficult due to the lack of prominent features and the heavily-forested land surrounding the harbor.

Pilotage.—While pilots are not available, vessels entering for the first time may obtain advice from the harbormaster at Kagoshima.

Anchorage.—The inner part of Yamagawa Ko is nearly a landlocked basin; the bottom, mud and sand, affords excellent holding ground, in depths of 36.6 to 41.2m.

Directions.—Vessels approaching from the S should steer with the W shoulder of a plateau 109m high, about 0.5 mile W of Uomi Take which is about 2.5 miles N of Uyama Saki, in line with Uyama Saki, bearing about 345.5° leads toward the entrance of the harbor. This course passes about 0.3 mile E of Kuchino Se. When nearing Uyama Saki, change course W and bring the light structure on Uno Se in line bearing 285° with the E entrance of the railroad tunnel. From a position about 0.3 mile from Uno Se Light, course may be shaped for the inner harbor. Vessels should navigate with caution as depths of 2.7m lie ESE of Uno Se.

8.8 **Uyama Saki** (31°13'N., 130°40'E.) is a low, wooded point. Kasa Se, with a depth of 1.2m and Naka Sone, with a

depth of 4.9m, lie about 0.7 and 0.6 mile E, respectively of Uyama Saki. Several shoals are scattered between these rocks and the mouth of the port.

The coast, N from Uyama Saki to Tara Misaki, about 2.8 miles, forms a bight at the head of which is the village of Minato. Uomi Take rises to an elevation of 215m, about 0.8 mile WSW of Tara Misaki. Tarano Se, a detached shoal, with a depth of 2.1m, lies about 1 mile SE of Tara Misaki. There are a group of three conspicuous radio towers near Uomi Take; a prominent radio mast with a parabolic antenna, stands near the shore about 1.3 miles further SW.

Chirin Shima (31°16'N., 130°41'E.) lies about 0.5 mile NE of Tara Misaki, to which it is joined by a narrow spit that dries. The island is low on its W side, gradually rising to a height of 103m to the top of a group of pine trees, and ends abruptly in a steep cliff, which forms the E side of the island. Ko Shima, a small islet, lies 0.35 mile N of Chirin Shima and is 24m high. A submarine cable extends 1.5 miles SW of Chirin Shima ESE across Kaga Shima Wan, to Oneshima Ko. A reef projects 0.1 mile WNW from the islets NW side. A reef ledge extends about 110m N from the N side of Ko Shima.

From Tara Misaki, the W coast of Kagoshima Wan trends about 9.5 miles NW to Kiire Ko and is fringed with shoals that project up to 1.3 mile offshore in places.

8.9 **Kiire Ko** (31°23'N., 130°33'E.) (World Port Index No. 62225) is the site of a major oil-staging terminal. It is located on the W side of Kagoshima Wan and is a transfer station for crude oil. A group of crude oil tanks stand on reclaimed land. Tankers of 100,000 to 300,000 dwt can access this port.

Winds—Weather.—Apart from typhoons, the area has no local weather features. But, this port is weak for the SE winds because of the topography of the port. Swells and wind waves are normally no higher than 2m.

Depth—Limitations.—The fairway leading to the port is well-marked and has depths over 50m.

The oil facility consists of four T-headed piers, which extend about 0.2 mile from the NE side of reclaimed land. At the head of each pier is a dolphin berth for a tanker, numbered 1 to 4 from the N. A line of dolphins, connected by catwalks, joins the berths and extends 0.15 mile NW of Berth No. 1 and the same distance SE of Berth No. 4. All berths are protected by submersible oil booms and Berth No. 1 and Berth No. 2 are used only for loading.

Due to a steady SE current of 0.5 knot at the berths, tankers berth port side to.

A pier, with a dolphin head lies on the NW side of the reclaimed land.

There are no public berthing facilities. Four berths can accommodate vessels up to 500,000 dwt, for further berthing information refer to the table titled **Kiire Ko—Berthing Facilities**.

Pilotage.—A berthing master boards about 5 miles SE of Kiire. Only vessels in ballast may berth after sunset.

Anchorage.—There is an anchorage about 3 miles N of Berth No. 3, in a depth of about 45m. There is a quarantine anchorage about 1.3 mile N of Berth No. 1, in 40 to 69m, moderate holding ground. Vessels should refer to the chart and note the location of the fish haven obstructions in this area.

The coast NW from Kiire Ko to Kagoshima Ko, about 4 miles, is fringed with shoals that extend up to 1 mile offshore in places.

Kagoshima Ko (31°35'N., 130°34'E.)

World Port Index No. 62220

8.10 Kagoshima Ko, a principal port, is divided into Honko Ku, Shinko Ku, Minamiko Ku, Taniyama Ku, and the outer port, all of which lie within a 9-mile section of the W coast of Kagoshima Wan.

East Breakwater, 1 mile long, lies parallel to and 0.2 mile E of the reclaimed land, between No. 2 Area and No. 1 Area. A light is shown from the S head of East Breakwater.

Winds—Weather.—The prevailing winds are WNW from April to September, and NW during the remainder of the year. In general, the winter NW winds have the greatest force, especially during January; and the summer winds, usually those of July, are the weakest. The most violent storms occur in early autumn, during which time there are one or two in the average year.

Information regarding restrictions due to weather, navigation warnings, and evacuation instructions are communicated by the Kagoshima Ko Typhoon and Tsunami Safety Measures Committee.

Kiire Ko—Berth Information

Berth	Length	Depth	Maximum Vessel				Remarks
			Size	LOA	Draft	Beam	
Tanker Terminals							
Nippon Oil Staging Terminal Co. (Nost)							
No. 1	35m	18.0m	165,209 dwt	300m	16.2m	50.0m	Crude and bunkers.
No. 2	30m	18.6m	164,028 dwt	300m	16.2m	46.0m	Crude and bunkers.
No. 3	35m	28.2m	450,000dwt	400m	25.2m	62.0m	Crude and bunkers.
No. 4	41m	34.0m	500,000 dwt	458m	30.6m	69.0m	Crude and bunkers.
North Jetty	15m	10.8m	5,735 dwt	105m	—	16.0m	Crude and bunkers.

Kiire Ko

Tides—Currents.—The MHW interval at Kagoshima is 7 hours 5 minutes; spring tides rise 9 and neaps rise 2m.

The tidal currents off the entrances of the inner harbor flow N on the rising tide from about 1 hour after LW to 1 hour after HW, and S on the falling tide from 1 hour after HW to 1 hour after LW. The change of the tidal currents occurs approximately 0.5 hour earlier than it does at the entrance of Kagoshima Wan. Tidal current velocities are strongest in the area between the inner harbor and Sakura Shima, where they attain a maximum velocity of about 2 knots when setting S.

Depths—Limitations.—The sections of the port are described from the N to S. The main harbor, situated in the NW part of the inner port, is about 1 mile long and surrounded by four breakwaters. There is a N entrance and a S entrance. Lights are shown on each side of both entrances. The primary entrance is through the S entrance. Ship Channel No. 1 leads between the outer breakwaters to Fairway No. 1 and then to Honko Basin. This basin is protected by a breakwater on its N side and the N wharf on its S side. On the E side, there is a berth with a depth of 13m alongside.

Kagoshima—Berthing Facilities			
Berth	**Length**	**Depth**	**Remarks**
Dry Cargo Terminal			
Honko North Terminal			
No. 1	360m	9.0m	Cruise vessels and containers.
No. 2	310m	7.5m	Ro-ro, passengers and containers.
Honko South Terminal			
No. 1	155m	7.5m	Ro-ro and passengers.
No. 2	155m	7.5m	Ro-ro and passengers.
No. 3	90m	5.5m	Ro-ro and passengers.

Kagoshima—Berthing Facilities			
Berth	**Length**	**Depth**	**Remarks**
No. 4	90m	5.5m	Ro-ro and passengers.
Lumber Port			
No.1 Quay	185m	10.0m	Closed.
Marine Port			
Cruise Quay	340m	9.0m	Cruise vessels.
Pacific Grain Terminal			
Grain Jetty	170m	14.0m	Grain.
Inner Quay	61m	6.0m	Grain.
Shinkou			
No. 1	125m	7.5m	General cargo.
No. 2	140m	5.5m	General cargo.
No.5	220m	9.0m	Ro-ro and passengers.
No. 6	190m	7.5m	Ro-ro and passengers.
Taniyama-1			
No. 1	250m	12.0m	Sand.
No. 2	260m	7.5m	Cement and sand.
No. 3	270m	5.5m	Steel products.
No. 5	550m	5.5m	Aggregates, sand, and steel.
No. 6	180m	5.5m	PCC.
No. 7	260m	7.5m	PCC and containers.
No. 8	240m	12.0m	Ro-ro and passengers.
Multipurpose Terminals			
Taniyama-2			
No. 1	360m	5.5m	Aggregates.
No. 2	270m	5.5m	Cement.
No. 3	180m	5.5m	Aggregates and steel.
No. 5	260m	5.5m	General cargo and steel.
No. 6	270m	7.5m	Containers and steel products.
No. 7	390m	7.5m	Containers and steel products.
No. 8	90m	5.5m	Containers and steel products.
No. 9	90m	5.5m	Scrap metal.
East Quay	390m	7.5m	Ro-ro and lo-lo.
Oil 1 North	22m	9.0m	CCP.
Oil 1 South	22m	7.5m	CCP.
Oil 2 North	20m	5.5m	CCP.
Oil 2 South	20m	5.5m	CCP.
Tanker Terminals			
Nippon Gas Co. Terminal			
LPG Berth	106m	9.0m	LPG.

Kagoshima—Berthing Facilities			
Berth	**Length**	**Depth**	**Remarks**
Nippon Gas	38m	13.0m	LNG. Maximum size of 73,000 dwt. Maximum beam of 28.0m.

North Wharf and South Wharf have depths from 6.0 to 13.5m. The outer harbor has open roads where vessels anchor. There is a ferry crossing from the N entrance across to Sakura Sima.

Shinko, situated between the mouth of Kotuki Kawa and the main port to the N, is entered between two breakwaters. It can accommodate vessels up to 10,000 dwt, with depths available to 9m within the basin.

Kamoike Ko, situated about 1 mile SSW of Kotuki Kawa, and protected by breakwaters, is used mostly by ferry boats. It has dredged depths of 4.5m and a pier 150m long.

Minamiko (South Port) is entered through a channel between two breakwaters, which leads to a basin with quays and piers with depths from 4.5 to 5.5m alongside. The least charted depth in the entrance is 4.5m. Vessels up to 2,000 dwt can be accepted at the 174m long pier. For further berthing information refer to the table titled **Kagoshima—Berthing Facilities**.

Aspect.—The city of Kagoshima is erected at the foot of Siro Yama, a hill that rises 122m, about 2.8 miles NW of Kan Se. Two radio towers are conspicuous and stand near Shiro Yama. There is a prominent tower, with a height of 46m on the seaward edge of reclaimed land 1.3 miles W of Kan Se. Kotuki Kawa flows through the city on the SW side of Siro Yama. A bridge spans the seaward entrance to Nagata Kawa N of Taniyama.

Pilotage.—Pilotage is not compulsory but necessary if the Master of the vessel is not familiar with the area. vessels should send requests for Pilots through the agents.

Pilots board, as follows:

1. Vessels requiring quarantine bound for Honko (Area No.1) and Shinko (Area No. 2)—In the vicinity of the quarantine anchorage (31°33.4'N., 130°35.4'E.).
2. Vessels not requiring quarantine and bound for Mozukai Ko or Taniyama Ko (Area No. 1 and Area No. 2)—About 1.2 miles E of Taniyakama Ko East Breakwater Light (31°30.3'N., 130°34.4'E.).
3. LNG vessels—In position 31°29.0'N, 130°33.9'E.

Regulations.—Vessels must give 24 hours notice to the port before the vessel's arrival. Berthing and unberthing can be conducted during daylight hours only.

Signals.—Storm signals are shown from the harbor police station, about 0.2 mile NW of the S end of East Breakwater.

Contact Information.—See the table titled **Kagoshima—Contact Information**.

Anchorage.—Kagoshima Ko provides the best anchorage in Kagoshima Wan.

Kagoshima—Contact Information	
Harbormaster	
Call Sign	Kagoshima Coast Guard Radio
VHF	VHF channels 12 and 16

Kagoshima—Contact Information	
Telephone	81-99-222-6680
Pilots	
Telephone	81-992-6077-07
Facsimile	81-992-6077-17
Port Authority	
Telephone	81-22-213-221
Facsimile	81-22-213-296
E-mail	harbour@pref.kagoshima.lg.jp

Large vessels may obtain anchorage off the main harbor, in 34.7m, mud and sand, with the light on the S end of East Breakwater bearing about 298°, distant 0.7 mile or further N with the same light bearing 247°, distant 0.35 mile, in a similar depth. Vessels should anchor S of the ferry crossing. During winter, strong winds may make the working of cargo difficult.

In an emergency, large vessels can seek anchorage in a designated area. This area, which is situated SE of Kan Se (31°34'N., 130°36'E.), provides anchorage, in depths of 38.5 to 43m, mud and sand. Shelter from winds between the N and E may be obtained in this spacious area. However, vessels should exercise caution due to the strong tidal currents between Kan Se and Sakura Shima. The Quarantine Anchorage lies S of Kan Se and has a general depth of 14m.

When the center of a typhoon passes the N part of this port, rain and wind become extremely severe. Small ships should seek refuge in Yamagawa-Ko and large ships in the N area of the E coast of Kyusyu, Amani-O Shima, or along the W coast of Kyusyu to the N of Yatusiro-Kai.

Submarine cables are laid S and E from the mouth of Kotuki Kawa.

8.11 The head of Kagoshima Wan is nearly landlocked, forming an inner bay which can only be entered through Nishi Suido, the channel on the W side of Sakura Shima. Depths in the central part of the bay range from 128 to 146m, and in an area in the E part, depths exceed 200m. This bay has an uneven bottom with no suitable anchorages, except those off Hamanoichi and Fukuyama; these are only suitable for small vessels.

A submarine cable and water pipeline are laid SW from Shin Shima to Sakura Shima.

Kajiki, a town from which storm signals are shown, lies in the NW part of the bay, 10 miles NE of Siro Yama.

Okiko Shima, 88m high, Benten Shima, 32m high, and Hetako Shima, 124m high, are three islands lying in a N-S direction within 1.25 miles of the shore.

Hamanoichi Hakuchi, an anchorage for small vessels with local knowledge, lies N and E of Hetako Shima.

Makurasaki Ko

Fukuyama Ko is a small harbor situated about 5 miles ESE of Okiko Shima. Local storm signals are shown at Fukuyama.

Okinozunbe, a shoal with a depth of 1.8m, lies 1.25 miles off the NE coast of Sakura Shima.

8.12 Makurasaki Ko (31°16'N., 130°18'E.) (World Port Index No. 62240) is situated on the SW coast of Kyushu, in a position about 13 miles WSW of Kaimon Misaki. The port consists of an outer harbor, with an anchorage, a town, and a small inner harbor entered between two breakwaters. The inner harbor is reported to be dredged to a depth of 4.5m. An outer breakwater projects SW into the harbor, from the S end of the town. A detached breakwater lies close NW of the outer breakwater.

Winds—Weather.—From the end of September to the beginning of June, 70 to 80 per cent of all winds are from the N and NNW. During the remaining months, the winds from the S and SW are the strongest. Local weather signals are displayed at a meteorological observatory on a hill NW of the town.

Depths—Limitations.—An unloading embankment for fishing boats is situated on the N side, with depths from 3.5 to 4.5m alongside. On the S side of the port is a fuel supply embankment, with a depth of 3.5m alongside and Sin Ko embankment, with depths of 4.5m alongside. A fish haven lies 2 miles ESE of Makurasaki Ko.

A berth, 180m in length, has depths alongside of 8m.

Aspect.—The meteorological observatory tower, standing on a hill NW of the town area, and the four television towers on the summit of Kurata Yama, about 4.3 miles N of the port, are good landmarks. A crane, whose top is painted yellow, is situated near the root of the S breakwater and is prominent.

Anchorages.—Anchorage may be taken, in 12.8m, rock covered with sand, in a position with the light on the head of the E breakwater bearing 022°, distance 0.35 mile. However, due to the nature of the bottom, sand over rock, the holding ground is not good.

A comparatively safe anchorage can be obtained in an area E of the N-S line of the S breakwater light when a strong NE wind occurs, and in an area to the W of this line when a strong NW wind occurs.

Dora Shima, with a depth of 0.2m, lies on a shoal within 0.7 mile SE of Okinozunbe.

Inoko Shima dries 1.2m, and lies on a shoal between Doro Shima and the NE tip of Sakura Shima, Nishisemari Bana. Shin Shima, 42m high, lies about 1 mile E of Nishisemari Bana. Io Shima and Nakano Shima are two rocky islets, which are 2.7 and 6m high. The water depth between these rocks is highly irregular. Attention must be paid as there are rocks in this area other than the those mentioned here. Lava, from an eruption reaches down to the shore on the E side of Sakura Shima about 2 miles S of Shin Shima. Hama Shima, is a rock pile, extending about 0.2 mile off the coast part of which dries, 1.2m, and is also located about 2 miles south of Shin Shima. Oki Se, is a rock, with a water depth of 4.5m, located about 2.5 miles ESE of Shin Shima.

8.13 From Kaimon Misaki to Bono Misaki (31°15'N., 130°13'E.), the S coast of Kyushu trends about 16.5 miles WNW and is indented by but one bay of any size, Makurasaki Wan. Then for about 11 miles NNW to Noma Misaki, the coast

is indented by small bays, fringed by numerous rocks.

Tidal currents between Kaimon Misaki and Bono Misaki flow W on the flood and E on the ebb. In calm weather, the Kuroshio and its countercurrent are recognizable, and subsequently the velocity of the flood is increased a bit, but about 2 miles offshore the combined rate is negligible.

Between the entrance of Kagoshima Wan and Bono Misaki, discolored water, caused by fluvial mud and appearing as shoals, may be noticed up to 2 miles offshore.

Akakue Bana (Akakuzure Bana), 123m high, and surmounted by a conspicuous growth of pines, is located about 11.5 miles NW of Kaimon Misaki. Also, near the W side of the point, is a prominent reddish cliff.

Bisanko Iwa, about 0.1 mile W of Akakue Bana, is a conspicuous rock, 18m high, with a somewhat pointed summit. A rock, 2.7m high, lies on the edge of the reefs, about 91m SW of Bisanko Iwa.

8.14 **Kaku Bana** (31°15'N., 130°17'E.) is surmounted by a conical hill, 92m high, named Yamatategami, that shows up well from E. Tategami Se, about 0.2 mile SSE of the headland, is a conspicuous rock.

Bono Misaki is a cliffy headland, which rises to a conical hill, 96m high. A hill, with two summits, about 171m high, lies about 0.5 mile NNE of the headland. Tide rips may be encountered in the offing about 2 miles W of the headland, especially during the W current.

Fuko Shima, 41m high, lies about 0.6 mile NNW of Bono Misaki. Unose Shima, 67m high, lies about 0.8 mile N of Bono Misaki.

Bono Tsu is a small bay which lies on the N side of the promontory of which Bono Misaki is the S extremity. Bono Tsu is unsuitable as an anchorage due to rocks which extend as far as 0.1 mile off the E side of the cove. At the head of the bay is the village of Bo.

8.15 **Minega Saki** (31°16'N., 130°13'E.) is a cliffy point, the W side of which is fringed with reefs and rocks extending up to 0.1 mile offshore. This point rises to Muko Yama, which attains an elevation of 134m and is covered with bushes. Minega Saki appears as an island from sea.

Tomura Ura, close N of Minega Saki, affords protection from all winds except from the SW and W. This bay affords the only suitable shelter in the W approach to Osumi Kaikyo, but its entrance should be identified before thick weather sets in. The coast in the vicinity of Tomura Ura is rocky; its N entrance should be given a berth of at least 0.5 mile because of a group of rocks projecting 0.2 mile SW and 0.4 mile S from it. These rocks form a natural breakwater for the bay. Use Shima, the southernmost of the rocks, is 22m high. Yama Shima, the largest of the group, lies midway between Use Shima and the N shore, and is 37m high. Two coves indent the N and S sides of the bay. At the head of the bay, which is shallow and has a sandy beach, is the village of Tomari. Matsu Shima, 15m high, the NW of a group of rocks close off the S shore of the bay, is located 0.55 mile E of Use Shima.

Anchorage.—Anchorage can be taken, in depths of 17.8 to 24.7m, about 0.4 mile from the head of the bay, with Use Shima open about three times it own width. This anchorage is situated N of Matsu Shima, which lies about 0.5 mile E of Use Shima. Small vessels can obtain better shelter, in a depth of about 15.5m, S of the above area, off the cove of the S side of the bay with the summits of Matsu Shima and Use Shima in line.

8.16 The coast between the N entrance point of Tomari Ura and Noma Misaki, about 9 miles NNW, is rocky and indented in its S part by two bays, namely, Kushi Wan and Akime Wan.

Tsurukui Saki, the NW entrance point of Kushi Wan, is faced with an almost perpendicular cliff and detached rocks extend 0.25 mile W from it. Close off the point is Tategami Iwa, a black rocky islet, 23m high, which is difficult to observe when it is bearing more than 030°. The farthest N of the detached rocks is pointed and 21m high. About 1.5 miles inland from the point is Ima Take, a prominent conical peak, 270m high, the summit of which is covered by trees.

Akime Wan, a small open bay with deep water, is entered between Tsurukui Saki and Oki-akime Shima an island, about 1.8 miles NNW. This bay is also unsuitable as an anchorage. However, small vessels with local knowledge may obtain shelter, except during strong South winds, off a sandy beach on the E shore or off the village of Akime, situated near the head of the bay. A mountain, with a conspicuous radio tower on its summit, is located about 2.5 miles E of Oki-akime Shima.

Oki-akime Shima is connected to the coast NE by above-water rocks and submerged reefs, but elsewhere it is steep-to. Sengan Se, with a depth of 0.3m, lies 1.5 miles WNW of the S end of Oki-akime Shima. A rock, with a depth of 2.7m, lies 0.2 mile N of Sengan Se. Both rocks lie in the track of coastwise shipping. In calm weather, they are usually marked by tide rips and in rough weather the sea breaks heavily over them.

Noma Misaki to Tengu Bana

8.17 **Noma Misaki** (31°24'N., 130°07'E.) is the W extremity of a small peninsula known as Noma Hanto, which from the N appears as an island. A group of radio towers stands on the middle of the peninsula, 0.75 mile NE of its extremity. A light is situated on Noma Misaki.

Ka Se is composed of two prominent rocks about 0.4 mile S of Noma Misaki. The S rock is 18.9m high and its peak is partly white; the N rock is black and low.

The coast 23 miles N from Noma Misaki to Tengu Bana forms a bight. In the S part of the bight are two rocks lying about 5 miles offshore. O Se, the SW rock, is steep-to and has a depth of 2.7m. This rock lies about 4.8 miles NNE of Takasaki Bana (Kosaki Bana), the N point of Noma Hanto. Kuta Shima, located about 3 miles NE of O Se, is somewhat square in shape, barren, and steep-to.

Between Kuro Misaki, the NW tip of Noma Misaki and Takasaki Bana, the coast recedes and forms a bay, at the head of which is Nome Ike, a salt water lagoon. The W shore of this bay is fringed with rocks and the bottom is uneven. Hiro Se, the NW of these rocks is 4.6m high. Kome Shima, a group of islets, lies 0.4 mile E of Hira Se. Close SE of the group is a reef with a depth of 5m.

Caution.—Vessels should not attempt to pass between Kome Shima and the coast S. Reference should be made to the chart for location of the fish haven obstructions in these waters.

A submarine cable lies 1 mile S of Kuta Shima and lands

11.5 miles NE of Kosaki Bana.

8.18 Noma Dake is the summit of Noma Hanto. Its W side is steep, sloping upwards to a peak. When seen from S, the W side appears as a perpendicular cliff.

Takasaki Bana (Kosaki Bana) (31°26'N., 130°10'E.), the N tip of Noma Hanto, is the extremity of a treeless spur. Close off the point is a rock, 4.5m high, conspicuous from, E or W. O Se, a detached 4.5m rock, lies about 0.2 mile N of Takasaki Bana.

Tateba Shima (31°25'N., 130°11'E.), a wooded 76m high islet, lies about 1.3 miles SE of Takasaki Bana. Tateba Shima is steep-to, except on its S side, where it is almost joined to the mainland by shoals. Its NW side is cliffy and its summit has a rugged appearance when seen from seaward. Kamino Shima, located about 0.4 mile NE of Tateba Shima, is a 54m high islet, fringed with small rocks, with a particularly wooded summit. Kannoshima Sone, a steep-to detached 2.7m rock, lies about 0.3 mile NNE of Kamino Shima.

Kazurase Bana (Sakiyamano Bana) is the N extremity of a peninsula which makes up the E side of Kataura Wan. Between Kazurase Bana and Kamino Shima, about 0.4 mile NW, are numerous reefs and rocks, among which are Matsummura Se, 2.1m high, and Naka Se, 4.9m high. Funako Se, comprised of three rocks, that dries 2.4m on its W side, lies about 0.3 mile NE of Kazurase Bana.

8.19 Kataura Wan is entered between Banshono Bana and the NW tip of the peninsula of which Kazurase Bana is the N extremity. The village of Kataura, from which local storm signals are shown, lies close S of Banshono Bana. A breakwater projects about 137m SE from Banshono Bana. Hirayae Yama, which lies on the W side of the bay, attains a height of 219m. The village of Koura lies at the head of the bay.

Anchorage.—With the exception of winds between the NNW and N, Kataura Wan affords shelter from winds from all directions. The islands in the approach prevent the entry of heavy seas; however, squalls descend from the mountains, especially with W winds.

Vessels may obtain anchorage, in a depth of about 18m, off the village of Kataura, with the E extremity of Kamino Shima and Matsugi Saki in line bearing 003°. Small vessels may anchor on the same bearing, with the summit of Hirayae Yama bearing about 240°. However, small vessels utilizing this anchorage should proceed no further S due to shoals in the head of the bay. Most of Kataura Wan, except for the head and the few patches in the middle, provides good holding ground in hard mud.

Directions.—The entrance of Kataura Wan is not easily made out due to the backdrop of high land. However, Tateba Shima is conspicuous and should be approached bearing about 180°. Upon identification of Kamino Shima, vessels should continue S with Tateba Shima open W of that islet to avoid Kannoshima Sone. From abeam of Kamino Shima, a vessel should pass midway between Tateba Shima and Matsugi Saki, and anchor as above.

8.20 Off-lying islands and dangers.—Taka Shima (31°27'N., 129°44'E.), a group of five small islets occupying an area about 0.2 mile in extent, lies about 19 miles W of Noma Misaki and 8 miles N of Tsukura Se. These islets, when seen from the N or S, appear as a group of three. The center islet is shaped like a pillar. The SE has a round summit and the SW islet is triangular and 68m high. The NE islet has two pointed summits and is conspicuous from the NW or SE. Two small rocks are located S of Taka Shima. The rock is located 930m from the group and is 1.9m high. The rock, which is awash at the highest HW is located midway between the rock and Taka Shima. At night, these rocks should be given a wide berth, as various submerged rocks are in the vicinity.

Michiga Saki lies 2.25 miles SE of Kazurase Bana, and between these points is a bight whose NW part contains several islets and reefs. The SE section is comprised of mud flats and sand, which dries.

Shikushi Saki, a small wooded promontory, is located about 1 mile NE of Michiga Saki.

Kimbo Zan, a conspicuous mountain with three summits, lies about 7.5 miles ENE of Shikushi Saki.

8.21 Tosaki Bana (31°40'N., 130°18'E.) is a small, rocky cape about 13m high, on which there are several pine trees. This area of coastline is sandy and intersected by several streams. Minato Kawa empties into the sea, about 2 miles NNW of Tosaki Bana. Kuro Se, a rock 2.4m high, lies about 137m offshore, 0.4 mile NW of the mouth of the Minato Kawa. Reefs, which dry in places, extend about 0.2 mile W from Kuro Se.

Caution.—Vessels navigating in the waters between Kosaki Bana and Tengu Bana, be aware of the fish haven obstructions in this area. Some are situated as far as 10 miles off the coast.

8.22 Naga Saki (31°42'N., 130°16'E.), a prominent point, is located 3.5 miles NNW of Tosaki Bana. This point, which is 4.9m high, is covered with pines and appears black. Reefs project W and S from the point.

Teru Shima, an islet 32m high, lies close inshore on the reef fringing the S side of Naga Saki. The village of Shimabira, which is connected to the islet at LW, is situated on the coast N of Tera Shima.

Mitsu Se is a long narrow reef which extends about 750m NE from a position about 0.5 mile S of Naga Saki.

Caution.—Vessels should not attempt to pass between Mitsu Se and Naga Saki.

8.23 Nomoto Kawa (Gohand Kawa) empties out into the sea about 0.7 mile NNE of Naga Saki.

Hira Se, a large flat rock about 4m high, lies on a shoal that dries. This shoal projects about 0.4 mile from the coast W of the mouth of Nomoto Kawa. A submarine cable lies about 0.5 mile N and 1.5 miles SE of Hira Se.

A breakwater extends 0.5 mile WSW from the shore, 0.3 mile NE of Hire Se. A quay, with alongside depths of 5.5 to 5.7m and used by ferries, has been completed on the NE side of this breakwater. A detached breakwater extends 0.3 mile NNW from a position 0.5 W of Hire Se. A light stands at the S head of the detached breakwater.

A submarine pipeline lies 1.2 miles NE to an area of reclaimed land on the shore.

8.24 Kushikino Ko (31°42'N., 130°16'E.) is primarily a fishing harbor and is entered between two breakwaters. The

port consists of a town, an outer harbor with an anchorage, and a small inner harbor with berthing facilities for small vessels.

Tides—Currents.—The MHW interval at Kushikino Ko is 7 hours 30 minutes; spring tides rise 2.8m and neap tides rise 2.1m.

Depths—Limitations.—The area in the vicinity of the 100m long central quay has been dredged to 3.5m. The end of this pier can accommodate vessels up to 880 dwt.

Aspect.—Conspicuous landmarks include the radio tower on the E side of the harbor, the group of oil tanks on the S side of the basin in the inner harbor, and the breakwater lights.

Contact Information.—The port can be contacted by telephone (81-966-3222-05).

Anchorage.—Shimabira Byochi, the S anchorage in Kushikino Ko, provides protection for vessels with local knowledge from winds between the N and E.

The best anchorage, in a depth of 10.9m, sand, lies with Naga Saki bearing 331° and Kuro Se bearing 095°. Small vessels can approach the W tip of Tera Shima to within 0.1 mile.

A quarantine anchorage is situated about 2.1 miles NW of Kushikino Light.

Directions.—From a position about 1 mile bearing 288° from Kushikino Light, head between the two breakwaters on a course of 102°. However, vessels should take care not to approach within 7m of the heads of either breakwater. Immediately after passing through the harbor entrance, course may be altered to port to proceed to a berth. Rocks, awash at LW extend from 5 to 10m off the E side of the N breakwater. Generally, within the harbor, depths are greater towards the breakwaters.

8.25 Hashima Saki (30°45'N., 130°12'E.) is a prominent headland, 122m high, located about 4 miles NW by W of Naga Saki. Okino Shima, a wooded islet 79m high, lies about 0.7 mile SW of Hashima Saki. Several fish havens lie in the vicinity of Okino Shima. There is a 4m patch, close off the NE tip of the island. Between this patch and Hashima Saki there is a deep channel.

South of Hashima Saki, a W set occurs on the ebb current.

Hashima Ura, on the E side of Hashima Saki, is an open bay whose shores are fringed with drying rocks. At the head of this bay is the village of Hashima. Small vessels with local knowledge may take anchorage sheltered from winds between the W and N, keeping Okino Shima open S of Hashima Saki.

Benzaiten Yama, a conspicuous peak, attains an elevation of 579m about 3 miles NE of Hashima Saki.

Tengu Bana, 3 miles NNW of Hashima Saki, is a promontory, with rocky cliffs, and a thickly wooded summit. About 1.3 miles NNW of Tengu Bana is Kamo Se, a detached steep-to rock, 8.6m high. This rock lies about 0.9 mile offshore and may be passed on either side.

The tidal currents off Kamo Se usually attain velocities from 0.8 to 1 knot, with the flood current setting N and the ebb current setting S.

8.26 Koshiki Retto (Kosikizima Retto) is a group of three islands and a number of islets extending about 20 miles in a SW direction from a position about 12 miles WNW of Tengu Bana. The three islands, from S to N, are Shimo Koshiki Shima, Naka Koshiki Shima (Taira Shima), and Kami Koshiki Shima.

Shimo Koshiki Shima is the largest island and its interior is mountainous. O Take, the summit of the island, is 604m high. This mountain, the highest in the group, is wooded, and its summit when seen from the W appears flattened. From NE or E the summit appears pointed and conspicuous. The N part of the island, N of O Take, is a narrow hilly promontory, that, when seen from the E or W, resembles a chain of islets. The W coast of the island is cliffy and the E side is comprised of a number of sand and gravel beaches.

Shimo Koshiki Shima

8.27 South end.—Tsurikake Saki (31°37'N., 129°41'E.) is a grassy round-topped headland, which is conspicuous from the E or W. Teuchi Saki, the SE tip of Shimo Koshiki Shima, has two round summits, 162m high. Kamino Se, a group of rocks, 5.2m high. A light, with a ramark, stands on Tsurikake Saki and storm signals are shown from it. Kamino Se, a group of rocks 5.2m high, lies about 0.2 mile S of Teuchi Saki. These rocks are steep-to, and the sea breaks heavily against them in bad weather.

Teuchi Wan is entered between Teuchi Saki and the E side of Tsurikake Saki. Shimone Se, a rock 3m high, is located off the W entrance point and narrows the navigable width of the fairway to less than 0.5 mile. The village of Teuchi is situated at the head of the bay.

Tides—Currents.—In the vicinity of Tsurikake Zake, the flood runs W and the ebb runs E. The current generally runs between 1 and 2.5 knots, with occasional tide rips in the offing. In the offing, between Taka Shima and Shimo Koshiki Shima, a SE ebb current of 1 to 2 knots has been reported. In the vicinity of Haya Saki, the flood runs N and the ebb S, at a speed of 1 to 2.5 knots. Tide rips occasionally occur off No Saki, a point 1.25 miles NW of Tsurikake Saki. An islet, 1.2m high, lies close S of No Saki. Haya Saki (31°39'N., 129°40'E.) is a steep, rocky headland, which rises to a wooded peak, and lies 1.5 miles N of No Saki (Nosakino Saki).

Anchorage.—Small vessels with local knowledge may anchor, in 12.8 or 14.6m, sheltered from N winds, in the middle of Teuchi Wan.

8.28 West Side.—The coast between Haya Saki and Kabetachi Bana, about 4 miles NNE, is steep and backed by a number of high peaks. Katano Ura is a small cove, the head which lies about 1.25 miles E of Haya Saki. There is a rock, 4.6m high, about 0.1W of the N entrance point of the cove. Seseno Ura is a small open bay situated NNE of Katano Ura. The bay should not be approached closely, as the sea breaks upon its shore except during E winds. Takanosu, a rock 33m high, lies off the S side of the entrance.

Chu Se, a gray columnar rock, 127m high, is close W of Taka Se Saki, which forms the N entrance to Seseno Ura. This rock is conspicuous from the N or S, but is difficult to distinguish from W due to high ground.

Kabetachi Bana is a steep promontory, located 1 mile NE of Chu Se. On the wooded hillsides in the vicinity of the cape, reddish patches are visible between the trees. Haike Yama, a sharp peak 512m high, is located 1.25 miles ESE of Kabetachi Bana. Yura Shima, which is comprised of two islets, is located

about 3.3 miles ENE of Kabetachi Bana. The E and larger of the two islets is 36m high and upon its summit lies a few pine trees. Ikeya Saki, a group of three islets, lies about 2.5 miles NE of Yura Shima.

Tsubura Saki, the N tip of Shimo Koshiki Shima, is located about 3.25 miles NNE of Yura Shima. This steep promontory rises to Yohagi Yama, a pointed wooded peak, 167m high.

8.29 East Side.—From Teuchi Saki, the coast leads about 2.5 miles NE to Sebi Saki, which rises to a hill, the N side of which is cliffy and wooded. Close off the point is an above-water rock that is only visible from the N.

Esaki Bana is a rocky, rounded headland, 93m high, which is surmounted by several trees.

Nagahama Ura is a small bay entered between Nagahama Saki and a point about 1 mile farther NE. It was reported that a vessel of 5,000 dwt anchored in Nagahama Ura. The best berth in this bay was reported, in a depth of 13m, is situated about 1 mile SW of Oda Yama, which rises to 426m on the NE side of the entrance.

Caution.—Caution is necessary when anchoring due to submarine cables.

8.30 Imuta Ura is a small bay on the S side of Hirase Saki, which is sheltered from winds between the W and N. This bay affords temporary anchorage for small vessels waiting to transit Imutano Seto. When anchoring, care must be taken to avoid submarine cables in the S part of the inlet.

Hirase Saki (31°47'N., 129°48'E.) is the NE tip of Shima Koshiki Shima, and is the extremity of a small peninsula. This point, which has three summits, is bordered by shoals extending up to 0.2 mile offshore in places.

Imutano Seto is the narrow strait which separates Shimo Koshiki Shima from Taira Shima to the NE. This strait which can be navigated by vessels with local knowledge keeping very close to the W side of Okinosegami, a rock, 4.3m high, lying 0.5 mile NNE of Hirase Saki.

Tidal rips and strong tidal currents form on the SE of the NW side of the narrows, depending on the direction of the current. Reefs on either side of the strait reduce the fairway to a width of 0.2 mile. Naka Bae, a rocky patch with a depth of 8.2m, lies in the middle of the narrowest part of the fairway.

Tides—Currents.—At springs, the tidal currents can reach a rate of over 3 knots. The flood runs N and the ebb S with about a 15 minute slack water. The sea breaks heavily with the wind against the current. There have also been periods when the NW or SW current continued to flow all day.

8.31 Naka Koshiki Shima (Taira Shima) (31°48'N., 129°50'E.) is without tall trees; there are patches of grass and brush and also areas of cultivation. Benkei Shima, a conspicuous islet located on a reef which dries, is 49m high and lies 0.2 mile E of the S tip of Naka Koshiki Shima. A lone pine tree stands atop the summit of the islet. About 137m E of Benkei Shima is another islet, 28m high.

The tidal currents off Benkei Shima run N on the rising and S on the falling tide, at a speed of about 1 knot. There are periods when the N or S current may continue all day long.

Anchorage.—Taira Ura affords temporary anchorage sheltered from all winds from the N, through the W, to S. On the S shore of the bight is the village of Taira, behind which is a large conspicuous temple. Shoals extend as far as 0.13 mile off the E and S sides of Taira Ura and as far as 137m off its head.

Eishi Ura, on the E side of Nakakoshiki Ura, affords anchorage in its central part, but submarine cables greatly reduce the available anchorage space. The interior of Eishi Ura is fringed with rocks within about 0.1 mile offshore.

Caution—There is considerable foul ground between Naka Koshiki Shima and Kami Koshiki Shima to the N, and large vessels cannot pass between these two islands. Naka Shima, the larger of the two islands on the above foul ground, lies SW of Kushi Saki, to which it is joined by drying rocks. Naka Shima is densely wooded and has a flat summit. The passage between the S side of Naka Shima and the N tip of Naka Koshiki Shima is completely blocked by a gravel bank which dries, on which is Maruyama Shima, a bare round-topped islet. Soemon Se, a 9.1m rocky patch, is located about 0.2 mile NNE of the W extremity of Naka Shima and about 0.15 mile off its N side.

Kami Koshiki Shima is the NE of the main islands which comprise Koshiki Retto. This island is mostly irregular in shape and hilly. Several small bays indent the NE side, and on the SW side are Nakagawara Ura and Nakakoshiki Ura.

Taira Ura, the bight on the W side of Nakakoshiki Ura, is entered close N of Ya Saki.

8.32 Kayamuta Saki (31°48'N., 129°53'E.), the cliffy S extremity of Kami Koshiki Shima, is the S entrance point of Nakakoshiki Ura. Close off this point is a large black rock, 31.7m high. From this rock, a sunken reef extends about 137m S to Kajikake Se, a rock, which dries 2.4m.

Ko Shima, a wooded islet 20.7m high, lies off the SE side of Kuratsuma Saki, about 350m offshore.

Kuratsuma Saki, on the E side of Nakakoshiki Ura, lies about 1.5 miles NNW of Kayamuta Saki.

Nakakoshiki Ko (31°50'N., 129°52'E.), situated at the head of Nakakoshiki Ura, is entered between two breakwaters. Nakakoshiki Ko is exposed to S winds, but good anchorage may be taken in its middle part; the best berth, in 11m to 12.8m, is about 0.5 mile SW of the village.

Tidal currents near the entrance of Nakakoshiki flow N on the rising tide and S on the falling tide. Off Kayamuta Saki the current attains a speed of 1 to 1.5 knots. There are times when the N or S current runs all day.

Nakagawara Ura, situated on the SW coast of Kami Koshiki Shima, is entered between Kuchinose Saki and Kushi Saki, about 0.7 mile SE. Soemon Se, on the S side of the approach, is a steep-to detached rock with a depth of 9.1m, located about 0.1 mile off the N shore of Naka Shima. Nakagawara Chume, an isolated rock, with a depth of 5m, lies about 0.2 mile off the E shore of Nakagawara Ura, 0.6 mile N of Kushi Saki.

Nakagawara Ura, from its entrance, leads 1.25 miles N, and then branches off Unose Bana into two parts, Kuwano Ura, the N part and Oshima Ura, the E part. The S part of the E shore of Nakagawara Ura is fringed with reefs which project about 0.1 mile offshore. Kotatsumaru Shima, 18m high, lies close off the W shore of Nakagawara Ura, 0.35 mile N of Kuchinose Saki. A rock, that dries 0.9m, lies close of the E side of the islet. The village of Kuwanoura is situated on the W shore of Kuwano Ura.

Anchorage.—There is a safe anchorage in Nakagawara Ura, which is situated about 1 mile N of Kushi Saki, in a depth of

Photo Courtesy Japan Coast Guard

Sendai Ko

about 25.6m. Small vessels can anchor, in a depth of 27m, on the W side of the entrance to Oshima Ura or off the village of Kuwanoura, in depths of 16.5 to 18.3m.

A phenomenon, locally known as Abiki, occurs in this region during spring and summer. This condition, where the level of the sea rises 0.6 to 0.9m and then falls to normal, may take place when there is a heavy sea in the offing, or before or after rough weather.

The NW coast of Kami Koshiki Shima from Kuchinose Saki, leads about 1.8 miles NNW to Hirase Saki, and then 1.5 miles NE to Nawase Bana, the NW tip of the island. Sakuiba Se, 2.4m high, is the outermost of the rocks which lie off Nawase.

Tidal currents about 2 miles N of Nawase Bana set E on the flood and W on the ebb, velocity not exceeding 1 knot.

Tomiyama Hanto is the peninsula forming the NE tip of the island and lies about 4 miles ESE of Nawase Bana. Nishino Ura is a small bay whose shores are mostly gravel. The bottom in the middle of this bay is rocky. Higashino Ura, 1.5 miles S of the NE tip of Tomiyama Hanto, is situated on the E side of the peninsula. This bays N part has a bottom of primarily coral.

Koshiki Kaikyo

8.33 Koshiki Kaikyo is the strait lying between Kami Koshiki Shima and Tengu Bana, on the mainland about 12 miles E. The main channel through the strait is about 6 miles wide between Kamo Se, the 8.6m islet NNW of Tengu Bana, and Naka Se, a shoal lying nearly in the center of the strait.

Naka Se, consists of two rocks, the highest of which is 4.3m high. Close off the N and S sides of Naka Se are rocks with depths less than 1.8m. About 0.2 mile S and 0.6 mile SW of Naka Se are rocks with depths of 8.6 and 7.7m, respectively, the latter being steep-to. Heavy overfalls occur in the vicinity of the above dangers, even with only a light wind.

Kurogami Iwa, a conspicuous black rock located in the W portion of Koshiki Kaikyo, about 2.8 miles NW of Naka Se, is 15.9m high. Kurogami Iwa has a pointed treeless summit and is fringed by submerged rocks on all but the W side.

Tides—Currents.—On the E and W sides of Naka Se, the flood current sets N and the ebb S, turning from 1 to 2 hours after HW and LW at Nakagawara Ura. The current reaches a maximum velocity of 1.5 knots off Naka Se. In the center part of Koshiki Kaikyo, during August and September, a current has been observed. Near either side of the channel, the combined velocity of this current and the S tidal current has been found to be as much as 2.5 knots. However, in the center of the channel, the tidal current velocity was less. Tide rips occur E and W of Naka Se.

Directions.—The fairway through Koshiki Kaikyo lies E of Naka Se and should be used instead of that channel W of Naka Se. Koshiki Kaikyo should be, if possible, avoided altogether in thick weather.

Caution.—Vessels should never attempt to pass between Kurogami Iwa and Kami Koshiki Shima, for numerous islets and rocks lie between them, and at times heavy tide rips are formed.

8.34 Okino Shima, 43m high, is a densely-wooded islet lying about 1.1 miles SW of Kurogami Iwa. The E side of the islet has a steep brown cliff which is conspicuous from the E.

Numerous islets and submerged dangers lie between Okino Shima and the E side of Tomiyama Banto. The largest of these islets are Futago Shima, 59m high; No Shima, 95m high; and Chika Shima, 94m high. Vessels heading N through Koshiki Kaikyo at night, or in restricted visibility, should, after having accurately determined its position, take care to avoid being set W by the S current when S of Hashima Saki. When about 4 miles S of Naka Se, vessels should change course to the E to avoid these rocks if depths are found to be greater than 54.9m.

Kyushu-Tenga Bana to Nagasaki Hanto

8.35 The stretch of coast, about 52 miles NNW, between Tengu Bana and Noma Misaki, the SW tip of Nagasaki Hanto, forms a large gulf. This gulf is separated into two sizable inlets by a chain of islands and islets.

Yorita Saki lies 1.25 miles N of Tengu Bana and its summit is thickly wooded. Yoseda Kawa empties out into the sea on the N side of the point of Yorita Saki. Depths of less than 5.5m which project about 0.4 mile offshore and sandbanks that dry, can be found along this section of coast, NNE from the E entrance point of Yoseda Kawa, to the mouth of Sendai Gawa. The N side of Sendai Gawa is formed by a training wall about 2 miles long. Sendai Gawa can be ascended by small craft for about 30 miles. With a wind, the sea breaks right across the entrance, especially during the falling tide. Small craft entering should do so on the flood tide if possible. The discharge from the river gives to the surface water within about 1 mile of the entrance a pale indigo color, which is quite distinct from the dark indigo of the sea in the offing.

8.36 **Sendai Ko** (31°51'N., 130°12'E.), situated off the N side of the mouth of Sendai Kawa, N of the training wall, is divided into an inner and outer harbor. The inner harbor provides a basin for small vessels. The outer harbor is protected by a detached breakwater about 0.5 mile long; a light is shown from the E end of the breakwater.

The approach can be made from the N or S of the detached breakwater, in depths of 8 to 9m.

There is a dolphin berth, 70m long, in the outer harbor, which can accommodate tankers up to 7,700 dwt, with depths of 8.4 to 9.6m.

The channel to the inner port is situated N of the training wall. This channel, with depths from 3 to 5m, is used by small vessels with local knowledge, and leads to a quay within the inner port.

Hachiware, a rock with a depth of 0.8m, lies about 670m WNW of Sendai Ko Light. A sunken rock, with a depth of 2.5m, lies about 100m SSE of Hachiware.

Tides—Currents.—From the mouth of Sendai Gawa and the island of O Shima about 11 miles N, the N tidal current flows from about 2 hours after LW, until about 2 hours after HW. The S current flows from 2 hours after HW until 2 hours after LW. The velocity does not exceed 1 knot.

Aspect.—Landmarks include the chimney with an elevation of 206m in the industrial area and Tsukiya Yama. Tsukiya Yama, a conspicuous round-topped hill, rises to an elevation of 160m close to the N bank of Sendai Gawa, about 1.3 miles E of the N entrance point; there is a reddish patch on its W side.

Pilotage.—Pilotage is not compulsory. Pilots from Kagoshima City board in approximate position 31°51.2'N, 130°09.5'E.

8.37 **Tate Yama** (31°54'N., 130°14'E.) is a conspicuous conical hill, 138m high; with a clump of fir trees on its summit. Fish havens lie 3 miles SW, 1 mile WNW and 2 miles NW of Tate Yama.

The coast leads N from the mouth of Sendai Gawa about 8.8 miles to Sakata Saki. Sakata Saki is a small peninsula, 69m high, that ends in a vertical cliff. Ushi Se, a rock 5.5m high, lies about 1.8 miles SE of Sakata Saki. Within 1 mile either side of Ushi Se, sunken reefs project about 0.5 mile offshore.

Akune Byochi provides an anchorage for small vessels, and lies on the N side of Kuratsu Saki, a 42m headland which lies 1.5 miles N of Sakata Saki.

O Shima, located on the W side of Akune Byochi, is 45m high. Numerous reefs, one of which is awash, lie within 0.4 mile S and 0.25 mile SE of O Shima. The entrance channel to the anchorage within Akune Byochi trends between the SE edge of the above reefs and the reefs projecting from Kuratsu Saki.

Kuwa Shima, 63m high, is heavily wooded and lies about 0.3 mile N of O Shima. Between these two islets there is a reef on which are several above-water rocks. A lighted buoy is moored off the N extremity of Kuwa Shima; fish havens lie close W and about 0.5 mile NE.

Akune Byochi is protected from the N by an extensive shoal flat, with depths less than 5.5m, which projects from the NE side of O Shima E to the shore. Ko Shima, 51m high and Moto Shima (Hon Shima), 14m high, lie on the E part of this bank among several other rocks.

8.38 **Akune Ko** (32°01'N., 130°11'E.) is situated in the SE part of Akune Byochi at the mouth of the Takamatu Kawa. This port is entered between two breakwaters and is divided into an inner and outer harbor. A light stands at the head of both breakwaters. A detached breakwater lies 0.5 mile NW of the W breakwater.

Tides—Currents.—Tidal currents in the channel between O Shima and Kuratsu Saki attain a velocity of about 1 knot. Near the NW tip of Kuwa Shima the S current is influenced by the strong flow from Kuro Seto and a velocity of about 2.3 knots may be attained, however, the N current is very weak.

Aspect.—Two radio towers, the NW marked by neon lights situated NE of the inner harbor, are good marks. A group of buildings, about 0.5 mile E of the W breakwater light, also forms a conspicuous landmark.

Anchorage.—Small vessels with local knowledge can take the anchorage outside of the breakwaters in Akune Byochi sheltered from all but SW and NW winds, in depths of 5.5 to 10m, sand.

Directions.—The main channel to Akune Byochi is between O Shima and Kuratsu Saki. Small vessels from the S with local knowledge head for the center of Moto Shima on a course which passes about 100m E of Kajikake Lighted Buoy (32°00.5'N., 130°10.5'E.).

The coast N 2.25 miles from Moto Shima leads to **Se Saki** (32°04'N., 130°11'E.), and forms a bight called Wakimoto Ura. This bay provides anchorage for small vessels with local knowledge sheltered from W and N winds, in a depth of about 4.6m. On a drying flat at the head of Wakimoto Ura is Tera Shima, an

islet 43m high. At the head of the cove, NE of the islet, is the village of Wakimoto, where local storm signals are shown. Reference should be made to the chart for the location of the fish havens in these waters. Seaweed and pearl cultivation facilities are installed along the shores inside this cove.

8.39 Kurono Seto is the channel leading between the mainland and Naga Shima, and then continues into Yatsushiro Kai.

Caution.—Hira Se, on the S side of the seaward approach to Kurono Seto, is 0.3m high, and lies on the outer edge of foul ground, which projects about 0.4 mile offshore.

Tatara Shima, 28m high, lies on the N side of the approach to Kurono Seto. The N side of Tatara Shima is connected to the S end of Naga Shima by rocky ledges and gravel banks, most of which dry. Sone Se, a rock, on which there is a depth of about 0.2m, and Kone Se, a 4.6m shoal patch, lie about 0.32 mile S and 0.74 mile SE of the S end of Tatara Shima.

Naga Shima lies across the seaward entrance to Yatsushiro Kai and is separated from the mainland SE by Kurono Seto. The E side is fairly high and undulating, but the W side is more even and cultivated in places. Gionin Dake (Gyonin Take), a conspicuous peak, with a heavily-wooded summit, 394m high, rises a little N of the middle of a range of hills that extends in a N and S direction through the island. The summit of the island lies about 1.5 miles S of Gionin Dake.

Naga Shima—South and West Sides

8.40 Southwest and west sides of Naga Shima.—Nagasaki Bana is the low SW tip of Naga Shima, which lies about 3.25 miles NW of the S end of the island. Maru Yama, a prominent hill, 183m high, lies about 0.5 mile NNW of the N tip of Tatara Shima. A conspicuous group of pine trees surmount a 189m hill, about 0.8 mile NE of Nagasaki Bana.

From Nagasaki Bana, the W side of the island leads about 3.5 miles NNW to U Saki, a headland on the E side of the S part of Nagashima Kaikyo.

Gesu Shima (32°11'N., 130°02'E.) is a horseshoe-shaped island which lies close off the S end of Amakusa Shimo Shima and forms the W side of Nagashima Kaikyo. Gesu Shima rises to a conspicuous wooded summit, 129m high. A light stands at the head of a breakwater close W of the island. Satsuki Ura is entered on the S side of Gesu Shima between O Saki and Futako Saki, about 1.3 miles W.

Futago Shima (Futako Shima, close off Futako Saki, is comprised of two islets, of which the N is 33m and the S is 31m high and conspicuous, being marked by a single pine tree on its summit. A few above-water rocks lie S of these above islets, the southernmost of which is 4m high.

Gan Se, about 1 mile S of Futako Shima, is a small reef on which the highest and westernmost rock is 13m high.

Tsuki Shima (Tsukino Shima), which lies close off the E entrance point of Satsuki Ura, is 65m high and has several dangerous rocks close S which are usually marked by breakers. Kuro Se, the southernmost of these rocks, has a depth of 1.2m. About 0.4 mile NE of the E tip of Tsuki Shima is Oko Se, an islet 15m high, from which reefs and shoals extend, about 0.2 mile S and E.

Hoga Shima, close off the E coast of Gesu Shima, is 50m high and lies 0.3 mile N of Oko Se. A detached reef, with a depth of 6.5m that is generally marked by tide rips, lies about 0.2 mile E of the N tip of Hoga Shima.

Ushi Shima, 56m high, lies close off the E side of Gesu Shima, with its SE tip about 0.3 mile NNW of the N end of Hoga Shima. Between these two islands are several sunken rocks.

Shelter can be obtained by small vessels with local knowledge between the above islets and the E shore of Gesu Shima.

Tairo Sho, a detached patch with a depth of 14.6m, lies 0.7 mile E of SE extremity of Ushi Shima.

Idoi Ze, about 0.5 mile E of the NE tip of Gesu Shima, consists of two above-water rocks which can be passed on either side.

8.41 Ushibuka Ko (32°12'N., 130°02'E.) (World Port Index No. 62260) is a fishing port situated between the N side of Gesu Shima and the S tip of Amakusa Shimo Shima. This harbor also affords temporary shelter for vessels awaiting the tides in Nagashima Kaikyo. Ushibuka Ko is entered between Tokko Se, a 3.7m rock close off the NE end of Gesu Shima, and Daibano Bana, a headland about 0.6 mile N. Reefs project about 0.3 mile S and SE from Daibano Bana. On the W side of Daibano Bana there is a basin protected by three breakwaters, one of which is detached. Depths in the harbor may be as much as 7m less than charted.

Winds—Weather.—For the most part, throughout the year the N winds are most frequent. However, during winter months winds from the W to N prevail; and summer E to S winds prevail.

Local weather signals are displayed from a signal station on a hill, 60m high, about 0.3 mile SW of Daibano Bana.

Tides—Currents.—The MHW interval at Ushibuka Ko is 7 hours, 48 minutes. Spring tides rise 2.5m and neaps rise 2.1m.

In the vicinity of Ushibuka Ko the current flows NE on the rising tide and SW during the falling tide. Due to the many small islands and dangers in this general vicinity the current tends to be complicated.

During the rising tide, the main tidal current flows midway between O Shima and Kata Shima, then S of Gesu Shima and joins the tidal current in Nagashima Kaikyo. A secondary tidal current, after passing between O Shima and Kata Shima, flows toward Kuro Shima, where it divides and flows E and W of the latter island. The tidal current flowing E of Kuro Shima joins the tidal current in Setowaki Seto and attains a rate of nearly 5 knots.

Aspect.—Tomi Yama, nearly 0.5 mile NW of Daibano Bana, is 216m high and conspicuous. A silver-gray iron framework radio tower, 15m high, stands on the summit of Tomi Yama; two red obstruction lights are shown from the top of the tower. Some oil tanks near the N end of Gesu Shima are conspicuous. A meteorological station, N of the NE entrance point of the inner harbor, is also conspicuous.

Anchorages.—Ushibuka Ko is well-protected, but the area available for anchorage is small. Anchorage can be taken, in 22.8 to 25.6m, NW of Idoi Ze; small vessels with local knowledge can anchor closer to the head of the harbor.

Anchorage has been obtained, outside the harbor limit, with Daibano Bana (32°12'N., 130°02'E.) bearing 295°, distant about 0.5 mile, in which position the holding ground was found to be good, and the effect of the tidal current small. Anchorage

can be taken in Kutama Ura, in depths of 22.9 to 25.6m, with Idoi Ze bearing 154°, distant 0.75 mile.

Directions.—Vessels approaching Ushibuka Ko should pass about 1.3 miles E of Hoga Shima. When Katsu Saki, the E entrance point of Kutama Ura, bears 315°, steer for it on that heading. When Daibano Bana bears 295°, alter course for that point in order to pass between Idoi Ze and the reefs extending off Katsu Saki. Vessels should then alter course for the harbor and anchor as directed above.

Kutama Ura is an inlet located just outside of the harbor limits of Ushibuka Ko and is entered between Diabano Bana and Katsu Saki, about 0.7 mile E. The shores of this inlet are fringed with shoals and reefs extend S from Katsu Saki. A rock, 0.9m high, is located near the S end of the reefs which project S of Katsu Saki. There is a breakwater on the E side of the inlet. Reclamation is in progress along the W side of the inlet.

Caution.—The approaches to Ushibuka are known to have a high number of collisions between, and the stranding of, small boats. Many marine incidents involve fishing vessels as well.

Amakusa Shimo Shima—Southwest Side

8.42 Amakusa Shimo Shima represents the largest island on the SW coast of Kyushu. This island, which is located between Nagashima Kaikyo to the S and Hayasaki Seto to the N, is very hilly and its coasts are rocky.

Suguchi Ura, a small bay almost completely blocked by shoals, is entered between Nagateno Bana (32°11'N., 130°01'E.) and Tsuru Saki, about 1 mile W. Kuro Shima, 76m high, is located on the E side of the entrance. Hira Se, a group of rocks which dry, lie on the E side of the S approach to Suguchi Ura. These rocks project off the SW side of Gesu Shima. A breakwater has been constructed from the NE extremity of Gesu Shima, it extends N for approximately 250m. A light is shown from the head of the breakwater. A wharf built on reclaimed land is situated 0.2 mile E of Kuro Shima. A breakwater extends 30.5m WNW from its head. A lighted buoy marks the limit of a reef extending S from Kuro Shima.

Kata Shima, 65m high, lies about 2 miles SW of Hira Se. Reefs extend about 0.19 mile from its S and 0.47 mile from its N end. Kasa Se, a rock, which dries, 0.3m, lies about 1 mile N of Kata Shima. Several rocks, some of which are above-water, lie between Kata Shima and Kasa Se.

O Shima is located about 2.25 miles N of Kata Shima and is 67.4m high. Reefs and shoals extend about 0.25 mile offshore, except on its SW side where they project as much as 0.45 mile offshore. Hira Se, not to be confused with the group of rocks of the name off Gesu Shima, consists of two flat-topped rocks about 2.1m high and lies on a detached reef, about 0.75 mile SW of the S end of O Shima.

Gongen Dashi, a detached shoal with a depth of 3.2m, lies about 0.3 mile E of Hira Se. Nakano Se, a group of rocks, the highest and northernmost being 34.8m high, lies about 0.8 mile WSW of NW tip of O Shima. Two patches with depths of 1.8 and 6.4m, lie about 0.35 mile N of Nakano Se. Okino Se is a rocky islet 21m high, surrounded by rocks and lies about 0.5 mile WSW of Nakano Se. About 0.25 miles SSW of Okino Se is Kujira Baye, a group of rocks which dry 1.5m, lie on a detached shoal about 0.3 mile SW of Okino Se.

Kuwa Shima, about 0.9 mile N of O Shima, is 75m high. Nakae Se, a detached rock, which is located midway between O Shima and Kuwa Shima, has depths of less than 0.4m. Kuwa Shima is impassable to the E due to a large number of reefs between it and Amakusa Shimo Shima.

Caution.—Due to the presence of many islets and dangerous rocks along the S coast of Amakusa Shimo Shima mariners should exercise particular care during poor visibility. The channels between these islands and rocks are used primarily by local fishing vessels and vessels who are without local knowledge should avoid them.

8.43 Oniki Wan is entered between Kuwa Shima and Oniki Saki, a steep-to headland about 2 miles N. Tomi Dake, a conspicuous dark hill, 224m high, lies close E of Oniki Saki. The shores of this small bay are mainly rocky and fringed with reefs.

Okinohira Se is a flat rock, about 1.2m high, which lies in the middle of the bay about 1.25 miles NE of Kuwa Shima. This rock, which breaks in any sea, has drying reefs extending about 0.25 mile W of it and a detached rock about 0.15 mile S. A rock that dries, 1.5m, lies 0.25 mile E of Okinohira Se.

Aka Shima, 48m high, lies on the N side of the bay about 0.75 mile ESE of Oniki Saki. Reefs extend SW and SE from it. Gongen Yama, at the head of the bay, rises to a height of 402m.

Oniki Ko is situated in the NE part of the bay and fronts the village of Oniki. Within the port is a small boat basin enclosed by two breakwaters. There is a wharf N of this basin formed by reclaimed land from which two piers project. These piers have reported depths (1974) at their heads of 7m. Vessels up to about 1,000 gt can be accommodated at the coal-loading facilities.

Anchorage.—Entry to Oniki Wan should not be attempted without local knowledge due to the many reefs and shoals.

The anchorage for general shipping is situated NE of Okinohira Se, in a depth of 25m, gray clay and fine sand, good holding ground. The anchorage space here is restricted by the numerous shoals in the bay. The depth of water is comparatively shallow; it is reported as being insecure when the wind and sea are from the SW to W.

The anchorage nearest the coaling piers in Oniki Wan is in about 11m, sand, but the space is very limited and local knowledge is essential.

Directions.—Because of the numerous reefs and shoals vessels should not attempt entry without local knowledge. Gongen Yama, bearing 085°, leads between the dangers in the outer part of the bay.

Amakusa Shimo Shima—West Side

8.44 West side of Amakusa Shima.—Sakitsu Wan is entered between **Kurose Saki** (32°18'N., 129°59'E.) and an unnamed point about 1.25 miles S. The outer and central parts of Sakitsu Wan are joined, about 2 miles E of Kurose Saki, by a narrow channel, in the fairway of the approach to which the least depth is 8.2m. The central and inner parts are separated by Onizukano Hana, 1 mile further E. A reef, on which there are several above-water rocks, extends about 0.1 SSW from Kurose Saki. The N side of Sakitsu Wan is indented by two coves, named from W, Ikusaga Ura and Sakitsu Ura. Ikusaga

Ura is shallow and used by small craft with local knowledge. Sakitsu Ura partially dries at LW, but there is usually heavy junk traffic in its outer part. On the W shore of Sakitsu Ura is the village of Sakitsu, where there is a prominent church. There is a conspicuous lighthouse on top of Naruseno Bana on the E arm of the entrance to the inlet.

Kamena Ura is located on the S side of the outer part of Sakitsu Wan. A shoal projects from the W entrance point of Kameno Ura leaving a channel utilized by small craft.

Ogamuseno Bana is located on the N side of the channel separating the outer and central parts of Sakitsu Wan. On the N side of this channel is a submerged rock, with a depth of 3.2m.

Onizukano Hana (32°18'N., 130°03'E.), a long promontory which projects about 0.5 mile N from the S shore, divides the inner part of Sakitsu Wan (Sakitsu Naiwan) into two anchorages. The better of the two anchorages lies between Onizukano Hana and Ogamuseno Hana, with depths of 10 to 23.8m. Ko Shima, a 23.5m islet, lies in the N section of this anchorage.

Hayano Ura is that part of Sakitsu Wan SE of Onizukano Hana. Inu Se, a flat rock, which dries 3m, lies nearly in the middle of Hayano Ura about 0.8 mile SSE of the extremity of Onizukano Bana. Takeno Saki, about 0.3 mile E of Onizukano Hana, is the E entrance point of Hayano Ura.

Anchorages.—Sakitsu Wan provides anchorage in its outer section, in depths of 12.8 to 18.3m, but it is exposed to SW winds and there is usually a swell. Sakitsu Ura affords sheltered anchorage in its S part, in depths of 5.5 to 12.8m, but it is usually crowded with native craft.

Kurose Saki to Shiki Saki

8.45 Kurose Saki to Shiki Saki.—Oe Ko, a small fishing harbor, is entered between Kurose Saki and a point about 0.75 mile NNW, from which drying reefs project. Shimabara Se, the southernmost of these, dries 2.1m.

Koga Se is a prominent group of rocks located about 2 miles NW of Kurose Saki. Two of these rocks are pointed, the highest being 27m. O Sone, a detached 3.2m rock, lies about 0.1 mile S of the group. About 0.1 mile N of the group is a rock with a depth of 1.8m.

Gotsu Yama (32°17'N., 130°02'E.) and Kurose Saki, in range 110°, leads about 0.1 mile S of O Sone.

Oga Se, a group of above-water rocks, located about 1.5 miles N of Koga Se. The highest and easternmost of these rocks, is about 35m high.

Arao Dake, a conspicuous dark peak, rises to a height of 342m, about 3 miles N by W of Kurose Saki.

Takahama Ura, which provides shelter for small vessels, lies about 2.5 miles NE of Oga Se.

Shimotsufukae Ko is a small harbor protected by a breakwater situated about 2.5 miles N of Takahama Ura. However, due to extensive rocks in its approach it can only be entered in calm weather with local knowledge. A lighted beacon stands close SW of an area of reclaimed land; its protecting breakwater lies 3.2 miles NNE of Shimotsufuka Ko Breakwater Light. The coast N, about 6.25 miles to Shiki Saki is fringed by rocks and shoals projecting as much as 0.3 mile offshore in places.

8.46 Shiki Saki (Unose Saki) (Kakise Saki) (32°32'N., 130°01'E.) is the W tip of Tomioka Hanto and the NW extremity of Amakusa Shimo Shima. Fuka Se, with a depth of less than 1.8m lies about 1.75 miles SE of Shiki Saki. Byobu Se, a detached rocky shoal with a depth of less than 1.8m, lies about 1.25 miles SE of Shiki Saki.; a detached 2.1m patch lies about 0.15 mile NE of this shoal. Several fish havens lie close offshore between Takahama Ura and Shikisaki Misaki.

Tomioka Wan is an open bay on the E side of Tomioka Hanto. The E shore of the bay is fringed by a shoal bank. Tomoe Saki is situated at the tip of a low, sandy spit about 0.5 mile long which projects S from the E extremity of Tomioka Hanto.

Yagata Sone and Tume Sone, with depths of 3.3 and 3.6m, lie, respectively, about 0.35 mile NE and 0.5 mile ENE of Tomoe Saki.

Tomoe Ura lies on the W side of the above sandy spit, and the channel leading into it has depths of 4.6m. In its N part is a detached rocky shoal with a depth of 1.2m.

Tomioka Ko (32°32'N., 130°02'E.), a small port situated on the E side of Tomioka Hanto within Tomoe Ura, consists of a town with berthing facilities for small vessels.

Tomura Ura is protected from swells during strong NW winds. Local weather signals are shown from a sandy hill near the middle of town. Several pine trees stand on the low sandy spit that forms the E side of the harbor.

There is open anchorage E of Tume Sone, in a depth of 10m. Vessels entering the harbor pass close E of the lighted buoy marking Tume Sone and then pass close S of Tomoe Saki.

Nagasaki Hano—Southwest Side

8.47 Nomo Saki (32°34'N., 129°44'E.) is the SW extremity of Nagasaki Hanto. Gongen Yama, 214m high, is a conspicuous peak, located on this point. A large number of dangerous rocks fringe Nomo Saki within 500m, including Otategami, which is 26m high and conspicuous.

Nomo Ura is entered between Nomo Saki and the S tip of Kaba Shima about 2 miles SE. This bay's NE shore is fringed with reefs extending about 0.2 mile offshore in places. Waki Misaki is the end of a sandy spit which projects about 0.65 mile SSE from the NE part of his bay. Waki Misaki is marked by a wooded hill, 51m high, from which local weather signals are shown.

Kaba Shima is located about 12 miles W of Shiki Saki and lies close S of the S end of Nagasaki Hanto. Kabashima Suido separates Kaba Shima from Nagasaki Hanto. This island rises to several steep hills, about 128m high, and is conspicuous from W and SW. Kabuto Se (Kono Se) is 1.2m high, and lies about 0.35 mile NE of the NE tip of Kaba Shima. Kajikake, a reef with depths of less than 1.8m, lies within 0.4 mile NW of the NW side of the island. Kai Se, a sunken rock, lies about 0.1 mile S of the S tip of the island.

Kabashima Suido is a passage, about 0.15 mile wide, between the N side of Kaba Shima and the S end of Waki Misaki. Nearly in the middle of the E end of the passage is Naka Shima, an islet 39m high, which reduces the navigable width to less than 0.1 mile. At its shallowest part Kabashima Suido has depths of 8.2m.

There are overhead cables suspended across Kabashima Suido. The cable between Kabashima and Waki Misaki has an overhead vertical clearance of 20m. A breakwater connects Naka Shima to Kaba Shima. A submarine cable is laid across

Kabashima Suido.

Wakimisaki Ko, protected by breakwaters, lies on the E side of the peninsula that terminates at Wakimisaki. The S side of Wakimisaki Ko is formed by a low point, with Benton Shima, a conspicuous islet 42m high, and some rocks within about 0.15 mile E of its extremity. Hire Se is the easternmost of the above rocks; two detached breakwaters project NE and SW from it.

The village of Wakimisaki lies on the W side of the harbor; about 0.2 mile NW of the village is a conspicuous red house.

Anchorage.—Vessels with local knowledge can anchor in Wakimisaki Ko, in depths of 9.1 to 14.6m, N of Hire Se or, in about 18.3m, E of Hira Se.

Directions.—Vessels approaching Wakimisaki Ko from W should round the S and SE extremities of Kaba Shima at a distance not less than 0.2 mile. They should then pass E of Kono Se prior to lining up for anchoring.

Yatsushiro Kai

8.48 Yatsushiro Kai is the southernmost of the inlets which indents the W coast of Kyushu. Yatsushiro Kai is bounded on the E by the mainland coast and on the W by the E coasts of Naga Shima, Amakusa Kami Shima, and several smaller islands.

The main seaward entrance to Yatsushiro Kai is via Nagashima Kaikyo and its continuation Hachiman Seto. Kurono Seto is the narrow S entrance from sea into the S end of the inlet.

The primary passage between Yatsushiro Kai and Shimabara Wan, the large inlet to the N, is Zozono Seto and its continuation Misumino Seto. However, while the fairway of these channels provide ample depths in their narrower parts, the tidal currents are strong. The next best passage between Yatsushiro Kai and Shimabara Wan leads through Otono Seto, Yanagino Seto, and Michigoeno Seto, but it is more tortuous and narrow than the primary one.

Vessels utilizing Nagashima Kaikyo and Hachiman Seto for entry or exit of Yatsushiro Kai should do so at or near SW to avoid difficulties with tidal currents.

Tides—Currents.—In Nagashima Kaikyo and Hachiman Seto, the current flows N from 1 hour after LW in Yatsushiro Kai to 1 hour after HW there, and the S current flows from 1 hour after HW to 1 hour after LW.

The tidal current, except in the vicinity of Yanagino Seto, flows in a general N direction on the flood and in a general S direction on the ebb, with the turn occurring within 1 hour after HW or LW.

Tidal currents greater than 6 knots have been observed NW of Naruse Bana (32°13'N., 130°06'E.).

8.49 Kurono Seto is the S seaward entrance to Yatsushiro Kai between the mainland coast on the SE and the SE side of Naga Shima. Depths within the fairway are not less than 18.3m and it is only about 0.13 mile wide in places. Tidal currents are so strong that vessels can pass through Kurono Seto only at or near slack water.

No Se, which is 0.9m high, lies on the W side of the S part of Kurono Seto about 0.35 mile E of Tatara Shima. No Se is almost joined to the coast to the N by reefs, and from it a spit with depths less than 5.5m projects about 0.15 mile S. Fuchinosiri is a rock which dries 0.3m, and lies about 0.13 mile NE of No Se. Kasa Se, which dries 3m, lies on the W side of the channel about 1 mile NNE of No Se.

Kajiori Saki lies on the E side of the channel about 1.25 miles NE of No Se. An overhead cable, with a vertical clearance of 30m, and a bridge, with a vertical clearance of 24m, crosses the channel.

Ichigo Saki (Itigo Saki), the E extremity of Naga Shima, is located about 3.25 miles NNE of Kajiori Saki.

Kasa Yama, a prominent dark cone-shaped peak on the E side of Kurono Seto, rises to a height of 394m, about 2.5 miles E of Kajiori Saki.

Katsura Shima, located on the E side of the N approach to Kurono Seto, is comprised of two islets joined by a drying bank. Okatsura Shima, the N islet, is prominent, round-topped, and densely wooded. Kokatsura Shima, the S islet, is cliffy, and between it and the shore S are three detached reefs. Several fish havens lie within a radius of 1.5 miles around Katsura Shima.

Tides—Currents.—Within Kurono Seto, the tidal current runs N from 1 hour after LW until 1 hour after HW. The S current runs from 1 hour after HW to 1 hour after LW. The maximum rate reaches 5.3 knots.

Nagashima Kaikyo—East Side

8.50 Nagashima Kaikyo is the S section of the main channel which leads from sea to Yatsushiro Kai.

From **U Saki** (32°11'N., 130°06'E.), the E side of the passage leads about 2 miles NNE to Naruse Bana, and then about 2.5 miles ENE to Nagase Bana. Many small inlets, available only to small craft with local knowledge, indent this section of shore. A detached 5.9m reef, which is usually marked by tide rips and can be seen below the surface in calm weather, lies about 0.5 mile NNW of Nagase Bana.

Shoura Shima (Syoura Shima), 104m high, lies with its S end close N of Naga Shima, from which it is separated by Chino Seto. This island makes up the E side of the N end of the main fairway through Nagashima Kaikyo, and that of the S end of Hachiman Seto. Take Saki, the NW tip of the S part of Shoura Shima, lies about 1 mile NNE of Nagase Bana and is conspicuous from SW or N. Rocks project about 0.15 mile from this point.

Nagashima Kaikyo—West Side

8.51 To Shima, a conical island, 147m high, lies on the W side of the fairway about 1.25 miles NW of U Saki. About 0.2 mile W of the SW tip of the island, is a detached 5.9m patch, which is usually marked by tide rips. To Shima is visible from seaward, across Gesu Shima. In Se, consisting of two drying reefs, lies on a shoal about midway between the W end of To Shima and the coast NW.

Aka Shima, a cliffy islet, which lies on the W side of Nagashima Kaikyo about 1.25 miles NE of To Shima. A reef, on which there are two rocky islets, projects about 0.15 mile S from the S end. Close off the N end of Aka Shima is a conspicuous pointed rock 8m high. About 0.18 mile NNE of this rock, is a 6.9m rocky patch usually marked by tide rips.

Matsusaki Wan is entered N of Aka Shima, between **Kabuto Bana** (32°13'N., 130°05'E.) and a point about 0.5 mile SW. This bay is accessible only to small vessels with local knowl-

edge. A light is shown from a breakwater at the W end of the bay. A shoal, with a depth of 4.6m and on which seaweed grows thickly, is located about 0.4 mile WNW of Kabuto Bana.

Fukami Wan is entered between Otega Saki, about 1.5 miles NNE of Kabuto Bana, and Gyotano Bana, about 0.35 mile further NNE. This small bay is available only to small vessels with local knowledge. On its N side is the village of Fukami, where there is a basin enclosed by a breakwater.

Shimomate Shima is an islet lying on a shoal on the NW side of the fairway, about 1 mile ESE of Gyotano Bana. A rock, which dries, lies on the rocky ledge, projecting about 140m offshore.

Ubu Shima (Ugu Shima), about 1 mile NNE of Shimomate Shima, is a conspicuous cone-shaped island. A reef projects from the N shore of the island, effectively blocking off nearly 0.5 of the width of the channel N of Ubu Shima. Kamimate Shima, a rocky islet 15m high, lies about 0.4 mile off the SE side of Ubu Shima and on the NW side of the junction of the fairways of Nagashima Kaikyo and Hachiman Seto. A lighthouse stands on this islet.

Hachiman Seto is the NE continuation of Nagashima Kaikyo and extends about 7 miles NE from Ubu Shima to abreast Yoka Shima.

Hachiman Seto—Southeast Side

8.52 **Dosaki Bana** (32°16'N., 130°11'E.) is the N tip of Shoura Shima. A rock, about 2.6m high, lies on a detached shoal lying within 0.35 mile W of the headland. Kuro Shima, an islet 45m high, lies 0.35 mile SW of Dosaki Bana.

Mate Shima, 16.2m high, lies about 0.5 mile N of Dosaki Bana. Reefs project about 0.3 mile N from this small islet. Ko Sone, a reef with 2.1m, lies about 0.25 mile W of Mate Shima; there are shoals between them.

Oxo Ne (O Sone) is a dangerous detached reef 4.5m lying close to the fairway, about 0.6 mile NW of Mate Shima.

Shishi Shima, the NW side of which forms part of the SE side of Hachiman Seto, lies with its S tip about 1.75 miles SE of Dosaki Bana. Reefs front the NW side of this island extending as far as 0.35 mile offshore in places. The conspicuous summit of this island, Shichiro Yama, rises to a height of 393m, and is surmounted by pine trees.

Hire Se a reef, which dries 2.7m, lies 0.3 mile W of Shishi Shima. Katasaba Ko Breakwater Light stands 0.3 mile ESE of Hire Se.

Hachiman Seto—Northwest Side

8.53 Miyanokawachi Wan indents the NW side of the passage between Medake Bana, about 2 miles NNE of Kaminate Shima and Nihoughi Bana (Nihongi Bana), about 1 mile further NE. The central part of this bay is considered to be a safe anchorage for vessels with local knowledge, in depths of 20 to 40m, with good holding ground. Kajiki Dake, on the middle of the peninsula forming the S side of the bay, is conspicuous and attains a height of 254m.

Tsuno Se, which is comprised of two steep-to rocky patches on which there is a least depth of 0.3m, lies 0.75 mile E of Nihoughi Bana. These patches usually appear as white and can easily be made out in smooth water. During the flood current these patches are marked by heavy tide rips.

Between Tateno Bana, a point about 1.5 miles NE by E of Nihoughi Bana, and Sozu Saki, an 34m, islet about 0.75 mile further NE, the NW shore of the passage is fronted by shoals extending as far as 0.4 mile offshore.

Yoko Shima, 116m high, lies about 2 miles NNE of Sozu Saki and is located on the N side of the NE end of Hachiman Seto.

Nankian Seto is the narrow and deep channel between the W side of Yoko Shima and the E tip of Amakusa Shimo Shima. This channel is used by local traffic with local knowledge.

Nabewari Yama, a conspicuous hill 233m high, is located about 0.8 mile W of the SW entrance point of Nankian Seto.

Directions.—Vessels entering or leaving Yatsushiro Kai via Nagashima Kaikyo and Hachiman Seto should do so at or near slack water. Vessels should, after entering W of Nagasaki Bana, shape a course generally NE to pass to the E of To Shima, Aka Shima, Shimomate Shima, and Kamimate Shima. Vessels should keep to the NW side of the channel until Oxo Ne is cleared, then make good a mid-channel course to clear Tsuno Se.

8.54 Gannoshiri Seto is the continuation of the main channel from the NE part of Hachiman Seto into the W part of Yatsushiro Kai.

Tagui Saki, the N tip of Shishi Shima, is the SW entrance point of the NW end of the channel. From Tagui Saki the SW shore of the strait leads nearly 1 mile to Utsugi Saki (Nata Saki) and then about 1 mile S to Takui Saki (Yuguchi Bana). There is a 3m patch, located about 0.2 mile offshore, midway between Tagui Saki and Utsugi Saki.

Tsuzura Shima (Tsutara Shima) (32°17'N., 130°16'E.) on the NE side of the NW end of the fairway through the channel, lies about 1 mile ENE of Tagui Saki. This islet has two summits, with the higher and W of the two being about 49m high. From this islet, a reef projects about 91m NE; at its tip is a rock that dries 2.7m.

Futago Shima is a rock, with two pointed peaks, which lie about 0.4 mile NNE of Tsuzura Shima. A rock, on which there is a depth less than 0.3m, lies about 0.1 mile N of Futago Shima.

Kuro Shima, an islet 53m, lies about 1 mile NE of Futago Shima and has a conspicuous tree on its S end. Reefs project about 0.1 mile from its SW part. Hiotan Shima is a dark, densely-wooded islet, 29m high, which lies on a drying gravel bank extending about 0.1 mile N from Kuro Shima.

Take Shima (32°19'N., 130°18'E.), with two summits about 83m high and separated by a low isthmus, has the appearance of two separate islands from a distance. Rocks project 0.2 mile N from the NE tip of the island. An archipelago of reefs and islets, the highest being 54m, extends about 0.6 mile S from the S tip of the island.

Caution.—Due to the many detached patches and other dangers in this vicinity, vessels utilizing Gannoshiri Seto should pass SW of Tsuzura Shima.

8.55 **Goshonoura Shima** (32°20'N., 130°20'E.) is traversed throughout its length by mountains, the summit of which is Karasuga Toga, 442m high. This peak appears conical and from S is conspicuous. Ganno Shiri, the SW tip of the island, is a steep rocky promontory, on which is a hill 84m high,

surmounted by a conspicuous grove of trees. A submarine water pipeline extends SE and S from a position 1 mile S of the NE point of Goshoura Shima, to the W coast of Kyushu at O Saki.

Tides—Currents.—Within Gannoshiri Seto, the flood current sets SE and the ebb NW. A maximum velocity of about 2 knots is reached; the time of the turn varies with the locality.

Anchorage.—Small vessels with local knowledge can take anchorage off the NW side of Goshonoura Shima sheltered by the off-lying islands.

8.56 Secondary channels southwest of Gannoshiri Seto.—Chino Seto, which leads from Nagashima Kaikyo to Ikara Seto, lies between the N part of Naga Shima and the S part of Shoura Shima. At its narrowest part the channel is 50m wide, and in its center are two rocks which dry 2.1m. The tidal currents which set against these rocks cause heavy tide rips making the passage difficult even for boats to pass, except at slack water.

Mefuki Seto, a channel leading from Hachiman Seto to Yatsushiro Kai, lies between the E sides of Shoura Shima and Ikara Shima on the W, and the W side of Shishi Shima on the E. Due to the many dangers in this channel, large vessels should avoid Mefuki Seto, using instead Gannoshiri Seto.

The E section of the N part of Mefuki Seto is obstructed by reefs extending about 0.5 mile from the W coast of Shishi Shima. Katasoba Ura, on the W side of Shishi Shima is located about 1.5 miles ENE of Dosaki Bana, the NE tip of Shoura Shima. Ajiro Se, a reef, which dries 1.5m, with a depth of 7.6m 0.15 mile N of it, lies about 0.9 mile ESE of Dosaki Bana. Ao Shima (Hyotan Shima), 14m high, lies about 0.5 mile S of the S end of Shishi Shima and is surmounted by conspicuous pine trees. Rocks on which there are depths of 0.9 to 8m lie within 0.25 mile WSW and SSW of Ao Shima, obstructing the E side of the channel.

Mefuki Bana, the N tip of Ikara Shima, lies about 0.9 mile W of Ao Shima. A spit, on which there is a 32m islet, projects 0.25 mile N of Mefuki Bana.

Ikara Shima, the E side of which forms the W side of Mefuki Seto, is a rather flat island rising to an elevation of 105m at its highest part. Koikara Shima, an islet 35m high, lies on the S side of SE entrance to Mefuki Seto. Koikara Shima is connected to Ikara Shima by foul ground. The S extremity of the island, Biwa Kubi, is a headland connected to the peninsula N of it by an isthmus. On the W side of the peninsula is a small bay which affords shelter to small vessels with local knowledge.

Ikara Seto is the channel between the W side of Ikara Shima to the E; and the SE side of Shoura Shima and the NE coast of Naga Shima to the W. This channel, entered from N by Mefuki Seto or Chino Seto, is used only by small vessels with local knowledge. There is a shoal in the entrance with a depth of 8.2m. On the W side of the N part of the channel are three islets and several shoals and rocks. Naka Se, a detached shoal on which there is a rock that dries 0.3m, lies in mid-channel about 0.6 mile NW of Biwa Kubi.

Kuen Saki, a cape on the S side of the SE entrance to Ikara Seto, lies about 0.4 mile SSW of Biwa Kubi. From this cape shoals project about 0.18 mile NE to O Sone, which has a depth of 1.8m. Miyano Ura is a small cove on the SW side of Ikara Seto, about 0.4 mile WSW of Biwa Kubi. An overhead cable, with a vertical clearance of 29m, spans Ikara Seto, 0.15 mile S of the W tip of Ikara Shima.

A bridge, with a vertical clearance of 18m, spans Ikara Seto close NW of the overhead cable.

Tides—Currents.—Within Mefuki Seto and Ikara Seto, tidal currents flow E on the flood and W on the ebb. The turn occurs within 1 hour after HW or LW. The current attains a maximum rate of 4 knots in Mefuki Seto and 1.5 knots in Ikara Seto.

Amakusa Kami Shima, a hilly island, lying between Yatsushiro Kai and Shimabara Kaiwan. The island is located E of Amakusa Shimo Shima and is separated from it by Hondo No Seto.

8.57 South side of Amakusa Kami Shima.—Hondo No Seto is generally used by small vessels and is less than 91m wide at its narrowest part. This strait's 30m wide fairway was dredged (1961) to a depth of 3m. Since 1968, this channel has been dredged to a depth of 4.5m covering a width of 50m in order to allow the navigation of ships of 700 gt. The maximum range of tide is about 3m. Two overhead cables span the strait at its N end, with vertical clearances of 21 and 23m.

Hondo Ko (32°27'N., 130°12'E.) is a small harbor which indents the NE coast of Amakusa Shimo Shima and is situated close W of the N entrance to Hondo No Seto.

The entrance channel to the port is located S of the sand dike which projects NE from the coast. This dredged channel is reportedly 40m wide, with a depth of 3.5m.

There is an unloading embankment on the W shore of the inner port, with depths alongside of 3m. On the N and E sides of the inner port are two reclaimed areas. The embankments have reported depths alongside of 3 and 4.5m.

The S approach to Hondo No Seto is via Nankian Seto or Yokoshima Seto. Yokoshima Seto, the channel between Yoko Shima and Amakusa Kami Shima, is over 10m deep and has a navigable width of 0.41 mile.

Both Nankian Seto and Yokoshima Seto lead into a nearly landlocked bay and then into the S entrance of Hondo No Seto. Shimochizuka Shima, 35m high, and Kamichizuka Shima 24m high, lie in the NE part of this bay and are almost connected to the NE shore by foul ground. Gosiki Shima is a small islet lying close to the S end of Hondo No Seto.

Yufunebara Wan (32°24'N., 130°16'E.) is entered between Funase Bana and Okinose Bana, about 1.5 miles ENE. This bay, which is exposed from S, offers temporary anchorage to vessels with local knowledge, in moderate depths, good holding ground, in its S part.

From Okinose Bana, the low, rocky E entrance point of Yufunebara Wan, a reef, which dries, projects 0.2 mile S. Several rocks, with depths of 8.2m and less, lie within 0.65 mile W and WSW, and a 10.1m patch lies about 0.35 mile SE of Okinose Bana. A fish haven is situated about 1.5 miles W of Okinose Bana.

Se Saki, a prominent point backed by a small hill, lies about 1.12 mile E of Okinose Bana. About 0.38 mile E of Se Saki is a spit, on the tip of which is a depth of 2.1m.

Ochiyodo Bana, about 1 mile E of Se Saki, is a bold pointed headland fronted by a cliff. Two drying rocks lie about 0.15 mile ENE of this point.

Kuraga Take, which attains a height of 682m, is the summit

of a range of mountains in the S part of Amakusa Kami Shima. Kuraga Take, 1.75 miles N of Ochiyodo Bana, is dark and cone-shaped with a summit which is thickly covered with bushes.

8.58 Tanasoko Wan, sheltered by off-lying islands, is entered between Ochiyodo Bana and a point about 0.75 mile SE. The head of this bay dries for about 0.3 mile offshore, and on a shoal off the E side is Ko Shima, an islet, 3.2m high. On the W shore of this bay is the town of Tanasoko. Vessels with local knowledge can obtain safe anchorage, in about 19.6m, good holding ground.

The southernmost point of Amakusa Kami Shima, Karajiro Bana, lies about 1.75 miles SE of Ochiyodo Bana. This point rises to a height of 116m about 0.25 mile within its extremity. A conspicuous point, 34m high, lies about 0.25 mile W of Karajiro Bana. A grove of trees stands on this point. Ikeno Ura, which indents the coast close N of the 34m high point, is a small inlet, which affords anchorage to small vessels with local knowledge sheltered from all but W winds. Odoka Se, a 4.5m patch, lies about 0.3 mile W of the 34.4m point.

Matsuga Saki, a prominent rocky point, lies 1.33 miles ENE of Karajiri Bana. A rock, which dries 0.6m, lies at the tip of a reef which projects about 0.1 mile S of Matsuga Saki. A short distance inland the land rises to an elevation of 118m and is thickly wooded. About 1.25 miles N of Matsuga Saki is Riuga Dake (Ryuga Dake), a hill 472m high, which has a large conspicuous rock on its SW side.

Wada Saki (32°24'N., 130°24'E.), a headland 40.2m high, lies about 1.25 miles NE of Matsuga Saki and represents the SE tip of Amakusa Kami Shima. Close off the S side of Wada Saki is Kube Shima, an islet, 98m high, which has a lone pine tree on its summit. A shallow channel, about 91m wide, separates Kube Shima from Wada Saki.

8.59 Off-lying islands and dangers.—O Sone (Oso Ne), an off-lying rock, on which there is a depth of 7.3m, lies about 1 mile S of Okinose Bana.

Maki Shima, a craggy island, 181m high, lies about 2.5 miles S of Se Saki. Naga Ura indents the SW side of this island. Hadaka Se, a pointed rock in the W approaches, is 5.2m high.

Dateku Shima (Hagi Shima), 62m high, lies 1.25 miles S of Se Saki, in the approach to a bay on the NW side of Maki Shima. Small vessels with local knowledge can take anchorage in Naga Ura. Kusumori Shima, about 0.4 mile E of Dateku Shima, is a conspicuous, conical island 160m high, on which there are clumps of pine trees. This island is separated from the N coast of Maki Shima by a channel about 0.15 mile wide. Hiotan Shima, 42m high, lies about midway between the N end of Dateku Shima and the W side of Kusumori Shima. Between Hiotan Shima and Kusumori Shima are reefs, on which there is an islet.

Hirase Shima, 82m high, lies about 1 mile ESE of Se Saki. A detached rock, with a depth of 5m, lies 0.2 mile W of Hirase Shima.

O Seto, the channel between the N end of Kusumori Shima and the S tip of Hirase Shima, is over 0.2 mile wide. The channel N of Hirase Shima is about 0.13 mile wide and is available to vessels with local knowledge.

Yoko Shima, 52m high, lies on the E side of the approach to Tanasoko Wan, about 0.5 mile SE of Hirase Shima. Within 0.1 mile SW of the SW end of Yoko Shima is a detached rock with a depth of 5m.

Yoichigama Shima (Yokoura Shima) rises to a conspicuous cone-shaped hill, 198m high, about 0.35 mile SW of Karajiro Bana.

Yokoura Seto, which is the channel on the W side of Yokoura Shima, has a navigable width of 0.3 mile and depths ranging from 20 to 40m in the center. A submarine water pipeline crosses the fairway between Yokoura Shima and Goshoura Shima.

Karajiro Seto, which is the channel between Yokoura Shima and Amakusa Kami Shima, has a navigable width of 40m and use of it by large vessels is not advised. Odoka Se, a rock with a depth of 4.5m, lies about 0.5 mile WNW of Karajiro Bana. A rock shelf, with a depth of 0.4m, lies on the S side of Karajiro Seto, and extends about 0.1 mile N from the N tip of Yokoura Shima.

Aka Shima (Mae Shima), located about 0.45 mile SE of the SE side of Yokoura Shima, is 92m high.

8.60 Naka Seto is the channel between the NW coast of Goshoura Shima (32°20'N., 130°20'E.) and the SE part of Maki Shima. Overhead cables, with a clearance of 18m, cross this channel. At its narrowest part, the NW side of the channel is obstructed by shoals, on which is an islet 0.3m high. Rocks, which dry 2.7m, and are marked by a light, lie in the middle of the N end of the channel. The fairway leads E of these rocks. At its S entrance is Mayu Shima, an islet, 61m high. A basin, protected by a breakwater, lies within Gosho Ura, a small cove on the NW side of Goshoura Shima, SE of Mayu Shima.

Hino Shima lies with the N part of its W side close E of Wada Saki and Kube Shima, from which it is separated by a narrow channel. An overhead power cable spans the shallow channel between Wada Saki and Kube Shima. This channel is primarily used by small vessels with local knowledge. A bridge, with a vertical clearance of 12m, connects Hino Shima and Kube Shima. The island has two conspicuous peaks separated by a low isthmus. The highest point, 238m high, is the dark, densely-wooded, and cone-shaped N peak. Tomari Yama, the treeless S peak, has a cone-shaped appearance when seen from S, and is very prominent. Shakushi Take, at the N end of the island, is 141m high, and is conspicuous from E.

Take Shima, an islet 74m high, lies about 0.4 mile NW of Taku Bana, the S tip of Hino Shima. Biwa Kubi, 44.5m high, lies close off the NE tip of the SE side of Hino Shima.

Ki Shima (Shiro Shima), 41m high, located on a spit, lies 1 mile NW of Biwa Kubi. Kuro Shima, another islet, lies about 0.25 mile NE of Ki Shima and between them is Naka Se, which dries 0.6m.

Inu Se, which dries, 2.1m, lies about 0.25 mile NNE of Yamashita Bana, the N tip of Hino Shima. Tawara Se, 1.2m high, lies about 0.3 mile SW of Yamashita Bana.

Aka Shima, a rocky cone-shaped islet, lies about 1 mile NE of Yamashita Bana. A shoal bank, with depths of about 5m, projects about 0.13 mile off the NW side of the islet.

Tides—Currents.—The tidal current in O Seto sets E on the flood, and then divides, one branch setting through Karajiro Seto and the other through Yokoura Seto. The ebb current

flows in the opposite direction. The turn occurs about 1 hour after HW and LW and the velocity sometimes exceeds 2 knots.

Yatsushiro Kai

8.61 South part.—The S part of Yatsushiro Kai may be considered as being that area bounded on the W by the E sides of Naga Shima and Ikara Shima and the SE side of Shishi Shima and on the SE by the mainland coast NE of the E entrance to Kurono Seto.

8.62 West and northwest sides.—Sabanokuchi Bana (32°10'N., 130°12'E.) is a prominent point on the E side of Naga Shima, about 0.5 mile NNW of Ichigo Saki. A similar point, Sakinoyama Bana, lies about 0.5 mile further WNW. Ko Shima, 18.3m high, is located about 0.25 mile NE of Sakinoyama Bana, and a rock 0.9m high lies 0.2 mile E of the point. The coast between Sakinoyama Bana and Kuen Saki, 1.5 miles N, is indented by a small bight. Nanao Shima (Nano Shima) is a rocky islet, 13m high, about 2.25 miles E of Sakinoyama Bana.

Tokoro Shima lies off the bight formed in the S part of Shishi Shima (32°17'N., 130°14'E.). The SE part of Tokoro Shima is steep-to, but Toro Se, which is above water, lies about 0.25 mile NNE of its SE point.

8.63 Southeast side.—Warabi Shima (32°07'N., 130°16'E.), 87m high, is located close off the W side on an extensive shoal bight; about 1.25 miles S of Katsura Shima. Warabi Shima is a conspicuous mark when approaching from NW through Kurono Seto, but not so from NE. The SE shore of the above bight is fringed with pine trees. Hirose Kawa empties out into the sound about 3 miles E of Warabi Shima. The village of Nago (Nagoura) is situated on the W side of the river. A breakwater projects about 0.2 mile NW on the W side of the river mouth.

Komenotsu Ko (32°08'N., 130°20'E.), a small local harbor, is situated at the NE tip of reclaimed land, and protected by two breakwaters. This harbor, used by small vessels, is not safe during NW winds. Vessels with local knowledge can obtain open anchorage NW of Komenotsu Ko, in a depth of about 9.1m.

Yahazu Dake, which attains an elevation of 687m, about 3 miles E of Komenotsu Ko, is a conspicuous cone-shaped peak surmounted by a single pine tree. Oniga Take, also prominent, lies about 3.25 miles ENE of Yahazu Take.

Koji Shima (Kogi Shima), which is distinguished by a single pine tree, lies about 4.5 miles NNE of Komenotsu Ko.

Miojin Saki (32°12'N., 130°22'E.) is a low, rocky tip of a narrow promontory. Between the point and Koji Shima is a channel obstructed by foul ground, on which is Nanatsu Se, which dries 1.2m.

Nakano Se (Naka Se), a detached steep-to reef, with a least depth of 4.2m, lies about 0.25 mile S of Koji Shima.

In calm weather, when the sea is smooth, Nakano Se can be made out by its gray-white color.

Hadaka Se, the NW edge of which lies about 0.1 mile S of Nakano Se, is an extensive shoal, which has in its center a rock which dries.

Fukuro Ura (32°11'N., 130°22'E.), which has a narrow entrance, is an almost landlocked bay affording shelter to small vessels with local knowledge.

8.64 Minamata Ko (32°12'N., 130°23'E.) (World Port Index No. 62250) is divided into a N part and a S part. The N part, Umedo Ko, is entered between Miojin Saki and Futago Shima, about 0.6 mile NNE. The S part, Hyakkan-Ko, is entered S of Koji Shima. The port provides anchorage and mooring facilities for large vessels and berthing for small vessels. The maximum size vessel which can be accommodated at the anchorage is 40,000 dwt, with a maximum length 190m. The depth at the anchorage is 10.5m.

Winds—Weather.—The N part of the harbor, Umedo Ko, is exposed NW. The S part of the harbor is partially protected by an off-lying island, Koji Shima, and there is relatively calm water there, except during SW winds.

Tides—Currents.—The MHW interval at Minamata Ko is 8 hours 42 minutes; the tidal difference between HW and LW is 4.1m

Depths—Limitations.—Umedo Ko, a private harbor, whose inner part is protected by a breakwater, which projects about 100m NE, has charted depths from 5 to 9m. A quay, which is situated on the S shore of this N section, is about 250m long and has depths from 3 to 5.2m; it can accommodate vessels to about 3,000 dwt. There is a dolphin berth on the E side of the breakwater with a depth of about 3m.

The S part of the harbor has charted depths from 10 to 19m. A breakwater extends about 150m SW from Miojin Saki. A quay, situated on the landfill W of Sannenga Ura, reportedly has a depth of about 3 to 4.5m.

There is a mooring buoy, whose use is prohibited, about 0.2 mile WSW of Midorino Bana, the NE tip of Koji Shima.

It has been reported (1996) that New Wharf contains two additional berths. One berth is 185m long, with a depth alongside of 9.5m; the other berth is 130m long, with a depth alongside of 7.0m.

Hyakken Midora Pier, which lies on the NE side of the S part of Minamata Ko, has a length of 220m and a depth alongside of 6.5m.

Aspect.—The chimneys and factory lights of a power plant on the W bank of the mouth of Minamata Kawa are conspicuous at night.

Nakao Yama, 334m high, is located about 2.25 miles E of the harbor; near its summit is a conspicuous silver iron framework radio tower from which red and white obstruction lights are shown.

Three silos are situated about 120m SW of the base of the breakwater at Umedo Ko.

Pilotage.—Pilotage is not compulsory; however, pilots may be requested from the Shimabara Kaiwan association between 0600 and 2000. Pilots board vessels about 1 mile S of **To Shima Light** (32°12'N., 130°04'E.); 24 hours notice required. It is also noted that availability of pilot is dependent upon the tidal conditions.

Regulations.—The entrances to Minamata Ko are blocked by fishing nets, except on the lighted range leading S of Koji Shima.

Vessels entering or leaving the S section of Minamata Ko shall use the channel mentioned above, between Lighted Buoy No. 1 and Lighted Buoy No. 2 at the entrance.

It has been reported that the depths at the mooring embank-

ment are less due to sunken ore spilled during loading operations.

Anchorage.—Vessels with local knowledge can anchor in the S part of Minamata Ko, sheltered from all but SW winds, in about 12.8m, mud and sand.

Temporary open anchorage can be taken off Umedo Ko. The best berth is situated about 0.3 mile W of the SE islet of **Futako Shima** (32°12'N., 130°23'E.), in 16.5m, mud and sand.

The quarantine anchorage, a circular area with a radius of 0.3 mile, lies with its center in position 32°12'N, 130°20.5'E.

Vessels should not anchor within the port boundary within a 0.33 mile radius centering on a point bearing 159°, distant 0.35 mile from Koji Shima Light. Exclusions from this restriction are the areas to the S of the 072° range from a point bearing 165° distant 0.4 mile from Koji Shima Light and to the N of a 051° line from a point bearing 189°, distant 0.3 mile from the light.

Anchored vessels should not block the lights of the beacons on Midorina Bana.

Directions.—Local knowledge is essential for vessels entering the N section, Umedo Ko. Vessels should exercise caution with regard to a submerged rock, with a depth of 0.4m, located about 80m W of the N end of the breakwater.

Futako Shima, located about 0.45 mile NE of Miojim Saki, is comprised of two rocky islets lying on the reef close off **Umedo Bana** (32°12'N., 130°23'E.). The SE and larger of these two islets is about 14.6m high. The area between the SE islet and Umedo Bana has been reclaimed.

8.65 Central section.—This section of Kai may be considered as that area bounded on the NW by the SE sides of **Goshonoura Shima** (32°20'N., 130°20'E.) and Hino Shima, and on the SE by the coast between O Saki and Tatsu Saki.

O Saki, 1.75 miles NE of Umedo Bana, is a prominent point backed by a mountain range which projects NE from Yahazu Dake.

Minamata Kawa empties out into the head of a bay, which nearly dries, between Umedo Bana and O Saki. The town of Minamata lies at the head of this bay.

8.66 Southeast side.—I Shima (Yunoko Shima, a dark, thickly wooded islet, 42m high, lies about 1.25 miles ENE of O Saki. Close NW of the island are two above-water rocks, which lie on a reef, having a steep-to outer side. Numerous fish havens lie close offshore between Tsunagi Wan and Sashiki Ko 4 miles NNE.

Tsunagi Wan is entered between I Shima and Inse (Kurase) Saki about 0.9 mile NNE. A rock, 0.6m high, lies about 91m W of Inse Saki. This bay affords anchorage, sheltered from all but W winds, to vessels, with local knowledge, in its middle, in about 12.8m, mud, good holding ground. Close NE of Inse Saki lies Egushi Ko, a fishing boat harbor protected by breakwaters 2.5 miles NE of Tsunagi Wan. A lighted tower stands at the head of Breakwater No. 1. A lighted buoy marks a 2.2m patch 0.5 miles SW of Egushi Ko.

Omon Saki (Oto Saki), located about 0.9 mile NNE of Inse Saki, is a low prominent point. Close off this point is a small rocky islet, 13m high, surmounted by a solitary pine tree. Uzo Ne (U Sone), a detached reef, with a least depth of 2.2m, lies about 0.75 mile NE of Omon Saki. A rock with a depth of 6.4m lies NNW of Uzo Ne.

Hobashira Saki, about 1.75 miles NE of Omon Saki, is the NW tip of a wide peninsula and forms the W side of Fukura. Close off this tip is a uniquely-shaped above-water rock; within 0.8 mile N is a rocky shoal on which there are three islets. Kino Shima (Oki Shima), the W islet, 22.3m high, is surmounted by a conspicuous pine tree. Ki Shima, the middle islet, is thickly wooded and 27m high. Taka Shima, the northeasternmost, is cone-shaped and 24m high. Mekari Se, which dries 0.9m, lies close N of the peninsula.

Karafune Hana, about 1 mile NE of Hobashira Saki, is the end of a narrow peninsula which forms the E side of Fukura. A chain of rocks which dry extends from this point N to a rock 9.1m high.

Fukura can provide anchorage, sheltered from all but N winds, for small vessels with local knowledge, in depths of 6.4 to 10.1m. However, caution must be taken to avoid a sunken ledge, with a drying rock, which projects about 91m E from the middle of the W side of Fukura.

Sashiki Wan, entered between Karafune Bana and a point about 0.5 mile N, is shoal; most of it dries. Sashiki Kawa empties out into the head of this bay. A conspicuous cone-shaped hill, 236m high, upon which is a dense growth of pine trees, lies about 0.6 mile S of the river mouth.

Ide Saki (Ideno Hana) (32°19'N., 130°28'E.) is a jutting, rocky headland located about 1.75 miles N of Karafune Hana. This point is conspicuous from S; a conical hill, 218m high, E of the point, is a good mark.

Shirakami Se, which is prominent, pointed, and white, is located about 0.45 mile WNW of Ide Saki.

Donkame Se, which is awash, is located about 0.2 mile further S. Ya Se, with a depth of 6.4m, lies about 1 mile S of Ide Saki.

Hiu Se, with a depth of 1.2m, lies about 0.7 mile NNE of Shirakami Se.

Umino Ura (32°20'N., 130°28'E.) affords anchorage, sheltered from all but NW winds, to small vessels with local knowledge, in depths of 4.6 to 7.3m.

Tanoura Wan, with generally shallow depths within, is entered between a point, about 1.5 miles NE of Ide Saki and Tatsu Saki, about 0.9 mile NE.

Tatsu Saki (32°22'N., 130°29'E.) is a prominent densely-wooded headland, which rises to a height of 29m. Tono Shima, heavily wooded, with a round summit, 24m high, and conspicuous pine trees on its S side. The island is located about 0.25 miles SW of Tatsu Saki. A rock shelf, which dries, projects about 0.1 mile SW from the island. Hiki Se, a rocky reef, with a depth of 3.6m, lies about 0.35 mile S of Tono Shima.

Nanatsu Ze, a detached group or rocks, of which the westernmost dries, lies about 0.4 mile W of Tatsu Saki. Several fish havens lie close W, S, and E of Nanatsu Ze.

8.67 North section.—The N section is bounded on the W by the E side of Amakusa Kami Shima and the SE sides of Senzoku Shima and Tobase Shima, and on the E and N by the mainland N of Tatsu Saki.

The E side of the N part of Yatsushiro Kai leads about 18.5 miles NNE from Tatsu Saki to the head of the inlet and is fringed with shoal and drying flats up to 3 miles offshore in places.

Shiba Shima, about 1.8 miles NNW of Tatsu Saki, is a high conspicuous islet, 25m high, surmounted by a dense growth of pine trees. Reefs project about 0.1 mile S from the islet, but its N side is steep-to. Genjiro Se, which dries 0.9m, lies about 0.75 mile NE by N of Shiba Shima. Kature Se, with a depth of 7.3m, and a patch with a depth of 9.1m, lie respectively, about 1 mile SE and 1.25 miles E of Shiba Shima.

Hinagu Ko, a small harbor protected by breakwaters, lies about 6 miles NE Tatsu Saki, and flats extend a considerable distance off the harbor. Kushi Yama, 324m, lies about 0.5 mile SSE of the root of the breakwater. This peak, which is surmounted by a conspicuous growth of trees, is particularly prominent from SW.

Fune Se, a rocky islet 5.2m high, lies about 3 miles NNW of the S breakwater of Hinagu Ko, on the edge of a drying bank. Detached patches with depths of 4.9m and 5.2m lie, respectively, 1.25 miles SSW and 1.75 miles WSW of Fune Se.

Kuma Kawa empties out into the strait about 3.5 miles N of Hinagu Ko. This river has a delta with three branches, the middle being the main stream, Mae Kawa is the N and Kuma Kawa (Minau Kawa) is the S. This river, which is noted for its rapids, is accessible only to small boats.

Kaga Shima, which lies on the coastal bank, is 29m high and is located about 2.25 miles N of Fune Se.

Yatsushiro Ko (32°30'N., 130°32'E.)

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8.68 Yatsushiro Ko is situated in the Mae Kawa. There is a mooring embankment for large vessels on the SW side of the tip of the reclaimed land to the SW of O Shima; another is under construction in an area to the NE of these embankments. On the reclaimed area to the E of O Shima, a petroleum handling port is being built.

Winds—Weather.—Local weather signals are displayed near two conspicuous chimneys of a cement factory, on the N side of the river, about 1 mile SE of Shiro Shima.

Tides—Currents.—The MHW interval at Yatsushiro Ko is 8 hours 42 minutes; the tidal difference between HW and LW is 4.3m.

It is reported that seiches enter the harbor during strong W and SW winds.

The tidal currents off the entrance of Yatsushiro Ko set NE on the rising tide and SW on the falling tide; the rates are 1.25 and 1.5 knots, respectively.

Depths—Limitations.—A deep-water channel, with depths greater than 20m, is situated between Kotsuka Shima and Ne-Shima, as well as between O-Tuku Shima and Ne-Shima. The shipping lane leading into the port is dredged to a depth 12m. The northernmost wharf has an alongside depth of 13m; the turning basin has a depth of 14m. Vessels must note that the N part of this channel becomes shallow immediately.

The outer harbor berths front the W side of the reclaimed land. The berths and approaches are dredged in sectors from 10m to 14m. Mariners should exercise caution as shallower patches exist within the 10m and 14m sectors. An obstruction with a depth of 12.9m lies within the 14m sector. Alongside depths in the 10m sector are from 8.8m to 9.6m. .

There are five quays, as follows:

1. Quay A and Quay B have a length of 130m, with a depth of 7.5m alongside.
2. Quay C has a length of 165m, with a depth of 9m alongside.
3. Quay D has a length of 185m, with a depth of 10m alongside.
4. Quay E is the largest, with a length of 240m and an alongside depth of 12m.

Galko Wharf, on reclaimed land N of the entrance, has six berths, as follows:

1. Berth No. 1 to Berth No. 4 have a total length of 740m, with a depth of 13m.
2. Berth No. 5 has a length of 240m, with a depth of 13m alongside.
3. Berth No. 6 has a length of 240m, with a depth of 13m alongside.

The approach is dredged to 10m.

The inner harbor has a quay, 720m long, with a depth of 5.5m alongside its quays and floating pier.

A tanker port is situated about 1.75 miles NE of the S breakwater. This facility, enclosed by breakwaters, is entered through a channel about 40m wide, which has been dredged to about 5m. There are dolphin berths on the S shore with depths of about 6m.

A new wharf, 560m in length, 14m in depth, able to accommodate vessels up to 50,000 dwt is being developed at Ohshima Kita.

Aspect.—O Shima, 83m high, and joined to the mainland by reclamation, is NE of the entrance to the inner harbor and very prominent. Cement silos situated atop the quay at the N entrance to the inner harbor are conspicuous. Two white chimneys, on the cement works, and the chimney on the incinerator plant, mark the inner part of the inner harbor.

Pilotage.—Pilotage is not compulsory for entering or leaving port, but can be obtained, if needed upon request from Miiko Ko.

Harbor pilots board in position 32°25.8'N, 130°29.5'E, about 1 mile S of Fairway Buoy No. 1 and Fairway Buoy No. 2 and are available from sunrise to sunset. For anchored vessels, the pilot boards 0.5 mile W of Fairway Buoy No. 1, in position 32°26.8'N, 130°29.0'E. Bay pilots are available 24 hours a day and board about 2.2 miles S of To Shima Light in position 32°09.7'N, 130°04.7'E.

Regulations.—Vessels should send their ETA on departure from the last port, 10 days, 4 days, 48 hours, and 4 hours prior to arrival.

Contact Information.—See the table titled **Yatsushiro—Contact Information**.

Yatsushiro—Contact Information	
Pilots	
Telephone	81-944-5314-05
Facsimile	81-944-5135-29
Port Authority	
VHF	VHF channel 16
Telephone	81-963-3325-16

Yatsushiro—Contact Information	
Facsimile	81-963-8724-61
E-mail	kouwan@pref.kumamoto.lg.jp
Web site	https://www.pref.kumamoto.jp

Anchorage.—The quarantine anchorage is situated in approximate position 32°28'N, 130°29'E.

Directions.—The approach to the entrance of the inner harbor may be made utilizing the channel between O-Tuku Shima and Kotsuka Shima and then heading midway between Mitsu Shima and the light on the end of the S breakwater, which leads to the entrance. Mariners are advised to make the above transit at slack water just after the HW, because there is a conspicuous tidal current which flows from S to N.

Shiro Shima is 17m high and is located about 1 mile E of Kaga Shima on reclaimed land. Taka Shima, which is prominent, and 43m high to the tops of the trees, is located about 0.75 mile NE of Shiro Shima.

O Shima is located about 1.75 miles NW of Taka Shima and its limestone strata are notable.

8.69 Oasase is a comparatively narrow spit, which projects about 9.5 miles S from Uto Hanto in the N part of Yatsushiro Kai. There are depths less than 5.5m upon this spit. The channels leading to Shimabara Wan are approached on the W side of Oasase. The channel on the E side of Oasase N of Yatsushiro Kai ends about 4 miles from the NE head of Yatsushiro Kai.

Tsuki Shima Shoto is a group of five islets lying at the S tip of Oasase, and within about 3.5 miles SW of Kaga Shima. Tsuki Shima (O-Tuku Shima), the largest islet, is 95m high, and comprised of limestone and white in color. On its NW side are two shallow coves; its SE side is cliffy. Kannon Shima (Kuro Shima), the southernmost islet of the group, lies about 0.35 mile S of Tsuki Shima, to which it is joined by a shoal flat. A shoal bank, on which there are depths less than 9.1m, projects about 0.5 mile S from Kannon Shima.

Kuro Shima (Unoko Shima), 39m high to the tree tops lies about 0.1 mile NE of Kannon Shima. Close SE of Kuro Shima is Hako Shima, a rocky wooded islet, 18m high. Ne Shima (Me Shima), 12m high and black, lies about 0.5 mile E of Tsuki Shima. Within about 1.25 miles S of Ne Shima, are shoals with depths less than 5.5m. Kotsuki Shima, 60m high, the northeasternmost islet lies about 0.3 mile E of Tsuki Shima. Between Kotsuki Shima and Ne Shima are shoals, with depths less than 5.5m.

Ushi Se (Oushi Se), which dries 3.4m, and Bebe Se (Koushi Se), a stone post, 3.6m high, on the reef, lie on Oasase in positions 10.75 and 2 miles N of Kotsuki Shima. Both rocks are usually marked by breakers, even at HW when winds are light.

Mitsu Shima, a group of three islets, lies on a shallow spit that projects NE from the E side of Oasase. The southernmost islet, Minami Shima, is 45m high to the tree tops, and lies about 1.25 miles WSW of O Shima. Naka Shima, also 45m high to the tree tops, lies about 183m NE of Minami Shima. Kita Shima, 44m high to the tree tops, lies about 0.2 mile NE of Naka Shima and about 0.1 mile NE of it is Benten Shima, 15m high.

Minor Passages Between Yatsushiro Kai and Shimabara Kaiwan

8.70 Otono Seto (Utono Seto) and Zozo No Seto, on the S and NE sides of Senzoku Shima (Senzokuzozo Shima) are the entrances to several connecting channels between Yatsushiro Kai and Shimabara Kaiwan. Zozo No Seto and its continuations NW represent the main channels. Otono Seto and continuations W represent the minor channels.

8.71 Otono Seto-Yanagino Seto-Michigoeno Seto.—These secondary channels, which connect Yatsushiro Kai with Shimabara Wan, are available for vessels with local knowledge. Otono Seto is entered from Yatsushiro Kai between **Shimo-Utono Bana** (32°32'N., 130°27'E.), the NE tip of Amakusa Kami Shima and Kami-Utono Bana, the S tip of Senzoku Shima, about 0.6 mile NNE. Reefs project about 0.1 mile into the channel from these two points. These reefs limit the navigable width to about 700m. Sobe Se, which dries 1.5m, lies about 0.43 mile N of Shimo-Utono Light.

Se Shima, on the S side of the W end of Otono Seto, is located about 1.25 miles WNW of Shimo Utono Bana. Several shoals, some of which dry, lie within 0.25 mile NE and 0.15 mile N of the island.

Kadano Bana, about 1.25 miles NW of Kami-Utono Bana, lies on the N side of the W end of Otono Seto. A spit with depths less than 9.1m projects about 0.75 mile SE from the point.

8.72 Yanagino Seto, the W continuation of Otono Seto, between Funabito Shima and Ebisu Bana. Funabito Shima lies close NW of the N tip of Se Shima. Detached patches are located within 0.1 mile NE of its N tip. Ebisu Bana lies about 0.45 mile W of Kadano Bana. A shoal bank, with depths less than 5.5m extends about 0.19 mile S. Also a patch, with a depth of 6.9m, lies about 0.20 mile S of the point.

Mebari Se, 0.3m high, lies on the S side of Yanagino Seto, 0.15 mile WNW of the N tip of Funabito Shima.

Two overhead cables span this strait.

Michigoeno Seto, whose N side is formed by the S shore of Oyano Shima, and whose S side is formed by the N shores of Nagaura Shima, Hiai Shima and Takamoku Shima. Michigoeno Seto, is the continuation W of Yanagino Seto and leads into Shimabara Wan. The narrowest part of the fairway is in the vicinity of Maruyama Bana, the S tip of Oyano Shima, where the fairway is about 91m wide. A bridge, showing green and red lights, with a height of 14.8m, spans this section of the channel extending from Maruyama Bana to the N coast of Nagasura Shima. Overhead cables span this strait close W of the bridge between Nagasura Shima and Amakusa Kami Shima. Kodomari, a village which lies on the SW point of Oyano Shima, about 0.9 mile WNW of Maruyama Bana. Suki Bana lies about 0.18 mile NNW of Kodomari. The SW part of Oyano Shima is fringed by reefs up to about 250m offshore. Suki Bana Se, with a depth of 4.1m, lies on the N side of the W end of the channel about 0.3 mile WSW of Suki Bana.

Takamoku Shima is cone-shaped, prominent, and 139m high. This island's SE coast is formed by white cliffs. For shoals and other dangers in the W approach to Michigoeno Seto, see Shimabara Wan, beginning in paragraph 8.83.

Tides—Currents.—The currents in Utono Seto flow N along the E coast of Amakusa Kami Shima, turning NW and then N between Kami-Utono Bana and Kadano Bana. It begins from 1 to 10 hours 30 minutes before LW and continues until from 4 hours 30 minutes to 5 hours after LW. Its maximum rate, which occurs between 2 and 3 hours after LW, is about 0.75 knot. The tidal current flowing S between Kami-Utono Bana and Kadano Bana continues in that direction across the channel to Shimo-Utono Bana, and then flows S along the E coast of Amakusa Kami Shima. It begins from 1 to 1 hour 30 minutes after HW and continues until from 4 hours 30 minutes to 5 hours after HW. Its maximum rate, which occurs between 2 and 3 hours after HW, is about 1.5 knots near **Shimo-Utono Bana** (32°32'N., 130°28'E.), but elsewhere it is less than 1 knot.

In Yanagino Seto, the E tidal current meets the current flowing from Utono Seto and combining with it flows N between Kadano Bana and Kami-Utono Bana. The W current is a branch of that flowing S between those two points.

In Michigoento Seto, the tidal current usually flows E during the rising tide and W during the falling tide, but the duration of flow varies greatly during the year. Between September and March, the E current stream flows for about 10 hours, and the W current for only a little over 1 hour. The W current begins about 2 hours before LW, and slack water lasts about 20 minutes. The rate of the E current is about 1 knot and that of the W current is about 0.75 knot. Between April and August, it is reported that conditions opposite to the foregoing prevail, and that the E current is at times inappreciable; it is possible that the report is based on daylight observations, and that at night the opposite is the case.

At the W end of Michigoeno Seto, N of Takamoku Shima, the current, flowing E along the NW coast of Amakusa Kami Shima during the rising tide, branches off Suki Bana, one part flowing N in Shimabara Wan and the other entering the channel; their rates are from 0.5 to 0.75 knot. The W current, flowing out of the channel, combines with the current flowing S along the W coast of Oyano Shima, off Suki Bana (32°33'N., 130°24'E.), and the combined current then flows W.

8.73 Akamatsuno Seto-Marukono Seto-Ikeshimano Seto.—Akamatsuno Seto is a narrow channel, usable only by small vessels with local knowledge, which is situated between the N coast of Amakusa Kami Shima on one side and the islands of Se Shima, Naka Shima and Mae Shima on the other.

Marukono Seto, located between the NW sides of Se Shima, Naka Shima, Mae Shima on one side; and a chain of islets, reefs and shoals called Ikeshima Gunto on the other side. This channel is only available to small craft.

Ikeshimano Seto is located between the N side of Ikeshima Gunto on one side and the S coasts of Takamoku Shima, Hiai Shima, and Nagaura Shima on the other side. Ikeshimano Seto, which is entered on the S side of Yanagino Seto, leads W into Shimabara Wan.

Nagasare Se, which dries 1.5m, lies on the SE side of the channel between the NE end of Ikeshima Gunto and Mebari Se. Ike Shima, 14.9m high, lies in about the middle of the NW side of Ikeshima Gunto. A bridge, with a vertical clearance of 12m, spans the channel between Ike Shima and Nagaura Shima.

Hira Se, 0.3m high, lies near the SW end of Ikeshima Gunto about 0.65 mile SW of the summit of Ike Shima. On the N side of the channel, reefs, which dry in places, project about 0.2 mile SW from the S tip of Hiai Shima. In the center of the channel, lies a detached shoal, with a depth of 7.6m, about 0.25 mile SW of W extremity of Hiai Shima.

Biro Shima, 22m high to the tree tops, serves as a good mark for identifying Ikeshimano Seto, and lies about 0.8 mile SW of Takamoku Shima. Umigame Se, which dries 0.6m on the SW side of the fairway, lies on a shoal about 0.3 mile NE of Biro Shima.

Tides—Currents.—Within Ikeshimano Seto, the currents resemble those in Michigoeno Seto, except off the W entrance. West of Takamoku Shima, the currents occasionally sets E and W directly into and out of the channel.

Zozo No Seto

8.74 Main approach.—Zozo No Seto, which leads between the NE side of Senzoku Shima and the SW side of Tobase Shima, is the main channel leading from Yatsushiro Kai to Misumi Ko to Shimabara Wan. This passage has depths ranging from 15 to 30m, and at its narrowest part, off Tobase Shima Light on Kata Shima Bana, it has a navigable width of 0.1 mile. An overhead cable, with a vertical clearance of 51m, spans Zozo No Seto SW from Katashima Bana.

A patch, with a depth of 3.0m, lies on the shoal which projects from the coast NE of Kami Utono Bana, the S tip of Senzoku Shima. This patch, which lies in the S approach to Zozo No Seto, is located about 0.75 mile NE of Kami Utono Bana a depth of 8.5m is located about 1.25 miles ESE of the same point.

Senzoku Shima is separated from Oyano Shima by an obstructed channel that can only be used by small vessels with local knowledge, and then not without difficulty. Senzoku Shima rises to a height of 167m near its E coast about 1.75 miles NNE of Kami Utono Bana.

Tobase Shima is low in its central part and densely wooded in its N section. The island is separated from the S side of Uto Hanto by a narrow, shallow channel available only to small vessels with local knowledge. The summit of the island, which is 83m high, lies near Katashima Bana, the S tip.

Dangers on the NE side of the S approach include a shoal bank, with depths less than 5.5m, which projects SE to join Oasase. Between the NW edge of this shoal bank and the SE side of Tobase Shima, about 0.4 mile NW, there are depths of over 7.3m.

Amitori Se, which dries 1.8m, is located about 0.2 mile NNW of Katashima Bana. A fish haven is situated about 0.75 mile ENE of Katashima Bana.

Nagakado Bana is a headland on the E side of Zozo No Seto, lying about 0.35 mile N of Katashima Bana. Between Nagakado Bana and Usagi Bana, about 0.55 mile NW, is a bay almost completely obstructed by shoals.

The N tip of Senzoku Shima, Rokushiro Bana, lies on the SW side of the channel opposite Usagi Bana. Genno Shima, 11m high, lies about 0.1 mile ESE of Rokushiro Bana and upon which are some pine trees. Ge Se (Ige Se), 5.6m high, and on which is a lone building, lies about 0.2 mile SE of Genno Shima.

Currents.—In Zozo No Seto, the flood current sets N and the ebb current sets S. A velocity of about 2.5 knots is attained in the narrows; however, it was reported that a current of 4 to 5 knots has been experienced.

Tera Shima, 39m high, lies on a shoal, about 0.3 mile N of Rokushiro Bana. Kotera Shima, 4.5m high, lies about 0.13 mile S of the S side of Tera Shima.

Kabuto Shima, 13m high, lies on the E side of the fairway, about 0.27 mile ENE of Tera Shima.

Shira Se (Sira Se), above sections of which are always above-water, lies in the center of a group of shoals with depths less than 11m. These shoals project about 0.85 mile NW from Tera Shima on the SW side of the fairway. The channel SW of Tera Shima and Shira Se is shoal and not recommended. Yemachino Se (Emachino Se), which dries 0.4m, lies about 0.1 mile SSE of the E tip of Shira Se. Another rock, which dries 0.3m, lies about 0.1 mile NW of the W extremity of Tera Shima.

8.75 Misumi Ko (32°36'N., 130°28'E.) (World Port Index No. 62280), a principal port, and the channel through it, form the NW continuation of Zozo No Seto.

This port, which is a good natural harbor, is bound on the W by the E side of Oyano Shima, on the S by the N end of Senzoku Shima, and on the NE by the SW sides of Tobase Shima and the Uto Hanto. Zozo No Seto leads into the SE part of the harbor and Yoko Seto into the S part. Motareno Seto leads E from the NE part of the harbor. Misumi No Seto leads NW into Shimabara Wan from the NW part of the harbor.

Winds—Weather.—In general, the harbor is sheltered from all winds but those from the S and occasionally those from the N. The prevailing winds for the most part are from the N. At times, during spring and summer, a strong S wind blows.

Local weather signals are shown from the harbor office near the radio tower on the N side of Misumi Ko, about 0.5 mile E of Sagari Matsu, the SW tip of Uto Hanto.

The tidal currents in Misumi No Seto, as in Zozo No Seto, flow N on the rising tide and S on the falling tide, the turn occurring about the times of HW and LW. The maximum rates of the currents are usually about 3.5 knots. However, it has been reported that in the narrows NW of the Sagari Matsu, a rate of 5 knots has been observed. Also, in O Seto, at springs, a rate of 6 knots has been observed. In addition, a vessel reported (1951) that the best time to enter or depart Misumi Ko through Misumi No Seto is about 1 hour before HW or LW at Misumi Ko. At this time it was ascertained that at about 40 minutes before HW or LW there, the current had already turned.

Tides—Currents.—The MHW interval at Misumi Ko is 8 hours 48 minutes. Spring tides rise 3.9m and neap tides rise 3m.

Depths—Limitations.—Near the S end of Misumi No Seto is an overhead cable, with a vertical clearance of 41m, and the Tenmon-Hasi Bridge (Amakusa Dai-itigo Hasi Bridge), with a height of 38 to 41m.

A cable, having a vertical clearance of 51m, crosses the S entrance of the Zozo No Seto; another cable, with a vertical clearance of 23m, crosses the center part of Motare No Seto.

Motare-no-Seto has a road bridge which spans the center of the channel. The road bridge has a vertical clearance of 5m. An overhead power cable spans the E end of the channel, with a vertical clearance of 21m.

The Misumi-Ko Bridge (32°36.7'N., 130°27.5'E,), with a vertical clearance of 39m, lies between the overhead cable and road bridge. Ganpeki Wharf A, Ganpeki Wharf B, and Ganpeki Wharf C are situated E of Sagari Matsu. The depths alongside range from 6 to 8m. Vessels up to 10,000 dwt can be accommodated.

Mooring buoys situated SE and S of Sagari Matsu can accommodate vessels to 10,000 dwt with drafts to about 10.5m. The berths NE of these have depths alongside of 2 to 4.5m and are for scheduled liners.

Reclamation has been carried out in the vicinity of West Pier, 0.25 mile ENE of Quay A.

Aspect.—Misumi Take, 406m high, is located about 0.85 mile E of the E entrance of Misumi No Seto. This peak's sharp summit is prominent.

Shibao Yama, 225m high, lies on the W side of the entrance of Misumi No Seto.

Hi Take (Tobi Take), 230m high, is located about 0.35 mile SW of Ushikorobi Bana and is prominent.

Nakagami Shima, an islet in the middle of the N entrance to Misumi No Seto, is about 89m high. This islet divides the N entrance of Misumi No Seto into two channels, the E being Ko Seto, and the W, O Seto, which is the preferred channel.

Pilotage.—Pilotage is not compulsory. Vessels approaching Misumi Ko are boarded by pilots off **Kuchinotsu Ko** (32°36'N., 130°12'E.) in Hayasaki Seto, the channel in the seaward entrance of Misumi No Seto. Pilots will board in either quarantine anchorage. Pilots are not available after sunset and their availability depends on tidal conditions. When clearing the port the pilots are usually dropped close off the N entrance of Misumi No Seto. During bad weather the pilots may remain on board as far as Kuchinotsu Ko.

Pilots may be contacted by telephone (81-944-531405) or facsimile (81-944-513529).

Anchorage.—The quarantine anchorage is situated about 0.8 mile NNE of Shibao Yama (32°37'N., 130°27'E.). Another quarantine anchorage is situated about 0.8 mile S of the S entrance of Zozo No Seto.

There is an anchorage, in 15m, mud, good holding ground, between the shore E of Sagari Matsu and the N edge of the shoal NW of Shiro Se. Vessels should refer to the latest chart, because the space is limited in this area. There are mooring buoys here and vessels can moor. Vessels should anchor with caution because of hard materials on the sea bottom, and being a menace to anchoring lie close off the shore just E of Sagari Matsu. Midway between the N edge of Shira Se and the S coast of Uto are sunken lumbers. Misumi Light and Seto-no-Bana, 39m high, on the E side of Ko Seto, are reported suitable for bearings when anchoring.

Fish havens are set about 0.7 mile NE of Misumi Light, and about 0.5 mile ENE and 0.6 mile S, respectively, of Katashima Bana.

Directions.—Entry to Misumi Ko by way of Yatsushiro Kai or from Shimabara Wan requires local knowledge.

Vessels approaching Misumi Ko from Yatsushiro Kai should pass through the narrowest part of Zozo No Seto with the pine trees on Genno Shima and the building on Ige Se in range about 320°. This range should lead close W of the lighted buoy marking Amitori Se. However, care should be taken to avoid opening Genno Shima to the NE of Ige Se. When abeam of the N end of the village of Zozo, Amitori Se will be cleared and course should be changed to pass midway between Tera Shima Light and Kabuto Shima. A course of 339° can be steered. Then course may be shaped for the flagstaff, 84m high, on the summit of a hill about 0.35 mile ENE of Sagari Matsu, bearing

about 328°. When abeam of **No Saki** (32°36'N., 130°29'E.), vessels should alter course for the anchorage.

Vessels proceeding from Misumi Ko into Shimabara Wan must pass through Misumi No Seto. Misumi No Seto is narrow and affected by strong tidal currents. Also, this channel has a very sharp bend, making the possibility of meeting a vessel passing through from the opposite direction a primary consideration. Due to all of the above factors, transit of Misumi No Seto should be made at slack water at a reduced speed. In O Seto, vessels should pass as close as practicable to the SW side of Nakagami Shima. The tidal currents in this vicinity come into contact upon Nakagami Shima and set across the fairway to the shore off Shibao Yama, where they again deflect back across the fairway in an opposite direction.

Caution.—Caution is especially needed to avoid the vicinity of Usikorobe Bana on the W shore, near the bridge. Vessels southbound for Yatsushiro Kai should follow roughly the reciprocal of the courses described above from the vicinity of Shira Se.

Nagasaki Hanto—East Side

8.76 Tameishi Ura (32°38'N., 129°50'E.) is a cove at the head of a bight, about 5 miles NNE of Kaba Shima. It is sheltered from all winds except from the S. Depths in the cove are from 1 to 5m. The village of Tameishi lies at the head of the cove.

Between Tameishi Ura and Mogi Ko, a distance of about 5.5 miles, the coast trends in a NE direction, and is fringed with reefs extending about 0.2 mile offshore in places.

A breakwater extends SW from the reef fringing the N shore of the entrance to the inlet. Another breakwater extends NE from the reef fringing the S shore of the entrance; a light stands at its head. An inner breakwater protects the harbor on the W side of the inlet; a light stands at its head.

8.77 Mogi Ko (32°42'N., 129°55'E.) (World Port Index No. 62340) is entered between Shiomi Saki and Aka Saki, about 0.5 miles to the NE. The W side of the harbor is fronted by a bank that dries. The town of Mogi lies on the W side of the harbor, where a pier is situated near the N end. A light is shown from the head of a breakwater SE of the pier.

Mogi Ko affords anchorage, sheltered from all winds except those between E and S, to small vessels with local knowledge, in depths of 6.9 to 8.2m. Large vessels can anchor near the entrance of the harbor, in depths of 14.6 to 20m.

Biwaga Saki (32°43'N., 129°56'E.) is the E point of Ikano Ura and lies almost 1 mile NNE of Aka Saki. The point is a conspicuous overhanging headland. Kajikake Iwa, a drying rock, lies 0.25 mile offshore and 0.75 mile NE of Biwaga Saki.

Aba Wan is located about 1.5 miles NE of Kajikake Iwa and is entered between Tate Ishi, a conspicuous black pointed rock, and Tsu Shima, about 1 mile to the E. The village of Aba Wan lies on the W side of the bay, where a basin for small boats is situated.

Anchorage.—Aba Wan affords anchorage, sheltered from all winds except from the S and SE, in a depth of 16.5m, in the center of the bay.

8.78 Maki Shima (32°45'N., 129°59'E.) forms the E side of Aba Wan; small vessels with local knowledge can obtain anchorage, sheltered from all winds, between the NE side of the island and the mainland coast, in depths of 2.7 to 4.6m.

Caution.—Caution is necessary because of shoals in both entrances.

Eno Ura, a small boat harbor, lies about 3.25 miles ENE of Aba Wan. A shoal, on which lies Biwa Shima and Shamisen Shima (Samison Shima), extends more than 1 mile E of the entrance. A narrow channel with a depth of 3m leads into the boat harbor. A light is shown from Shamisen Shima and the S entrance point of the harbor.

Tachibana Wan

8.79 Tachibana Wan (32°44'N., 130°08'E.) is entered between Shamisen Shima and Kuni Saki, 6 miles to the SE on the opposite shore. The bay is open to the SW and depths range from 31 to 37m in most parts of the bay.

Yuki (Uki), a village on the N side of the bay, lies about 3 miles NE of Shamisen Shima. Three conspicuous radio towers lie about 3.5 miles E of Yuki; the village of Chijiwa lies about 2.5 miles SE of the radio towers.

Obama Ko (32°43'N., 130°13'E.) lies about 3.25 miles S of Chijiwa and is conspicuous by a number of white buildings on its shore. The roadstead off Obama affords good anchorage, sheltered from all winds except those between S and W. The bottom is mud and the holding ground is good, but the depths are somewhat great.

Kyodomari, a boat harbor, protected by a breakwater, lies about 4.25 miles SW of Obama Ko. The village of Kyodomari lies on the SE side of the boat basin. A light is shown from the head of the breakwater.

Kuni Saki (32°41'N., 130°08'E.) is a densely-wooded peninsula, faced with a white overhanging cliff, located about 1 mile NW of Kyodomari. A reef, with depths of less than 2.7m, extends about 0.15 mile NE from Ko Shima, an islet, 0.5 mile ESE of Kuni Saki. Kamino Se, a detached rock that dries, 1.8m, lies 0.3 mile offshore, about 0.75 mile S of Kuni Saki.

From Kuni Saki, the coast trends S for about 3 miles and then SE for 3 miles to Setsume Saki, the NW entrance point to Hayasaki Kaikyo. A light is shown from the point.

Hayasaki Kaikyo

8.80 Hayasaki Kaikyo (32°34'N., 130°10'E.), the main entrance of Shimabara Wan, leads from seaward between the N side of Amakusa Simo Shima and the S extremity of Shimabara Hanto.

Tides—Currents.—In Hayasaki Kaikyo, the tidal current flows E from 1 hour after LW until 1 hour after HW, and W from about 1 hour after HW until 1 hour after LW. The maximum rate is about 8 knots, and eddies and tide rips are formed between Gotsu Iwa and Setsume Saki, especially in the vicinity of the latter.

Gotsu Sho (32°34'N., 130°07'E.), on the S side of the main fairway, lies about 1.5 miles off the coast of Amakusa Shimo Shima, about 3 miles WSW of Setsume Saki; from it a shoal extends about 0.3 mile southward. There is a detached 12.5m patch about 1 mile E of Gotsu Sho. A light is shown from a tower on Gotsu Sho.

Tsujino Shima lies about 1.25 miles S of Gotsu Sho and is separated from a point on the coast of Amakusa Shimo Shima

by a narrow and shallow channel. A light marks the NW side of the channel and a lighted buoy marks the SW side. The N side of the islet is fringed with foul ground of a spit, on which lies Kogame Sho, a rock, marked by a light.

From the point abreast Tsujino Shima, the S shore of Hayasaki Kaikyo trends about 3.5 miles E to Oniike Ko and is fringed with a shoal bank extending about 0.3 mile offshore in places.

Oniike Ko (32°33'N., 130°11'E.) is located on the SE side of the strait, about 3.25 miles E of the E extremity of Tsujino Shima. The harbor, used mainly by small craft, is protected by a breakwater. A light is shown from the head of the breakwater.

Kuchinotsu Ko (32°36'N., 130°12'E.)

World Port Index No. 62330

8.81 Kuchinotsu Ko (Kutinotu Ko), on the N side of Hayasaki Kaikyo, is entered between Tsuchibira Saki, about 1.5 miles NE of Setsume Saki, and Miyasaki Bana, about 0.5 mile to the ENE. The port consists of a small natural harbor and town, with anchorage afforded to most vessels awaiting a favorable tide in Hayasaki Kaikyo.

Depths—Limitations.—Charted depths in the middle part of the harbor are from 5 to 19m. A rocky patch, with a depth of 14m, lies about 0.3 mile SSE of Tsuchibira Saki.

It was reported (1963) that the water depth at a point bearing 110°, 0.3 mile from Kuchinotsu Light is less than charted.

Pilotage.—Pilots are available and will board vessels in Hayasaki Kaikyo.

Anchorage.—Large vessels can anchor SE of Tsuchibira Saki, in about 18.3m, mud bottom. Small vessels can anchor inside the harbor, in a depth of 5.5m, mud.

Shimabara Wan—South Part

8.82 Shimabara Wan is entered from seaward through Hayasaki Kaikyo. Vessels approaching the strait from the W or S should proceed to a position N of Gotsu Sho, and then steer for the middle of the narrows of Hayasaki Kaikyo. If an opposing tidal current is encountered, it is best to enter the passage from a position NW of Setsume Saki, passing reasonably close to that headland.

Pilotage.—Pilots are available for Shimabara Wan and the ports within. By arrangement, pilots meet vessels in the entrance to Hayasaki Kaikyo, in the vicinity of Gotsu Sho or Setsume Saki.

The locations of fish haven obstructions should be noted on the chart.

8.83 South and southeast shore of Shimabara Wan.—From Oniike Ko, the E coast of Amakusa Shimo Shima, forming part of the S shore of Shimabara Wan, trends about 5.5 miles S to Hondo Ko, on the W side of the N end of Hondono Seto, and is fringed with a coastal bank, with depths of less than 5.5m extending about 0.75 mile offshore in places.

Fish haven obstructions are situated about 1.25 miles offshore.

Hondo Ko (32°27'N., 130°12'E.) is only available to small vessels with local knowledge, as the coastal bank in the vicinity dries for a distance of 0.75 mile. The town of Hondo overlooks the harbor. Two lights are shown offshore, E of the town.

From the E side of the N end of Hondono Seto, the NW coast of Amakusa Kami Shima, forming part of the S shore of Shimabara Wan, trends about 7 miles NE to Akasaki. This stretch of the coast is fringed with a coastal bank, with depths of less than 5.5m, extending about 0.5 mile offshore in places, and from it a bank, with depths of less than 18.3m and on which lie some 8.3m patches, extends up to 4 miles offshore. Lights are shown close offshore from the villages of Oshimako, Kotsu, and Akasaki. Numerous fish havens lie up to 1 mile offshore between Hondo Ko and Michigoeno Seto.

8.84 Kuro Shima (32°32'N., 130°20'E.) lies about 0.5 mile offshore, 1.25 miles NE of Akasaki. Take Shima lies about 0.25 mile offshore and 1.75 miles E of Kuro Shima. The village of Oura, on the N coast of Amakusa Shimo Shima, lies 0.75 mile SW of Take Shima. A lighted buoy is moored 0.5 mile WNW of the N extremity of Take Shima.

Yu Shima, a flat-topped island, is conspicuous when entering Shimabara Wan through Hayasaki Kaikyo. The island lies about 4.5 miles N of Kuro Shima. Two conspicuous radio towers stand on the S side of the island and lights are shown from the W and S sides of Yu Shima. Shoals with depths less than 5m extend E, SE and S of Yu Shima.

Yushima Seto, the channel taken by nearly all vessels which enter Shimabara Wan, leads between Yu Shima and Yoko Sone, nearly 3.25 miles to the W.

Nogama Shima (Nokama Shima) (32°35'N., 130°23'E.) lies on the SE side of the S end of Shimabara Wan, close off the W extremity of Oyano Shima, about 2.25 miles SE of Yu Shima. The coast between Nogama Shima and a small peninsula about 2 miles NE is fringed by a shoal bank. Habo Shima, an above-water rock, lies close off the NW side of the bank.

Ebito Ko, a fishing harbor on the W coast of Oyano Shima, 1.5 miles E of Nokama Shima. A light stands on the head of the protecting breakwater.

Misumi No Seto lies about 2.75 miles NE of Habo Shima and is entered between the NE end of O Yano Shima, which shows a light, and the SW end of Uto Hanto.

Shimabara Wan—Central Part—East and West Sides

8.85 Uto Hanto (32°39'N., 130°35'E.) is the mountainous peninsula on the SE side of the central part of Shimabara Wan, and its N coast extends about 9 miles ENE from Setono Bana, to the mouth of the Midori Kawa. O Take, the summit of the peninsula, attains an elevation of 478m, and lies about 5.75 miles E of Misumi Take, and is a good landmark. The point on the S side of the mouth of Midori Kawa is low and wooded, and from a distance appears dark and is fairly prominent.

A light is shown from the village of Sumiyoshi, which lies near the S entrance point of Midori Kawa. A lighted buoy is moored off the mouth of the river. A fish haven lies close NE of the lighted buoy.

Between the middle of the N side of Uto Hanto and Nagasu Ko, about 15 miles NNW of the mouth of Midori Kawa, the E shore of Shimabara Wan forms a bight, from the shores of which a shoal bank with depths of less than 5.5m, most of the inner part which dry, extends about 2.75 miles offshore in places.

Hyakkanishi Ko (32°48'N., 130°37'E.) lies at the mouth of the Tsuboi Kawa, which is located about 4.75 miles N of the mouth of the Midori Kawa. The port is used by small vessels with local knowledge. A light is shown from the N entrance point to the river, and a lighted buoy is moored about 1.9 miles W of the light.

Two small harbors, protected by breakwaters, and showing lights, lie within 2.25 miles, NW of Hyakkanishi Ko Light.

8.86 West side of the south part of Shimabara Wan.—Kareki Saki (32°44'N., 130°23'E.) is a headland marked by several houses, and lies about 8.5 miles NNE of Yu Shima. A line of trees extends inland at right angles to the coast and makes the point somewhat conspicuous.

Unzen Take lies almost in the middle of Shimabara Hanto, about 4.5 miles WNW of Kareki Saki. Its summit is somewhat flat and its sides are steep, making it a prominent mark.

Shimabara Ko (32°46'N., 130°23'E.)

World Port Index No. 62320

8.87 Shimabara Ko is situated 2 miles N of Kareki Shima and consists of the two towns of Minato and Shimabara. The port is made up of an outer and inner harbor, with anchorages and docking facilities for small vessels.

Winds—Weather.—Local weather signals are displayed at the town of Minato in a position SW of the railroad station.

Tides—Currents.—The MHW interval at Shimabara Ko is 8 hours 54 minutes, spring tides rise 4.3m and neap tides rise 3.1m.

The tidal currents flow N and S during the rising and falling tides, respectively; the change occurring at approximately HW and LW. The velocity exceeds a rate of 2.5 knots.

Depths—Limitations.—Coastal vessels and car ferries use the outer harbor and fishing vessels frequent the inner harbor. The outer harbor pier has depths of 2.5 to 3m alongside.

Aspect.—A radio tower, marked by a red obstruction light, standing about 0.7 mile NNW of Shimabara Light, and Shimabara Castle, marked by intermittent illuminating lights until 2100, are excellent landmarks both day and night.

Pilotage.—Local knowledge is essential for entering either the outer or inner harbor.

Anchorage.—Small vessels anchor in the inner harbor, in depths of 0.3 to 5m, sheltered from all winds.

8.88 West side of the north part of Shimabara Wan.—Taira Ko (32°52'N., 130°19'E.), a small harbor protected by breakwaters, lies about 7.5 miles NNW of Shimabara Ko. A light is shown from the head of the W breakwater.

Small vessels with local knowledge can obtain anchorage in the unnamed bay entered between Taira Ko and Takesaki Shima, about 6.5 miles to the NW. Two conspicuous radio masts stand near the village of Isahaya (32°50'N., 130°04'E.), about 2.5 miles inland from the head of the bay.

Takesaki Shima (32°57'N., 130°14'E.) shows a light from its E extremity; close N of this light, a second light is shown from the head of the N breakwater in Michikoshi Ko. Takesaki Ko lies on the S side of Takesaki Shima and is protected by breakwaters.

8.89 East side of the north part of Shimabara Wan.—Nagasu Ko (32°55'N., 130°27'E.) is entered between two breakwaters. A light stands on the head of the N breakwater. A submerged jetty extends 0.15 mile SW from a position 0.1 mile SW of the N breakwater light. Several fish havens lie within 2 miles of the entrance to the harbor. Two building docks, with a capacity of 800,000 dwt, and a quay, 310m long, with depths from 5.5 to 7m alongside, are situated on reclaimed land close SE of Nagasaka Ko.

From Nagasu Ko, the coast trends about 4.75 miles N to Miike Ko and is fringed with a bank that dries out about 1.75 miles offshore; the edge of the bank is comparatively steep-to.

Miike Ko (33°00'N., 130°25'E.)

World Port Index No. 62290

8.90 The port of Miike Ko, a principal port and a port of entry, is situated about 5 miles NNW of Nagasu Ko, and consists of a city, an outer harbor, a small artificial inner harbor, and a wet dock, and anchoring and berthing facilities for large vessels. Miike Ko is principally a coal exporting port.

Winds—Weather.—Winds between SE and SW prevail during the summer in the vicinity of Miike Ko, and in the winter winds between W and N predominate. Heavy seas are sometimes experienced with SW winds but seldom at other times. The heaviest rainfall occurs in June and July. Visibility is frequently poor, but the fogs here cannot be described as being thick.

Local weather signals are displayed near the SE corner of the inner harbor.

Tides—Currents.—In a position about 1.5 miles SW of the light on the head of the N breakwater, the tidal current flows N during the rising tide and S during the falling tide, at the rate of about 2 knots. Off the heads of the breakwaters, these currents sometimes attain a rate of 5 knots, necessitating great care in entering or leaving the entrance channel. In the fairways between the breakwaters, the current may obtain a rate of about 1 knot; in the approach to the wet dock, they do not exceed 0.5 knot.

Depths—Limitations.—There is a passage from about 1.4 miles S of the entrance to this port up to the dock area after passing through an area between the N and S groins. This passage has depths from 6.5 to 13m. The inner portion of the channel is being dredged to maintain a constant water depth of about 7m at LWST.

New Berth No. 5 is at a pier with dolphins 138m N of Berth No. 5. There are depths of 9.5m alongside New Berth No. 5 and depths of 10.4m alongside Berth No. 5. North Wharf has eight wharves with a maximum depth of 10m. The maximum draft for vessels up to 20,000 dwt is 9m; for vessels up to 25,000 dwt the maximum draft is 8.5m; and for vessels up to 30,000 dwt the maximum draft is 7.5m. The depth on the sill of the wet dock is 10.4m at ordinary spring tides, and a depth of 8.5m is maintained within the wet dock.

The channel leading from the inner harbor to the wet dock has a width of 36.6m, with a navigable width of 20m at the wet dock gate. The gate is closed from 3 hours after to 3 hours before HW thereby enabling a depth of 8.5m to be maintained in the wet dock. A dam, 11m high, on both sides of the gate, decreases the velocity of the current when the range of the tide is high. The wet dock has

a water area of about 32 acres, and the height of the quay wall is 1.5m above HW ordinary spring tides.

Two berths in the inner harbor are capable of berthing vessels up to 10,000 gt.

It is reported the largest vessel to dock in this port is 25,532 dwt. Vessels with a draft of more than 7m must wait for high tide.

Aspect.—Yotsu Yama, close to the coast, SE of the inner harbor, is a conspicuous landmark. It consists of four peaks in a row, from 39 to 55m high, extending in a NW/SE direction for about 0.4 mile, with yellowish brown cliffs on its seaward side. Kokuzo Yama, the southernmost peak is the highest of the four. A gray mine shaft at the foot of Yotsu Yama can be recognized at a distance of several miles offshore.

The large chimney of a power station on the S side of the harbor is conspicuous.

Lights are shown, but only when vessels are entering or leaving the inner harbor, at intervals along each breakwater; they serve to mark the breakwater but are not visible from seaward.

Lights are shown at the N and S entrance points of the inner harbor.

Several piles remain at the site of a former beacon, situated about 2.25 miles WSW of Miike Ko Breakwater Light. The site is marked by a light.

Pilotage.—Pilots is not mandatory for bay transit, but pilotage is compulsory in the harbor for vessels over 1,000 gt. Pilots will board 1 mile S of Kuchinotsu Light.

Harbor pilotage is compulsory. The pilot boards in position 32°35.0'N, 130°12.0'E for the bay and position 32°59.0'N, 130°23.0'E.

Vessels are to forward their ETA, stating ETA at Kuchinotsu Light, 48 hours prior to arrival.

Regulations.—Vessels are to reduce speed in the harbor to a point just sufficient to maintain steerage way.

Inbound vessels should advise the port 15 minutes before passing Miike light.

Outbound vessels should advise the port 15 minutes before leaving the dock.

Vessels are prohibited to approach within 50m of tankers loading or discharging in the inner harbor.

Vessels must not proceed abreast of or overtake another vessel in the fairway.

Vessels must not anchor or stop in the fairway.

Vessels over 100 gt are to moor, or secure bow and stern to buoys.

Vessels are prohibited to approach within 50m of tankers loading or discharging in the inner harbor.

Signals.—There is a signal station at the harbor office, close NW of the wet dock gate, from which traffic, depth, and tidal signals are displayed.

The following traffic signals are in force:

1. A green light indicates docking and undocking permitted.
2. A red light indicates docking and undocking prohibited.

Contact Information.—See the table titled **Miike—Contact Information**.

Anchorage.—Small vessels anchor in the inner harbor; however, when winds from between NW and SW exceed 40 knots, they shift berth to the wet dock.

Miike—Contact Information	
Pilots	
Telephone	81-944-5314-05
Facsimile	81-944-5135-29
Port Authority	
Telephone	81-944-5472-48
Web site	https://www.miikeport.jp

There are mooring buoys in the inner harbor for large vessels.

A quarantine anchorage has been established off the entrance to Miike Ko.

8.91 Omuta Ko (33°02'N., 130°25'E.) (World Port Index No. 62300), at the mouth of the Omuta Kawa, lies about 1.5 miles NNE of Miike Ko and is approached across a bank that dries. On either side of the mouth of the river extensive reclamation work has been carried out, and on the N side, a wet dock is available to vessels of 300 gt. The approach channel is shallow, but kept dredged to a depth of 0.6m.

The city of Omuta extends from the N side of the mouth of Omuta Kawa to the E side of Miike Ko. Suwa Kawa flows through the S part of the city and can be ascended by vessels drawing less than 1.8m as far as the first bridge across the river.

8.92 North part of Shimabara Wan.—The N part or head of Shimabara Wan is much obstructed by shoals and is fringed with banks that dry out about 4.5 miles in places. Into it flows several rivers of which Chikugo Kawa and Suminoe are the largest.

Chikugo Kawa flows into the head of Shimabara Wan, about 8 miles NNW of Miike Ko. The river flows through mud flats that extend nearly 5 miles offshore. The land in the vicinity of the mouth of the river is very low, but is backed by mountains some 15 miles inland. In the channels across the mud flats, the depths in places are about 0.6m, but in the river they are greater.

The channel across the mud flats is marked by beacons, but the channel frequently changes so that local knowledge is essential for passage.

Suminoe Ko (33°12'N., 130°13'E.)

World Port Index No. 62310

8.93 Suminoe Ko, a specified harbor, is situated in the mouth of the Suminoe Kawa, about 7 miles WNW of Chikugo Kawa. The harbor is used chiefly for the export of coal. The port consists of two villages, Higashi Suminoe and Nishi Suminoe, and a small, natural, shallow harbor where small vessels can anchor and moor to buoys.

Winds—Weather.—Local weather signals are displayed at the village of Higashi Suminoe.

Tides—Currents.—The MHW interval at Suminoe Ko is 9 hours 12 minutes; spring tides rise 5.5m and neap tides rise 4m.

The tidal current in the river attains a rate of over 3 knots and

on occasion may reach 5 knots.

Depths—Limitations.—There is a maximum depth of 5.2m in the anchorage area at LW.

The approach channel is shallow, but vessels up to 2,000 gt enter the harbor. Entry into the harbor is impossible except by making use of the tidal range, which is about 6m at its greatest.

Aspect.—The equipment for gathering seaweed at the seaward end of the drying bank is a good guide for vessels approaching the port.

Pilotage.—A pilot is available; vessels should anchor temporarily E of Suminoe Ko Lighted Buoy to await the pilot's arrival. It is recommended that vessels calling at this port for the first time employ a pilot. entering the harbor at night should be avoided, particularly in the case of the vessel's first call to the harbor.

Anchorage.—Mooring buoys are anchored in the harbor nearly 0.5 mile downstream from a bridge that spans the river between the two villages. Vessels secure their sterns to the mooring buoys and ride with two anchors down. Two vessels, headed upstream and downstream, respectively, can secure to the same buoy.

A vessel mooring heading upstream should do so when the ebb tidal current is flowing, and should moor heading downstream during the flood, otherwise difficulty may be experienced in maneuvering. Mooring is not possible at LW.

Japanese

JAPANESE	English
A	
abura	oil
asai	shallow
asase	ledge, shoal
B	
bae (see hae)	bank, shoal, rock
bakufu	waterfall
bana (see hana)	cape, point
bashi	bridge, point
byochi	anchorage, harbor
C	
chiiasi	little, small
cho	township
chu	middle
D	
dai	large, great
daiba	fort
dake (see take)	hill, mountain
dashi	rock, reef
F	
fukai	deep
futo	wharf, pier
G	
ga	of (in names)
gaiko	outer harbor
gake	cliff
gan	rock
ganpeki	quay, wharf, seawall
gata	lagoon, bay, inlet
gawa (see kawa)	river
genya	field, plain
genyu	crude oil
guchi (see kuchi)	entrance, strait, channel
gun	district
gunto	island group
guri	reef, rock, shoal, bank
gyoko	fishing harbor
H	
hae (see bae)	bank, shoal, rock
hakuchi	roadstead, anchorage
hama	beach, coast
hana	cape, point
hanto	peninsula
hashi	bridge, point
hatoba	wharf
heigen	plain, field
higashi	east
hikui	low
hira	flat, level
hiro	fathom
hiroi	wide, broad
ho	cove
ho	peak
hoku	north
I	
ikari	anchor
ike	lake, pond
ishi	rock
iso	reef, rock, shoal
iwa	rock, island, shoal, mountain
J	
jima (see shima)	island, rock, reef
jorikusho	landing place
ju	middle
juyu	crude oil, heavy oil
K	
kai	sea
kaiho	fort
kaikyo	strait, channel
kaiwan	gulf, inlet, sound
kaku	point, cape
kami	upper
kawa guchi	estuary
kawa	river
kei	river
ken	prefecture
ki	tree
kita	north
ko	harbor, port
ko	lagoon, lake, small
kubi	cape, isthmus
kuchi	mouth of channel, entrance
kuri	reef, rock
kuro, kuroi	black
M	
machi	town
matsu	cape, point, pine tree
michi	road
mijikai	short
minami	south
minato	harbor, port
mine	peak, mountain
misaki	cape, point, peninsula
mizu	water
mori	forest, wood
mura	village
myaku	chain (of hills, reefs)

JAPANESE	English
N	
nada	sea, gulf
nagai	long
naikai	inland sea
naiko	inner harbor
naka	middle
nan	south
ne	rock, reef, island
nippon, nihon	japan
nishi	west
no	of (possessive like 's)
nobori	mountain
numa	marsh, swamp
nupuri	mountain
O	
o	great, large
o	small
oka	hill, land, mound
oki	offing, offshore, bay
okii	great, large
P	
pii	cape
R	
ressho	chain of islets, archipelago
retsugan	chain or rocks
retto	chain of islands, archipelago
S	
saki	cape, point
sambashi	pier
san	mount, mountain
satai	sandbank
sawa	marsh, swamp, lake
se	bank, islet, reef, shoal
sei	west
seki	cape, point, rock
sekiyu	oil
sen	peak
sendan	shoal
seto	strait, channel
sha	sand
shi	city
shima	island, rock, reef
shimo	lower
shio	current, tide
shiri	cape, point
sho	bank, reef, shoal, small
sho	island, reef
shoto	archipelago, island chain
shu	country, province, state
sima (see shima)	island, rock, reef
son	village
sone	rock, shoal
su	bank, reef, shoal
sui	water, waterway
suido	channel, strait
suna	sand
syoto (see shoto)	archipelago, island chain
T	
ta	ricefield
tai	bank, sandbank
takai	high, tall
take	hill, mountain
taki	waterfall
to	island, islet, east, rock
toge	mountain, pass
torii	gateway of shinto temple
tsu	harbor, port
U	
uchi	bay, in, inside
umi	in, inside
unga	canal
ura	bay, bight, beach
W	
wan	bay
Y	
yama	mountain, hill, range
Z	
zaki (see saki)	cape, point, headland
zan	peak, mountain, hill
ze	shoal
zeikanjo	customhouse
zen	mountain
zone, zono	shoal

How to use the Index—Gazetteer

Geographic names of navigational features are generally those used by the nation having sovereignty and are listed alphabetically. 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. Positions are approximate and are intended merely as locators to facilitate reference to the charts.

To use as a Gazetteer note the position and Sector number of the feature and refer to the Boundaries diagram for the Sector. Plot the approximate position of the feature on this diagram.

To use as an Index of features described in the text note the Sector-Paragraph number at the right. The Sector-Paragraph number is then used to manually locate the feature. Each Index entry is also hot-linked to its location in the text.

Index—Gazetteer

	Position				Sec. Para
	°	'	°	'	
MIYANOURA DAKE	30	20 N	130	31 E	7.70
MIYANOURA KO	30	26 N	130	35 E	7.74
MIYASAKI KO	31	54 N	131	28 E	6.28
MIYATO SHIMA	38	20 N	141	10 E	2.33
MOGI KO	32	42 N	129	55 E	8.77
MOKOTO YAMA	43	42 N	144	20 E	1.8
MOMOTORI SUIDO	34	31 N	136	50 E	5.24
MONBETSU KO	44	21 N	143	21 E	1.6
MONBETU KO	44	21 N	143	21 E	1.6
MORI KO	42	07 N	140	35 E	1.43
MORITO SAKI	33	32 N	135	53 E	5.57
MOROSAKI KO	34	42 N	136	59 E	5.39
MOROSAKI SUIDO	34	41 N	136	59 E	5.38
MOTOMACHI KO	34	45 N	139	21 E	4.2
MUKO SHIMA	26	36 N	142	08 E	4.20
MUKO SHIMA	27	41 N	142	08 E	4.14
MUKOSHIMA RETTO	27	37 N	142	11 E	4.13
MURORAN KO	42	21 N	140	58 E	1.40
MUROTO SAKI	33	14 N	134	11 E	6.5
MUTSU-OGAWARA KO	40	57 N	141	25 E	2.3
MYOGA SHIMA	33	27 N	135	48 E	5.59
MYOKEN YAMA	35	10 N	140	09 E	3.5

N

NAARAI KO	35	42 N	140	51 E	3.2
NAGA SAKI	31	42 N	130	16 E	8.22
NAGASHIMA WAN	34	11 N	136	21 E	5.47
NAGASU KO	32	55 N	130	27 E	8.89
NAGATA	30	24 N	131	26 E	7.71
NAGATA MISAKI	30	23 N	130	23 E	7.71
NAGATENO BANA	32	11 N	130	01 E	8.42
NAGO WAN	26	34 N	127	56 E	7.27
NAGOYA KO	35	04 N	136	52 E	5.31
NAHA KO	26	13 N	127	41 E	7.26
NAHA SHIN KO	26	14 N	127	41 E	7.26
NAHARI KAWI	33	25 N	134	01 E	6.8
NAKA KOSHIKI SHIMA	31	48 N	129	50 E	8.31
NAKA SE	30	34 N	131	03 E	7.81
NAKADACHI SHIMA	27	38 N	142	11 E	4.14
NAKAGUSUKU WAN	26	14 N	127	55 E	7.31
NAKAHISE SAKI	28	19 N	129	33 E	7.55
NAKAMINATO KO	36	20 N	140	36 E	2.43
NAKANO SHIMA	29	51 N	129	51 E	7.64
NAKANO SONE	30	18 N	130	08 E	7.69
NAKAYAMA SUIDO	34	39 N	137	02 E	5.33
NAKIRI KO	34	17 N	136	54 E	5.42
NAKODO SHIMA	27	38 N	142	11 E	4.14
NAON	28	20 N	129	19 E	7.52
NARUSE BANA	32	13 N	130	06 E	8.48
NAZE KO	28	23 N	129	30 E	7.53
NE BREAKWATER LIGHTTOWER	35	19 N	139	41 E	3.22
NE SAKI	39	31 N	142	04 E	2.11
NEMURO KO	43	20 N	145	35 E	1.15
NIGISHIMA WAN	33	56 N	136	13 E	5.52
NII SHIMA	34	23 N	139	16 E	4.4
NISHI SAKI	24	26 N	123	47 E	7.9
NISHINO SHIMA	27	15 N	140	53 E	4.17
NO SAKI	30	29 N	130	09 E	7.84
NO SE	31	30 N	131	24 E	6.31
NO. 21 BEACON	21	24 N	123	56 E	7.10
NOGAMA	32	35 N	130	23 E	8.84
NOJIMA SAKI	34	54 N	139	54 E	3.7
NOKAMA	32	35 N	130	23 E	8.84
NOKANO SE	43	22 N	145	57 E	1.17
NOKKAMAPPU SAKI	43	23 N	145	39 E	1.16
NOKKE SAKI	43	34 N	145	21 E	1.14
NOMA MISAKI	31	24 N	130	07 E	8.17
NOMO SAKI	32	34 N	129	44 E	8.47
NOSAPPU SAKI	43	23 N	145	49 E	1.16
NOSE HANA	30	19 N	130	24 E	7.71
NOTARI	34	37 N	138	15 E	5.10
NOTORO MISAKI	44	07 N	144	15 E	1.7
NOZIMA SAKI	34	54 N	139	54 E	3.7
NU SAKI	26	13 N	127	21 E	7.23
NUMAZU KO	35	05 N	138	51 E	5.8

O

O NE	38	48 N	141	38 E	2.22
O NE	41	26 N	141	29 E	2.3
O SAKI	38	51 N	141	41 E	2.20
O SAKI	39	15 N	141	58 E	2.16
O SHIMA	31	33 N	131	25 E	6.31
O SHIMA	33	28 N	135	50 E	5.58
O SHIMA	33	38 N	134	30 E	6.4
O SHIMA	34	09 N	136	22 E	5.47
O SHIMA	34	44 N	139	24 E	3.10
O SHIMA	39	24 N	142	00 E	2.13
O URA	30	28 N	130	58 E	7.80
OAKAN DRAKE	43	27 N	144	10 E	1.32
OAKAN TAKE	43	27 N	144	10 E	1.32
OBAMA KO	32	43 N	130	13 E	8.79
OCHIISHI SAKI	43	09 N	145	30 E	1.25
ODAWARA	35	15 N	139	10 E	3.35
ODOMARI WAN	31	01 N	130	41 E	6.36
OFUNATO	39	03 N	141	44 E	2.18
OGAME SHO	28	15 N	129	53 E	7.56
OGAMI SHIMA	24	55 N	125	20 E	7.18
OGAN MISAKI	24	27 N	124	05 E	7.14
OGASAWARA GUNTO	27	09 N	142	05 E	4.12
OGINOHAMA KO	38	22 N	141	27 E	2.31
OHAKO SAKI	39	21 N	142	00 E	2.14
OIGAWA KO	34	46 N	138	18 E	5.13
OKACHI YAMA	28	02 N	129	10 E	7.43
OKAGE YAMA	33	45 N	134	30 E	6.2
OKAGE YAMA	33	45 N	134	31 E	6.3
OKI-DAITO SHIMA	24	28 N	131	11 E	7.3
OKIKAJITAKA NE	38	17 N	141	09 E	2.33
OKINAWA GUNTO	26	20 N	127	30 E	7.19
OKINO-ERABU SHIMA	27	22 N	128	35 E	7.39
OKINOKUWA	28	00 N	129	15 E	7.44
OKINOTAKA NE	38	17 N	141	09 E	2.33
OKINO-TORI SHIMA	20	25 N	136	05 E	4.24
OMAE SAKI	34	36 N	138	14 E	5.9
OMAESAKI KO	34	36 N	138	14 E	5.11
OMINE YAMA	26	11 N	127	39 E	7.25
OMONAWA	27	40 N	128	58 E	7.41
OMUTA KO	33	02 N	130	25 E	8.91
ONAGAWA	38	27 N	141	27 E	2.25
ONAHAMA KO	36	56 N	140	54 E	2.39
ONAHAMA WAN	36	55 N	140	52 E	2.38
ONESHIME KO	31	15 N	130	47 E	8.4
ONIGA SE	34	54 N	139	49 E	3.8
ONIIKE KO	32	33 N	130	11 E	8.80
ONIZUKANO HANA	32	18 N	130	03 E	8.44
ORA WAN	26	32 N	128	04 E	7.34
ORI SAKI	30	29 N	130	12 E	7.85
ORI SE	30	31 N	131	00 E	7.81
ORYUZAKO BYOCHI	31	48 N	131	29 E	6.29
OSANBASHI	35	27 N	139	39 E	3.23
OSASHI SAKI	38	36 N	141	32 E	2.24
OSATSUBE KO	41	54 N	141	00 E	1.45
OSE SAKI	35	02 N	138	47 E	5.4
OSHIME HANA	32	46 N	132	38 E	6.18
OSUMI GUNTO	30	30 N	130	00 E	7.70
OTAKE SAKI	30	22 N	130	58 E	7.79
OTO YAMA	28	19 N	129	16 E	7.52
OTOTO SHIMA	27	10 N	142	11 E	4.15
OTSU MISAKI	36	50 N	140	48 E	2.41
OTSUCHI WAN	39	21 N	141	57 E	2.14
OTU MISAKI	36	50 N	140	48 E	2.41
OURA WAN	26	32 N	128	04 E	7.34
OWASE KO	34	04 N	136	13 E	5.50
OWASE WAN	34	03 N	136	17 E	5.49

P

PORONUPURI DAKE	44	58 N	142	24 E	1.4
PORT OF HIRARA	24	48 N	125	17 E	7.17
PORT OF NASE	28	23 N	129	30 E	7.53

R

RAUSU HAKUCHI	44	01 N	145	12 E	1.13
RAUSU KO	44	01 N	145	12 E	1.13
RUKAN SHO	26	06 N	127	32 E	7.23
RYOISHI WAN	39	18 N	141	56 E	2.14
RYORI	39	02 N	141	48 E	2.17