PUB. 125

SAILING DIRECTIONS (ENROUTE)

★

WEST COAST OF SOUTH AMERICA

★

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SIXTEENTH EDITION

Preface

Pub. 125, Sailing Directions (Enroute) West Coast of South America, Sixteenth Edition, 2023, is issued for use in conjunction with Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia. Companion volumes are Pubs. 126 and 127.

Digital Nautical Charts 7 and 14 provide electronic chart coverage for the area covered by this publication.

This publication has been corrected to 18 February 2023, including Notice to Mariners No. 7 of 2023. Subsequent updates have corrected this publication to 2 March 2024 including Notice to Mariners No. 9 of 2024.

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).

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DSN	547-5455
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NGA Maritime—Contact Information	
Maritime Safety Office	
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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. This publication is updated as needed and made available as a downloadable corrected publication on the NGA Maritime Safety Office 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.

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/maps/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.

Canadian Sailing Directions.

Various port handbooks.

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

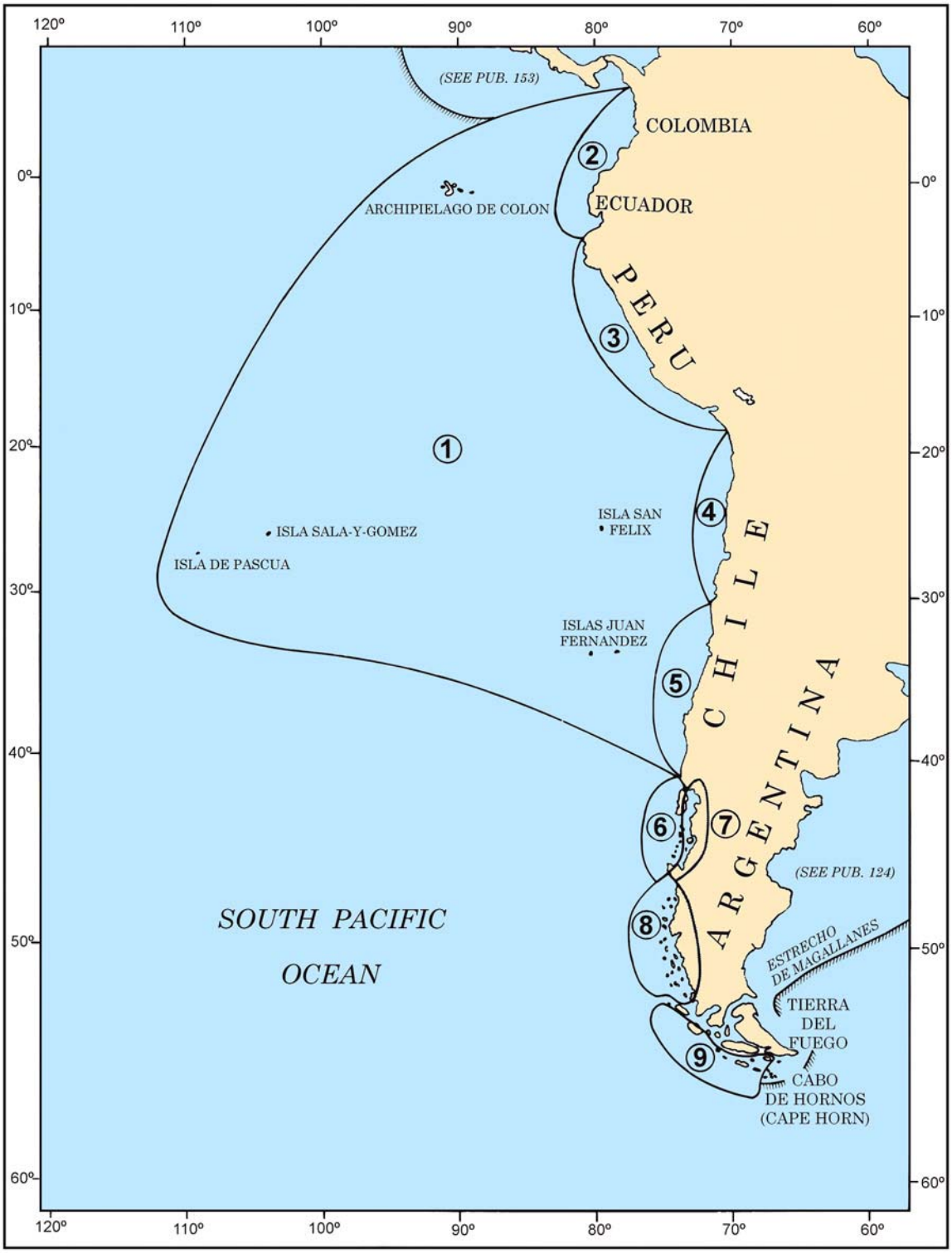
Other U.S. Government publications, reports, and documents.

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

Date of Change: 2 March 2024	
Notice to Mariners: 9/2024	
Sector	**Paragraphs**
Sector 2	Paragraphs 2.10, 2.13, and 2.32
Sector 3	Paragraph 3.39
Sector 5	Paragraph 5.12, 5.16, and 5.43
Sector 7	Paragraph 7.21 and 7.40

Date of Change: 2 December 2023	
Notice to Mariners: 48/2023	
Sector	**Paragraphs**
Sector 2	Paragraphs 2.14 and 2.32
Sector 3	Paragraph 3.9
Sector 7	Paragraph 7.59

Date of Change: 24 June 2023	
Notice to Mariners: 25/2023	
Sector	**Paragraphs**
Sector 2	Paragraphs 2.13, 2.2, and 2.32
Sector 3	Paragraphs 3.21 and 3.40
Sector 5	Paragraph 5.18
Sector 7	Paragraph 7.21



SECTOR LIMITS — PUB. 125

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

Abbreviations

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	nrt	net registered tons
kHz	kilohertz	TEU	twenty-foot equivalent units

Directions

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

Vessel types

LASH	Lighter Aboard Ship	Ro-Ro	Roll-on Roll-off
LNG	Liquified Natural Gas	ULCC	Ultra Large Crude Carrier
LPG	Liquified Petroleum Gas	VLCC	Very Large Crude Carrier
OBO	Ore/Bulk/Oil	VLOC	Very Large Ore Carrier
Lo-Lo	Lift-on Lift-off	FSO	Floating Storage and Offloading Vessels (System)
NGL	Natural Gas Liquids		

Time

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

Water level

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

Communications

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

Navigation

LANBY	Large Automatic Navigation Buoy	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

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

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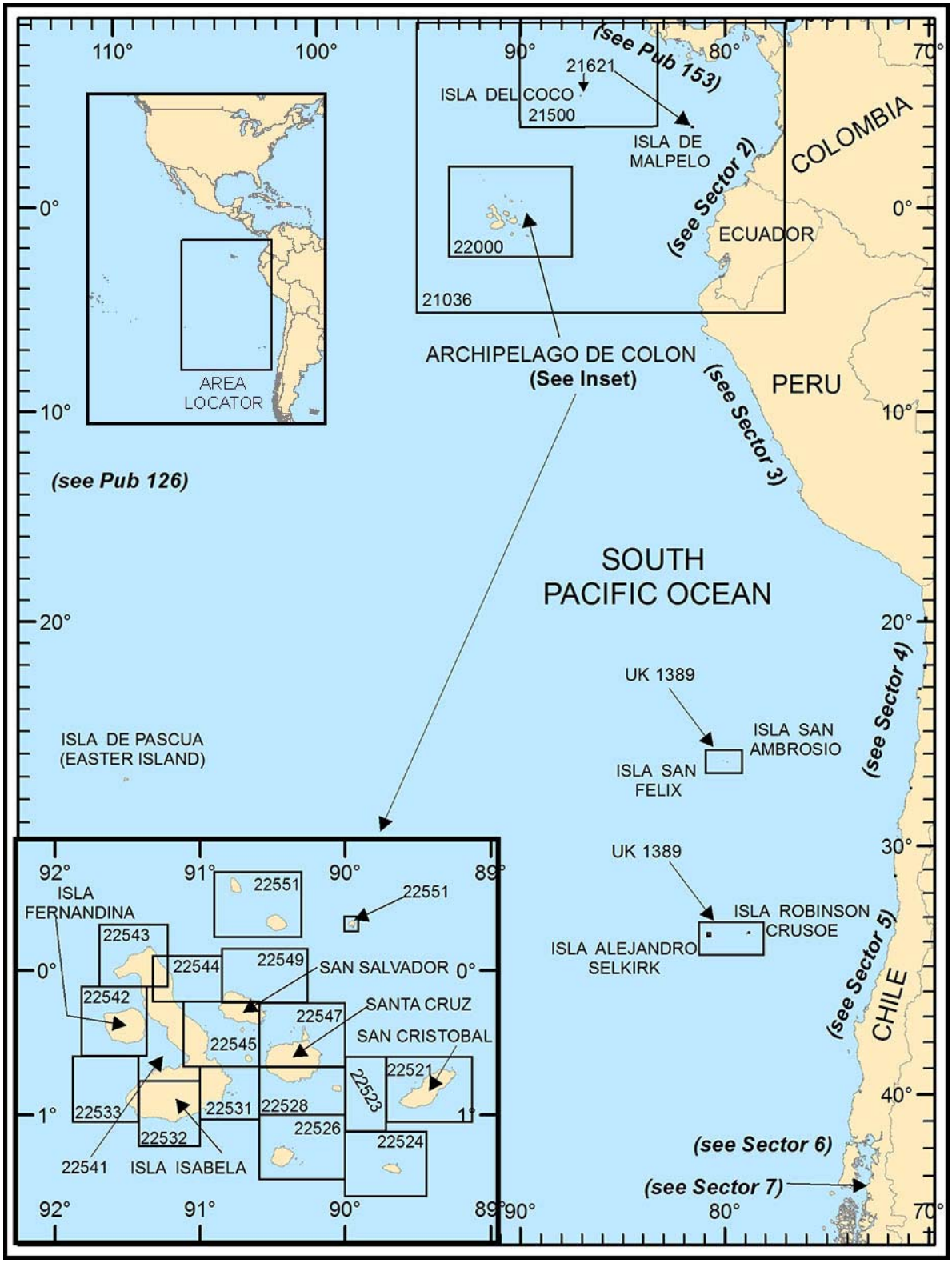


Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR **1** — CHART INFORMATION

SECTOR 1

WEST COAST OF SOUTH AMERICA—OFF-LYING ISLANDS AND DANGERS

Plan.—This sector describes the off-lying islands, dangers, and banks that are widely scattered W of the coasts of Colombia, Ecuador, and Chile. The sequence of the description is from N to S.

General Remarks

1.1 The waters W of the coasts of Colombia, Ecuador, and Chile contain a number of off-lying islands, dangers, and banks, most of which are not marked by navigational aids. The islands, volcanic in origin, are in general precipitous and steep-to, but detached dangers lie close off many of them. Isla de Malpelo, about 200 miles off the Colombian coast, lies closest to the coast. Isla de Pascua, about 2,000 miles off the Chilean coast, is the western most of the off-lying islands described herein. The Archipelago de Colon and the Archipelago de Juan Fernandez are the principal island groups; the Archipelago de Colon is the largest group.

Off-lying Islands, Banks, and Dangers West of Columbia

1.2 **Isla de Malpelo** (3°59'N., 81°36'W.), lying about 200 miles off the W coast of Columbia, consists of a sheer and barren rock with three high peaks; a light is shown from the N peak. In clear weather the island is visible from a distance of 30 miles and is reported to be a good radar target at 30 miles. From some directions the island resembles a crown. Strong currents in the vicinity cause the appearance of breakers, but the island is believed to be steep-to, with depths of 46 to 110m less than 1 mile offshore.

North Rocks, consisting of four above-water rocks and a rock awash, lie close NNW of the N end of the island. South Rocks, two above-water rocks, lie close S of the S end of the island. A number of above-water rocks lie close off the S and SE end of the island.

A landing place is situated on the E side of the island, about 0.3 mile SSW of the N extremity, but the swell makes it difficult.

It was reported that a meteorological station was established on the island.

Anchorage can be taken off the NE end of Isla de Malpelo, in a depth of 46m, rock, during light to moderate seas, although anchorage is not recommended due to the presence of submerged pinnacles, the rocky bottom, and a lack of soundings.

Caution.—The island was reported (1992) to lie 2 miles NW of its charted position.

Malpelo Nature Reserve is a circular area of radius 6 miles centered on position 3°58.5'N, 81°34.8'W. Fishing and any other activity identified by Colombian authorities is prohibited in the area.

Shoal areas have been reported (2003) between 60 and 73 miles NW of Isla de Malpelo, with the shallowest depth of 34m approximately 61 miles NW of Isla de Malpelo.

Area to be Avoided.—To avoid risk of damage to the environment and economy, all vessels greater than 500 gt and all fishing vessels should avoid the area bounded by:

a. 5°00'00"N, 83°03'48"W.
b. 2°43'30"N, 83°03'48"W.
c. 2°43'30"N, 82°06'06"W.
d. 3°28'55"N, 82°06'09"W.
e. 3°28'55"N, 81°08'00"W.
f. 3°45'40"N, 81°08'00"W.
g. 3°45'40"N, 80°43'50"W.
h. 4°26'30"N, 80°43'50"W.
i. 4°26'30"N, 80°22'10"W.
j. 5°00'00"N, 80°22'10"W.

It was reported (1992) that a vessel was detained and a severe fine imposed for approaching within 200 miles of the islands.

Rivadeneyra Shoal (4°15'N., 85°10'W.), position doubtful, was reported to lie about 215 miles W of Isla de Malpelo. The least depth over the shoal was 3m.

Isla del Coco (5°32'N., 87°04'W.), about 340 miles WNW of Isla de Malpelo, is described in Pub. 153, Sailing Directions (Enroute) West Coasts of Mexico and Central America.

The Archipelago de Colon

1.3 The **Archipelago de Colon** (Galapagos Islands) (0°00'N., 90°00'W.) is the group of islands and islets forming the archipelago that lies on and near the Equator, between 500 and 700 miles W of the coast of Ecuador. The entire group comprises an area of about 2,966 square miles and is a military reservation. It is reported that there are airports on Isla Baltra and at the naval base on Isla San Cristobal.

Winds—Weather.—Although the island group lies on and near the Equator, the climate is tempered by the cool Peru Current.

The Southeast Trade Wind is the prevailing wind in the Archipelago de Colon and blows between SE and SW. From April to December, the trade wind blows with great regularity and gales are unknown. Calms are frequent from January to April, with occasional light squalls from the NW. Heavy rollers occasionally break upon the N shores during the rainy season, but no wind of any consequence accompanies them.

The greater part of the islands are, in general, embraced in a dry zone which rises to about 244m. The period of January to April is the rainy season for the low grounds, but even during this period rainfall cannot be relied on. At the higher levels light rain occurs throughout the year, and rainfall is greater from June to November when thick mists are prevalent.

Thick fog has been reported at sea near the Archipelago de Colon in April and September.

In the vicinity of the islands, bioluminescence (phosphorescence) has been observed.

Tides—Currents.—The currents in the vicinity of the Archipelago de Colon are strong, with rates of 1 to 2.5 knots.

The Archipelago de Colon—Galapagos Islands

They generally set W and NW. There is a marked difference in the temperatures of the bodies of water moving within a few miles of each other. On one side of Isla Isabela the temperature of the sea 0.3m below the surface was 26°C, but on the other side it was less than 15°C. These differences are due to the cool Peru Current (Humboldt Current) coming from the S along the coasts of Chile and Peru, which, at the archipelago, joins a warmer body of water moving from the Gulf of Panama.

Near Cabo Blanco, the Peru Current leaves the coast and sets WNW and W toward the archipelago, passing this group on both the N and S sides. The breadth of the current stream on the meridian of the Archipelago de Colon is 400 to 500 miles. Beyond the archipelago the current widens rapidly and is lost in the Equatorial Current near 108°W.

Aspect.—There are six principal islands, nine smaller islands, and a number of islets and rocks. The formation of the entire archipelago is volcanic. In general, the higher islands have one or more principal craters toward their centers with several smaller ones on their flanks. There are as many as 2,000 craters, some rising to 1,524m at their centers, among the islands. There is a marked difference between the S and N sides of the islands. The S sides are covered with luxuriant vegetation. The N sides consist in general of bare lava, from the crevices of which springs a thick undergrowth. The low lands are generally parched and rocky; however, the larger islands are fringed with dense mangroves which are backed in places by impenetrable thickets. The trees on the islands seldom grow over 9.8m high.

Water is found on many of the islands during the rainy season. An adequate supply of water can be obtained at Isla San Cristobal, but it must be boiled for drinking purposes.

Note.—Several lighted beacons and markers are situated on the islands and islets to assist small craft with local knowledge in entering the coves, craters, and narrow fairways.

Regulations—Particularly Sensitive Sea Area (PSSA).—Archipelago de Colon and its surrounding waters have been declared a natural and world heritage site, recognized worldwide for its scientific and cultural importance. In order to safeguard the island marine ecosystem, a PSSA has been established surrounding the affected waters.

Within the PSSA the following regulations apply:

1. The area should be avoided by ships of 500gt and over carrying oil and dangerous cargoes, and by ships carrying large quantities of bunker fuel.
2. The discharge of oil or oily mixtures, other noxious liquids, garbage or other harmful substances is prohibited from all vessels regardless of size.
3. The dumping of plastics, synthetic fishing lines or nets, plastic garbage bags, loose stowage materials, coverings and packaging material, paper, rags, glasses, bottles, metal, ceramics and similar materials is prohibited from all vessels regardless of size.

As an associated protective measure, an Area to be Avoided has been established largely enclosing the PSSA. The area is bounded by lines joining the following positions:

a. 2°30'N, 92°21'W.
b. 2°14'N, 91°40'W.
c. 1°14'N, 90°26'W.

d. 0°53'N, 89°30'W.
e. 0°35'S, 88°38'W.
f. 0°52'S, 88°34'W.
g. 1°59'S, 89°13'W.
h. 2°05'S, 89°34'W.
i. 2°01'S, 90°35'W.
j. 1°32'S, 91°52'W.
k. 1°13'S, 92°07'W.
l. 1°49'N, 92°40'W.

Effective on 1 May 2008, all ships and barges carrying cargoes of oil or potentially hazardous material entering and departing any port in the Galapagos and all ships 500 gt and above entering and departing any port in the Galapagos shall use the following routes:

1. On the E side of the Area to be Avoided, westbound ships shall follow the route established by a recommended track between the following two positions:
   a. 1°05'08.4"S,87°54'43.8"W.
   b. 1°05'08.4"S,88°41'19.2"W.
2. On the E side of the Area to be Avoided, eastbound ships shall follow the route established by a recommended track between the following two positions:
   a. 1°10'10.2"S, 87°57'42.6"W.
   b. 1°10'10.2"S, 88°44'15.8"W.
3. On the W side of the Area to be Avoided, westbound ships shall follow the route established by a recommended track between the following two positions:
   a. 1°21'04.8"S, 92°43'43.8"W.
   b. 1°14'28.2"S, 92°06'21.0"W.
4. On the E side of the Area to be Avoided, eastbound ships shall follow route established by a recommended track between the following two positions:
   a. 1°26'11.6"S, 92°43'49.8"W.
   b. 1°18'56.4"S, 92°02'48.6"W.

All vessels, including private yachts, desiring to call at any of the islands or to enter their waters must obtain clearance from the Ministeriao de Defense National, Quito, Ecuador, or from an Ecuadoran consul before sailing to the islands. Upon arrival at the archipelago, vessels must clear with the local authorities at Bahia de Naufragio, Isla San Cristobal or at Bahia de la Academia, Isla Santa Cruz, before proceeding to any of the other islands.

The Ecuador Ship Reporting System is mandatory and applies to all vessels navigating within 200 miles of Ecuador and Archipelago de Colon. For further information, see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia. The area of the mandatory ship reporting system is bounded by a line joining the following positions:

Mandatory Ship Reporting System	
Point	**Position**
A	2°30'N, 92°21'W
D1	1°26'N, 89°03'W
E1	0°01'S, 86°06'W
F1	0°12'S, 88°01'W
G1	0°35'S, 87°54'W

Mandatory Ship Reporting System	
Point	**Position**
H1	1°02'S, 87°53'W
I1	2°34'S 88°48'W
J1	2°46'S, 89°30'W
K1	2°42'S, 90°42'W
L1	2°05'S, 92°18'W
M1	1°32'S, 92°44'W
L	1°49'N, 92°40'W

The **Autonomous Temperature Line Aquisition System (ATLAS)**, a successive chain of mooring buoys, with quick flashing orange and white colored lights, are placed along the equatorial belt of the Pacific from the Archipelago de Colon to New Guinea. Vessels are to give them a wide berth of 6 miles.

Caution.—Mariners should exercise caution in the waters adjacent to the islands due to numerous unconfirmed reports of depths less than 200m in much deeper water.

1.4 Isla Darwin (Isolote Culpepper) (1°39'N., 92°00'W.), a small, rocky and barren islet, is the NW islet of the Archipelago de Colon. An arched rock, 31m high, lies about 0.3 mile E of the S end of the islet. A reef extends 0.2 mile SE from the rock.

The island was reported (1996) to lie 1 mile N of its charted position.

Isla Wolf (Isla Wenman) (1°22'N., 91°49'W.), rocky and barren, lies about 18.5 miles SE of Isla Darwin. It actually consists of three islets and a large above-water rock which lie close together and are separated by narrow passages; when sighted from the offing they appear as one islet.

The group of islets is formed by the crater of an old volcano, the W side of which is broken away and submerged, so that the islet is in the form of a crescent with concave sides W.

A light is shown from the NE extremity of the largest islet.

1.5 Isla Pinta (0°35'N., 90°45'W.), about 7 miles long and 4 miles wide, lies about 77 miles SE of Isla Wolf. The island has an active volcano near its center that rises to a height of about 762m.

Shoal water, on which breakers have been reported, extends 0.5 mile N from the N end of the island. Rocas Nerus, below-water rocks, extend about 0.3 mile N from a position on the N shore about 0.8 mile E of the above shoal area. A depth of 8.2m lies about 1.3 miles NNW of Cabo Chalmers, the SW extremity of Isla Pinta.

A depth of 131m was reported to lie 6 miles N of the N extremity of the island. A depth of 140m was reported to lie 7 miles NNE of the N extremity of the island. A depth of 264m was reported to lie 34 miles WNW of the island.

Anchorage can be taken, in depths of 12.8 to 27.4m, rock and sand, about 1.5 miles NNW of Cabo Chalmers (0°33'N., 90°47'W.). The anchorage lies 0.3 to 0.4 mile off high, sheer cliffs which on closing show a narrow sloping shelf of rock with patches of black sandy beach at their base.

A vessel approaching the anchorage from the S can round

Bahia de Naufragio—Isla San Cristobal

Cabo Chalmers about 1 mile offshore and anchor 0.2 to 0.3 mile N of a conspicuous green patch near the base of the highest cliff.

Isla Marchena (0°20'N., 90°28'W.) lies 15.5 miles SE of Isla Pinta. Numerous above and below-water rocks lie up to 0.3 mile offshore and a dangerous rock lies in an approximate position about 3 miles off the NE side of the island.

Anchorage can be taken, in a depth of about 31.1m, sand, 1 mile WNW of Punta Montaluo (0°23'N., 90°28'W.). The anchorage lies off a small cove with a black beach marked by a rocky point W and high rocks E. Fishing vessels frequent the anchorage.

Isla Genovesa (0°20'N., 89°57'W.), a flat island, lies about 25 miles E of Isla Marchena. A crater lake lies near the center of the island. Bahia Darwin, marked at its head by a pair of lights, indents the S side of the island. The entrance of the bay, about 0.5 mile wide, is shallow and encumbered by reefs. Small craft with local knowledge can enter the bay via a constricted channel and anchor on a small ledge in the NE part of the bay, where there are depths of 7.3 to 16.5m, sand.

1.6 Isla San Cristobal (0°50'S., 89°25'W.) lies at the E extremity of the Archipelago de Colon. Numerous above and below-water rocks and dangers lie close to the shores of the island which is a good radar target at 25 miles. Most of the inhabitants reside in and about Bahia de Naufragio, a town situated near the SW end of the island.

A radiobeacon is situated on the S side of the island, about 6 miles ESE of the town.

The E side of Isla San Cristobal, between Punta Pitt (0°43'S., 89°14'W.) and Punta Naufagio (0°55'S., 89°38'W.), is rock-fringed and contains no harbors or anchorages. **Roca Este**, drying, and **Roca Ballena** (Roca Whale), awash, are off-lying dangers shown on the charts of this coast. There is an above-water rock (Estefania) and adjacent shoal patch lying almost 3 miles NNW of Punta Pitt. The former gives a good radar return up to 15 miles.

Anchorage can be taken, in a depth of 36.6m, in Bahia de Agua Dulce (0°56'S., 89°30'W.), an open roadstead exposed to heavy rollers. The anchorage lies 0.4 mile off a waterfall, at the base of which fresh water is available. The water should be boiled or otherwise treated before drinking.

1.7 Bahia de Naufragio (0°54'S., 89°37'W.), a bay and town of the same name, is entered between Punta Lido, from which a light is shown, and Punta Malamocco, about 0.8 mile apart. The town is a port of entry for the Archipelago de Colon. A radio station is situated near the head of the bay.

Tides—Currents.—The flood and ebb tidal currents set NE and SW, respectively, with a velocity of up to 1.8 knots.

Depths—Limitations.—Shoals and reefs fringe the harbor and coast around the bay. Depths of less than 5.5m exist 0.5 mile offshore. Reefs, above and below-water, lie in the inner harbor and approaches to the harbor. Arrecife Schiavoni, with a least depth of 0.3m, lies in the entrance and helps protect the bay from NW weather. A dangerous wreck lies on shoals close E of the reef. Arrecife Schiavoni and nearby reefs are not visible on a bright day with a calm sea except for the light-colored water over them. With a swell, the sea breaks heavily on the reefs and across the S entrance of the bay. A lighted buoy marks the NE extremity of the shoal water.

Rocas Dalrymple (0°51'S., 89°38'W.), 19m high and steep-to, lies in the N approach to the bay. A light, with a racon, is shown from a concrete block on the highest rock. Rocas Dalrymple is a good radar target; it is also a landmark on a N approach to the harbor.

1.8 Puerto Baqerizo Moreno (0°54'S., 89°37'W.) is located on the S shores of Bahia de Naufragio and is the capital of the Galapagos Province. This is a small port catering mostly to fishermen and small to medium-sized pleasure craft.

Tides—Currents.—The mean range at springs is 1.8m while the mean range at neaps is approximately 1m.

Depths—Limitations.—There are two piers in the port. The Naval Pier, 50m in length, is located on the S shore close NNE of Puerto Baquerizo Moreno Light (0°53'57"S., 89°36'43"W.) and is reserved for official harbor and naval use. The Municipal Pier, 80m in length, is located 300m NE of the naval pier. There is a rock, awash, situated 25m NE of the head of the municipal pier.

Punta Suarez Light—Isla Espanola

Aspect.—A prominent gray stone building, housing the Governor of the Islands and the Naval headquarters, stands 0.2 mile WNW of a conspicuous church standing at the head of the bay. The Naval base extends from the gray building WNW to another prominent building standing on Punta Malamocco. A radio mast exhibiting fixed red obstruction lights lies 91m SW of Puerto Baquerizo Moreno Light.

Anchorage.—Two designated anchorages lie within Bahia de Naufragio, of which only one is available for non-military vessels. The Naval Anchorage is located 0.2 mile N of Puerto Baquerizo Moreno Light; the anchorage for other vessels is located 0.375 mile NNE of the light. Two mooring buoys equipped with yellow lights are situated between the Naval Anchorage and the Naval Pier.

Additional anchorage is available, in 29.3m, sand, about 0.5 mile NE of Punta Lido.

Directions.—Caution must be exercised when approaching the bay, particularly from the W. From a position about 0.5 mile S of Rocas Dalrymple, steer a course of 165° with the rock astern, bearing 345°. When about 0.3 mile W of Punta Lido, and when the light at the head of the bay bears 165°, change course to 165° and proceed to an anchorage.

Caution.—Entry into port should be restricted to daylight hours only since town lighting and all obstruction lights have been reported to be extinguished between midnight and sunrise due to the town generator being turned off.

The W side of Isla San Cristobal is fringed by rocks, reefs, and shoals extending as far as 1.3 miles offshore. These are numerous, small coves indenting this low dark-colored coast. Isla Lobos (0°51'S., 89°34'W.), a good radar target, lies close offshore. Mariners are to use caution as a rock has been reported estimated to be at a depth of 6m in the vicinity of (0°51'41″S., 89°35'22″W.) north of Isla San Cristobal. A detached 3m patch lies 1.2 miles W of Isla Lobos. Punta Bassa (Manglecito) (0°49'S., 89°32'W.), a salient feature, is low, dark, and reported to be a good radar target. Breakers extend up to 0.5 mile N of the point. Anchorage can be taken about 1.5 miles SW of the point, in depths of 11 to 32.9m.

Bahia Stephens (0°48'S., 89°30'W.), an open bay on the NW side of the island, can be identified by Roca Kicker (Roca Peteadora) (0°46'S., 89°31'W.), a sheer, high rock shaped like a church with a high, square tower. The rock is a good landmark on approaching the bay, which is clear of dangers except for several shoal patches lying 1.2 miles off the NE entrance point. Punta Finger (0°45'S., 89°28'W.) is a conspicuous dark-colored cliff topped by a pinnacle rock which is located at the NE extremity of Bahia Stephens.

Anchorage can be taken, in depths of 18.3 to 21.9m, good holding ground, about 0.5 mile offshore.

Caleta de la Tortuga (0°42'S., 89°22'W.), an open roadstead, lies 1.5 miles SW of Cabo Norte (0°41'S., 89°21'W.), the N extremity of Isla San Cristobal. Cerro Pan de Azucar (0°43'S., 89°21'W.), about 220m high, and another hill rising 0.2 mile SW, are good landmarks when approaching the roadstead.

Anchorage.—Anchorage can be taken in the roadstead, in depths of 21.9 to 27.4m, sand, about 0.5 mile offshore.

1.9 Isla Espanola (1°23'S., 89°40'W.), the S island of the Archipelago de Colon, is 195m high, rugged, and covered with brushwood. Its coasts are bold and rocky. The island gives a good radar return at 21 miles. Rocks and reefs, above and below-water, lie 0.2 mile off the island, except in the vicinity of Isla Gardner, which is encircled by foul ground. There is a

Puerto Baquerizo Moreno—Isla San Cristobal

7.3m detached patch 0.6 mile N of the N extremity. Isla Gardner (1°20'S., 89°39'W.), an islet, gives a good radar return up to 16 miles.

Bahia Gardner (1°21'S., 89°38'W.), lies S and W of Isla Gardner. A reef, with an islet at its N end, extends N from Isla Espanola leaving a passage about 137m wide and with a least depth of 5.5m N of the islet. A rock, with a depth of 3.7m, lies in the bay about 0.4 mile from the SW end of Isla Gardner. Local knowledge is required.

Anchorage can be taken in the bay, in depths of 9.1 to 18.3m,. Vessels can anchor about 0.8 mile W of the summit of Isla Gardner, in 36.6m. There is anchorage with the N extremity of Isla Gardner bearing 075°, and the S extremity 116°, in a depth of 34.7m.

Arrecife Macgowen (1°07'S., 89°54'W.) lies about 20 miles NW of Isla Espanola. It consists of rocks awash, 1.8m below the surface, which are dangerous as soundings give no warning of their proximity. This group of rocks is marked by an unlighted pillar buoy at its westernmost edge. A pinnacle rock, with a depth of 2.1m, was reported to lie about 0.5 mile ENE of Arrecife Macgowen.

Banco Hancock, with a depth of 19.5m, is an isolated patch lying about 19 miles WNW of Arrecife Macgowen.

1.10 Isla Santa Maria (1°17'S., 90°25'W.) has several round-topped hills that are visible from any direction. Numerous above and below-water rocks lie on fringing shoals encircling the island. Islets lie up to 1.8 miles off the NE side and up to 5 miles off the E side of the island. Isla Enderby lies 2.5 miles NNW of Punta Ayora. Isla Campeon is located 1.3 miles W of Isla Enderby and just 0.7 mile off the N coast of Isla Santa Maria. Isla Caldwell, 114m in height, lies 2 miles SSE of Punta Ayora. Isla Gardner, 227m in height, lies 2.9 miles SE of Isla Caldwell. Isla Watson lies 0.9 mile SW of Isla Gardner. An isolated rock, awash, lies about 8 miles SE of the E extremity of the island.

Bahia Playa Prieta (Black Beach Anchorage) (1°16'S., 90°30'W.) affords good anchorage, in depths of 18.3 to 36.6m, sand, about 0.3 to 0.5 mile off the head of the bay. There is some swell, but reefs lying SW give some shelter. Vessels must

Puerto Ayora—Bahia Academy S of Isla Santa Cruz

not anchor in depths less than 18.3m in order to avoid a rock, with a depth of 1.8m, that lies 0.1 mile offshore. The summit of Isla Santa Maria, bearing 118°, leads S of the rock and to the anchorage.

Landmarks approaching the anchorage include a high rock lying 0.2 mile offshore and 0.5 mile S of the anchorage, and a brownish sandy beach inshore; a light is shown from the NE point of the bay.

Bahia del Correo (Post Office) (1°14'S., 90°25'W.), indenting the N coast of Isla Santa Maria, is mostly foul, but affords sheltered anchorage, good holding ground, with easy access. There are depths of 12.8 to 14.6m in the center of the bay, about 0.5 mile ENE of the W entrance point. Landing can be effected at a sandy beach in the SE part of the bay.

1.11 Isla Santa Cruz (0°38'S., 90°19'W.) is featured by a prominent mountain rising near the center of the island. It is volcanic. Rocks and foul ground fringe the island; several above-water rocks and islets lie up to 3 miles offshore.

Bahia Academy (0°45'S., 90°18'W.) indents the S coast of the island E of Punta Estrada (0°45'S., 90°18'W.). The shores of the bay are foul for 0.5 mile offshore and depths generally are less than 5.5m. Isla Coamano (0°45'S., 90°17'W.) lies on foul ground about 1.5 miles E of Punta Estrada. There are several shoal patches lying up to 1.5 miles S and SE of the Punta Estrada. A light, frequently extinguished, is shown from the Isla Coamano. Another light is shown near a stone landing jetty, about 1 mile NNW of Punta Estrada.

Landmarks include three research station buildings standing 2.2 miles N of Punta Estrada and a white sandy beach at the head of a small cove, 0.7 mile NW of the same point.

Pilotage, if required, can be provided by the Harbormaster; there is no formal pilot service.

Anchorage can be taken in Bahia Academy, in depths of 11 to 14.6m, about 0.6 mile from the landing jetty with Punta Estrada bearing 180°, distant about 0.7 mile. Vessels approaching the bay from the E or W should keep about 3 miles offshore. Puerto Nunez (0°43'S., 90°13'W.), a foul cove, affords anchorage, in 6.4m, clear of the foul ground which extends up to 0.8 mile offshore.

Rocas Gordon (0°34'S., 90°09'W.), a group of three rocks, of which the largest is 61m high, lies 1 mile NE of Islas Plaza (0°35'S., 90°10'W.). A light is shown from the S side of the S island of Islas Plaza.

Isla Baltra (0°27'S., 90°16'W.), low and covered with brush, is separated from the N coast of Isla Santa Cruz, and from the E end by Canal de Itabaca (0°29'S., 90°16'W.), a shallow passage about 0.3 mile wide. Buoys mark the fairway, which is used by fishing vessels in transit. It is reported that most of the buoys have been removed and a pole beacon marks a rock near the W outlet of the fairway.

Isla Baltra accommodates a naval and air force base; because of this, the use of Isla Baltra is restricted.

The quay is controlled by the naval authority.

Local knowledge is required.

Anchorage.—Anchorage can be taken, in depths of 7.3 to 14.6m, sand and rock, at the E end of Canal de Itabaca. The steep-to S shore of the canal should be favored on entering to anchor.

1.12 Caleta del Norte (0°25'S., 90°17'W.) is the N of two small bays on the W side of Isla Baltra. Punta del Norte, the NW end of the island and bay, is reported to be a good radar target. Isla Seymour (0°24'S., 90°17'W.) is separated from the N end of Isla Baltra by a passage blocked by foul ground at its E end. Anchorage can be taken, in 16.5m, at least 0.2 mile off the head of Caleta del Norte.

Caleta Aeolian (0°27'S., 90°18'W.), the S of two bays, is en-

Isla Baltra

Isla Eden (top) and Islas Daphne (below)

tered S of Punta Naboa (0°26'S., 90°17'W.). Aeolian Light is shown from a tower on the point and prominent lighted radio masts stand within the point. Seaplane ramps are situated at the sandy head of the bay. A wharf, 61m in length, with alongside depths of 6m, is situated nearby as is a radio station and airfield. Anchorage can be taken, in 16.5m, in the outer bay.

Islas Guy Fawkes (0°31'S., 90°32'W.) are a straggling group of islets lying off the NW side of Isla Santa Cruz. Isla Eden (0°33'S., 90°32'W.) lies at the S end of the group. Anchorage can be taken, in about 14.6m, 0.8 mile NNE of Isla Eden.

Islas Daphne (0°25'S., 90°22'W.) consists of three islets. The NE islet, 107m high with sheer sides, lies about 3.5 miles W of Isla Seymour. The cone-shaped SW islet lies 5 miles W of Caleta del Norte. The third islet is an above-water rock lying on a shoal, 0.7 mile E of the SW islet. When approaching from the NE, Isla Baltra and Isla Seymour appear to merge with the higher background of Isla Santa Cruz, and Islas Daphne is the first to be identified.

Aeolian Light

Isla Santa Fe (0°50'S., 90°04'W.) lying about 12 miles off the SE side of Isla Santa Cruz, is steep-to except on its N side where above and below-water rocks lie up to 200m offshore. A 12.8m patch lies 1.7 miles ENE of the NW extremity of the island.

1.13 Isla San Salvador (0°15'S., 90°45'W.), high and wooded, consists mainly of lava and has a conspicuous volcanic hill (Cerro Pan de Azucar) at the W side of the island. Isla

Chinese Hat (Sombrero Chino) E of Isla Rabida

Rabida (0°25'S., 90°42'W.), a small barren island, lies 2.5 miles off the S side of the island. A group of small islets lies 4 miles E of Isla Rabida; a chain of islets, including a 4m patch, lie off the SE end of Isla San Salvador.

Bahia de Sullivan (0°17'S., 90°34'W.), formed E and S by Isla Bartholome (0°17'S., 90°33'W.), is open to the NE and has a 7.4m rocky patch lying in its center. Small vessels can anchor in at least 20.1m, 0.3 mile off the head of the bay.

Bahia de James (0°14'S., 90°52'W.), an open bay, has sheltered coves within the NE and SE entrance points. Isla Albany, lying 0.5 mile off the NE entrance point, merges with Isla San Salvador from offshore. Cerro Pan de Azucar (a prominent volcanic cone), 395m high, is the best landmark on approaching the bay. Anchorage can be taken, in 13m, off a sandy beach with the center of Isla Albany bearing 346°, distant 1.7 miles. Large vessels should anchor about 0.4 mile farther out, in 27.4m, sand over rock. Depths of 9.1m or less exist up to 0.5 mile from the head of the bay.

1.14 Isla Isabela (0°30'S., 91°10'W.) is composed of six huge craters, all active, joined at their bases by lava, the most remarkable isthmus being Istmo Perry. The S end of the island is moist from the trade wind and has dense vegetation. The N part is dry and barren. There are few navigational aids or landmarks.

Punta Albemarle (0°10'N., 91°20'W.), the N end of Isla Isabela, is a good radar target. Foul ground extends 0.5 mile N of the point. Roca Redonda (0°14'N., 91°37'W.), a barren islet, lies 18.5 miles WNW of the point. Between Punta Albemarle and Punta Alfaro, the island is steep-to, but the latter point is fringed for about 1 mile offshore by shoals of less than 9.1m. An islet lies 2.2 miles NNW of Punta Alfaro (0°25'S., 90°57'W.).

Bahia de Perry (Cartago Bay) (0°35'S., 90°55'W.) indents the coast between Punta Alfaro and Cabo Barrington (0°36'S., 90°54'W.). The bay is fringed by mangroves, but anchorage can be taken, in depths of 12.8 to 23.8m, sand and rock. Roca Blanca (0°33'S., 90°52'W.), above-water, lies 4 miles NNE of Cabo Barrington.

1.15 Cabo Woodford (0°45'S., 90°47'W.) is the E extremity of Isla Isabela. Between this cape and Cabo Barrington, the coast is foul for at least 1.3 miles offshore. A rock about 6m wide, with a depth of 1.8m, was reported to lie about 6.5 miles ESE of Cabo Woodford.

The coast between Cabo Woodford and Cabo Rosa, the S extremity of Isla Isabela, is considered hazardous to approach as there are several islets and rocks scattered offshore. Landings are difficult due to breakers. The dangers include Islas Crossman (0°51'S., 90°48'W.), Isla Tortuga (1°01'S., 90°52'W.), Roca Burra (0°58'S., 90°52'W.), and Roca Union (1°02'S., 91°06'W.).

Villamil (0°57'S., 90°58'W.) is a village situated at the head of a bay, about 8 miles SW of Punta Veintimilla (0°55'S., 90°51'W.). Cerro Villamil is a conspicuous hill rising about 0.8 mile within the W shore of the bay and 1 mile SW of the village. A 46m long pier and a flagstaff are situated adjacent to the village. The E side of the bay is encumbered with shoals, rocks, and islets for 1.8 miles offshore. A light is shown from a tower on the W islet.

Pilotage.—Pilotage is not compulsory, but is recommended for the first visit; although there is no formal pilotage service, a member of the Harbormaster's staff can advise.

Anchorage.—Anchorage can be taken, in a depth of 12m, about 1 mile W of Villamil Light, but it is not recommended due to the heavy swell and breakers. Landing is possible in a cove about 4 miles SW of the village.

1.16 Cabo Rosa (1°03'S., 91°10'W.) is the S extremity of Isla Isabela. From the cape, the coast trends WNW for 17 miles then NW to Punta Cristobal (0°54'S., 91°31'W.), which can be identified by a mass of small craters behind it. Other than Caleta Iquana (0°57'S., 91°27'W.), the coast is quite regular in outline.

Bahia Isabel (0°37'S., 91°06'W.) indents the W side of Isla Isabela. Four islets are clustered about 0.5 mile offshore. Anchorage can be taken, in depths of 18.3 to 25.6m, sand, about 0.3 mile S of the southernmost islet. The area E of the islands is shoal with a foul bottom. Only small vessels should anchor in this area, and even then a tripping line is necessary.

Anchorage can be taken in a cove about 5 miles NE of Caleta Webb (0°48'S., 91°27'W.). Two small hills, covered with green brush with a sandy beach on each side, identify the anchorage. The cove has depths of 54.9m about 0.8 mile offshore, decreasing to 5.5m close inshore. Good anchorage can be taken about 0.5 mile offshore, in 32.9m.

Caleta Tagus (0°16'S., 91°22'W.), formed by an old crater, affords good anchorage, in depths of 11 to 29.3m, sand and gravel. The shores of the cove are steep-to and the entrance is clear of dangers. Anchorage is reported as being good in a cove near Punta Vincente Roca, about 17 miles NW of Caleta Tagus. There are depths of 11 to 36.6m, good holding ground of rock and sand in the cove, which is reported to have a large cave at the water's edge.

1.17 **Isla Pinzon** (0°36'S., 90°40'W.) is a small, high island lying in the passage between Isla Isabela and Isla Santa Cruz, about 11 miles NE of Cabo Woodford. A small, high islet stands about 5 miles SE of Isla Pinzon.

Isla Fernandina (0°25'S., 91°29'W.) lies close to the W side of Isla Isabela on the NW side of Bahia Isabel. The island is a high, large volcano that is barren, steep-to, and has a crater lake near its center. An extensive field of lava encircles the base of the volcano. Foul ground extends at least 0.5 mile off the SE side of the island.

A vessel anchored off the island's NE coast in Espinosa Bay, with Punta Espinosa (0°16'S., 91°27'W.) bearing 295° and the S point of the bay bearing 177°, in 34.7m.

Off-lying Islands, Banks, and Dangers West of Chile

1.18 Numerous off-lying dangers have been reported between longitude 100°W and the coast of Chile. The effect of seismic disturbances on the ocean floor within this area, which is not infrequent, may cause an existing islet or rock to become submerged. On the other hand, earthquakes thrust submerged peaks above, or nearly above, the ocean surface. Through the years, various surveys have failed to locate most of these reported dangers. However, they are retained on the charts as a warning to navigators.

Included in these dangers are Sefton Reef (36°43'S., 83°15'W.), Yosemite Rock (32°04'S., 83°14'W.), Podesta Island (32°14'S., 89°08'W.), Emily Rock (29°38'S., 87°25'W.), a rock and adjacent shoal depths of at least 165m in position 25°40'S, 85°00'W, and a depth of 155m, which was reported in the position 43°13'S, 97°43'W.

Isla San Ambrosio (26°21'S., 79°52'W.) is high, steep, and about 2 miles long. The island consists of rough burnt volcanic particles arranged in horizontal strata intersected by vertical veins of basalt, which appear from the offing as streams flowing from the summit. Fishermen frequent the island, and have established several houses on it. Three above-water rocks, the outermost about 0.5 mile offshore, lie E of the island; a conical rock lies close W.

Anchorage for small craft can be taken in a cove (Las Moscas) indenting the middle of the N coast of the island, where shelter from SE winds can be obtained, in a depth of 40.2m, rock. Landing can be effected at the head of the cove.

Isla San Felix (26°17'S., 80°07'W.), about 1.5 miles long, rises to Cerro San Felix (San Felix Hill) at its W end. The W and SW sides of this arid, volcanic island consist of steep, yellow cliffs sloping down to beaches on the NE side. An airfield is located in the central part of the island. Foul ground extends 0.3 mile off the E and NE sides of the island, and depths of 12.8 to 25.6m exist up to 1.5 miles E. A light is shown from the W side of the island.

Islote Gonzalez (Gonzales Island), high and inaccessible, lies 0.3 mile S of the SE end of Isla San Felix and is connected with that island by a submerged reef. Another reef extends NW from the islet almost to the S shore of Isla San Felix.

Roca Catedral de Peterborough (26°16'S., 80°08'W.) is the highest of a group of jagged rocks which lie about 1.3 miles NNW of Cerro San Felix. Depths of 11 to 30m have been obtained up to 1.8 miles N, NNW, and NW of these rocks.

Rada San Felix (San Felix Road), on the bank which connects Isla San Felix and Roca Catedral de Peterborough, affords anchorage, in depths of 20.1 to 36.6m, black sand, about 0.3 to 0.5 mile offshore. The tidal current sets SW and NE with a velocity of 0.5 knot, but may increase to 3 knots.

Caution.—ODAS buoys, known as DART (Deep-ocean Assessment and Reporting of Tsunamis), are located offshore in the following positions:

a. 20°28'22"S, 73°25'46"W.
b. 23°10'00"S, 72°02'36"W.
c. 26°44'36"S, 73°58'59"W.
d. 32°07'36"S, 73°47'00"W.
e. 35°46'30"S, 75°14'14"W.

Three ODAS buoys are also located in the vicinity of 19°45'54"S, 84°44'18"W.

The Archipelago de Juan Fernandez

1.19 The **Archipelago de Juan Fernandez** (33°37'S., 78°50'W.) consists of Isla Robinson Crusoe, Isla Santa Clara, and Isla Alejandro Selkirk. The islands are a base for a fishing fleet.

Isla Robinson Crusoe (33°38'S., 78°50'W.), lying about 360 miles W of Valparaiso, is about 10 miles long and irregular in outline. The E half of this populated island is wooded, with alternate craggy ridges and fertile valleys; the W half is flat, low, and bare. **Cerro El Yunque** (33°39'S., 78°51'W.), shaped like an anvil when seen from NE, is a wooded peak, the highest in a range of mountains and a prominent landmark. Isla Robinson Crusoe has been sighted by radar at 40 miles.

Alexander Selkirk was landed on Isla Robinson Crusoe in 1705 and lived alone for 4 years before being rescued. Daniel Defoe based his classical story Robinson Crusoe on this episode.

Winds—Weather.—The island has a humid but healthful climate. Between October and May, the weather is fair, although rain squalls occur during the evening and at night. Unsettled weather, with rain, calms, or fresh N winds occurs during the rainy season. There are strong N winds in winter. Fog is not frequent.

Tides—Currents.—Local currents off the island are most noticeable at the turn of the tide when they attain a velocity of 3 to 4 knots. The currents follow along the coast, but do not enter Bahia Cumberland.

1.20 Punta Hueso Ballena (33°40'S., 78°46'W.) is the high, cliffy E end of the island. The coast NW of the point, as far as Punta Loberia (33°37'S., 78°49'W.), consists of steep, rugged slopes with no offshore dangers.

Bahia Cumberland (33°37'S., 78°50'W.), entered between Punta Loberia and Punta San Carlos, about 1 mile WNW, is open, deep, and clear of dangers.

Landmarks approaching the bay include the buildings at Fort San Juan Bautista (33°37'S., 78°50'W.) and the caves S of the settlement. Other buildings S of Punta Loberia are conspicuous.

Weather conditions in the bay differ from the weather offshore as the terrain inland is such that wind squalls move off the land and into the bay with considerable velocity. The water in the bay then becomes turbulent and discolored, especially in summer (November-May).

Muelle Fiscal, which is 100m long and can accommodate vessels with a maximum draft of 4m, is situated 0.3 mile S of Punta San Carlos (33°37'S., 78°50'W.).

Anchorage can be taken by vessels over 100m in length about 0.4 mile E of the light in the settlement, in a depth of 49.4m. Vessels less than 100m long can anchor, in a depth of 20.1m, sand, about 0.5 mile SSE of Punta San Carlos and clear of a sunken wreck lying 0.4 mile SE of the same point. It is advisable to use both bow anchors, with a good spread and a long scope of chain, to take care of sudden squalls and strong shifting winds.

Caution.—When approaching Bahia Cumberland from the W or N, it is easy to mistake Bahia del Oeste (Puerto Ingles) (33°36'S., 78°51'W.), but the hills are less steep and the terrain is lower than at Bahia Cumberland.The coast between Bahia del Oeste and Punta Norte is high and cliffy; Cerro Alto (33°36'S., 78°52'W.) is a prominent feature. The W side of the island is rocky, with no anchorages or safe landing places. Punta O'Higgins, the S extremity of Isla Robinson Crusoe, lies 1 mile SE of Punta Isla (33°41'S., 78°57'W.), the SW extremity.

Bahia Carvajal (33°40'S., 78°56'W.), indenting the S coast directly N of Punta O'Higgins, affords anchorage, in a depth of about 27.4m, sand, with the point bearing 217° and the E entrance point of the bay bearing 042°.

Bahia Tierra Blanca (33°39'S., 78°55'W.) also affords anchorage, in depths of 28 to 30m. The bay is named after the light color of the surrounding hills.

1.21 Isla Santa Clara (33°42'S., 78°56'W.) is separated from the SW end of Isla Robinson Crusoe by a channel almost 0.8 mile wide. The island is barren and on a N approach shows as a single peak. Rocks and islets lie off the W and S coasts. The sea breaks heavily all around the island making landing dangerous.

Isla Alejandro Selkirk (33°45'S., 80°45'W.), lying about 84 miles W of Isla Robinson Crusoe, is densely wooded and very mountainous. Many deep ravines lead to a steep-to rugged coast on the E side of the island off which are tremendous depths. The S, W, and N sides of the island have sandy strips of beach which extend 0.1 mile offshore in places.

A very high peak rises at the SW side of Isla Alejandro Selkirk, and at the SW extremity there is a prominent rock with a hole through it. Landing is possible near the center of the E shore at Quebrada Sanchez, and at the foot of Quebrada Las Casas (33°45'S., 80°43'W.), where there is a boat slip and buildings of a former penal colony.

Anchorage can be taken about 0.3 mile ENE of Quebrada Sanchez (33°43'S., 80°44'W.), in depths of 40.2 to 49.4m. The ravine is recognized by a white patch on a hill near it. This anchorage is unsafe with E winds, but affords shelter from SW winds. Anchorage can also be taken, in depths of 31.1 to 50m, sand, off Rada de la Colonia (33°45'S., 80°43'W.).

Isla Salas Y Gomez and Isla de Pascua

1.22 Isla Salas Y Gomez (26°28'S., 105°28'W.) is uninhabited and scarcely more than a heap of stones, less than 0.5 mile long NW-SE and about 0.3 mile wide. During a gale it would be hardly distinguished amidst the spray. The highest point, 30m high and marked by a light, is at the S end of the island. A submerged rock lies about 200m SW of the S point of the island. Anchorage can be taken about 0.3 mile off the N side of the island, in 56m, coral, and also 0.2 mile S of the S end of the W side in 33m, sand and shells.

Isla Salas Y Gomez

Bajo Scott (Scott Reef), on which the sea breaks, lies about 1 mile NE of Isla Salas Y Gomez. It is about 91m long with depths of 30 to 35m close around.

With E winds, a W current, with a rate of about 1 knot, is experienced in the vicinity of Bajo Scott.

Caution.—A no-take Marine Reserve surrounds Isla Salas Y Gomez. Within this area, which covers about 58,000 square miles, fishing and the removal of any plants or animals are prohibited within about 125 miles of the coastline of the island.

1.23 Isla de Pascua (Easter Island) (27°05'S., 109°20'W.) is grass-covered and cultivated. The inhabitants of this Chilean-governed island reside mainly at the islands SW side. There are numerous inactive volcanic craters and high, grassy hills. The highest crater, Mount Terevaka, is located near Cabo Norte (North Cape), the NW extremity of Isla de Pascua. Cabo Sur (South Cape), the S extremity of the island, is very high and prominent. The N and S sides of the island are high and steep, and there are only three or four sandy beaches along the

Isla de Pascua—(Easter Island) viewed from SE

entire rocky coast. Three high rocks, lying as far as 1 mile SW of the SW extremity of the island, serve as good radar targets.

Winds—Weather.—The weather is never good for more than a few days at a time at Isla de Pascua. Ships anchoring off the island should be ready to sail on short notice. There are abrupt and violent wind changes, usually in a counterclockwise direction.From October to April, the Southeast Trade Winds blows constantly, except during the summer months when the winds are variable. The trade wind is strongest at the beginning and end of the period and is accompanied by showers.

In winter, W and SW winds are fairly frequent and are often accompanied by rain and heavy seas.

1.24 Rada Hanga-Roa lies on the W side of the island between Punta Cook (27°08'S., 109°26'W.) and Punta Roa, about 1.3 miles SSW. The shores of the bay are rocky, with shoals and foul ground extending at least 0.2 mile offshore. Landing is not very feasible. A very constricted boat channel leads to a pier in ruins, but local knowledge is required as there are dangers on the range line. Front and rear beacons named Barril and Trianguls, respectively, lead to anchorages in the bay when aligned 144°. Barril Beacon consists of a pyramid of earth and stone with a barrel and spar topmark painted in orange and white bands. Trianguls Beacon consists of a triangular-shaped stone wall with a vertical iron column, surmounted by a triangular daymark painted in orange and white bands.

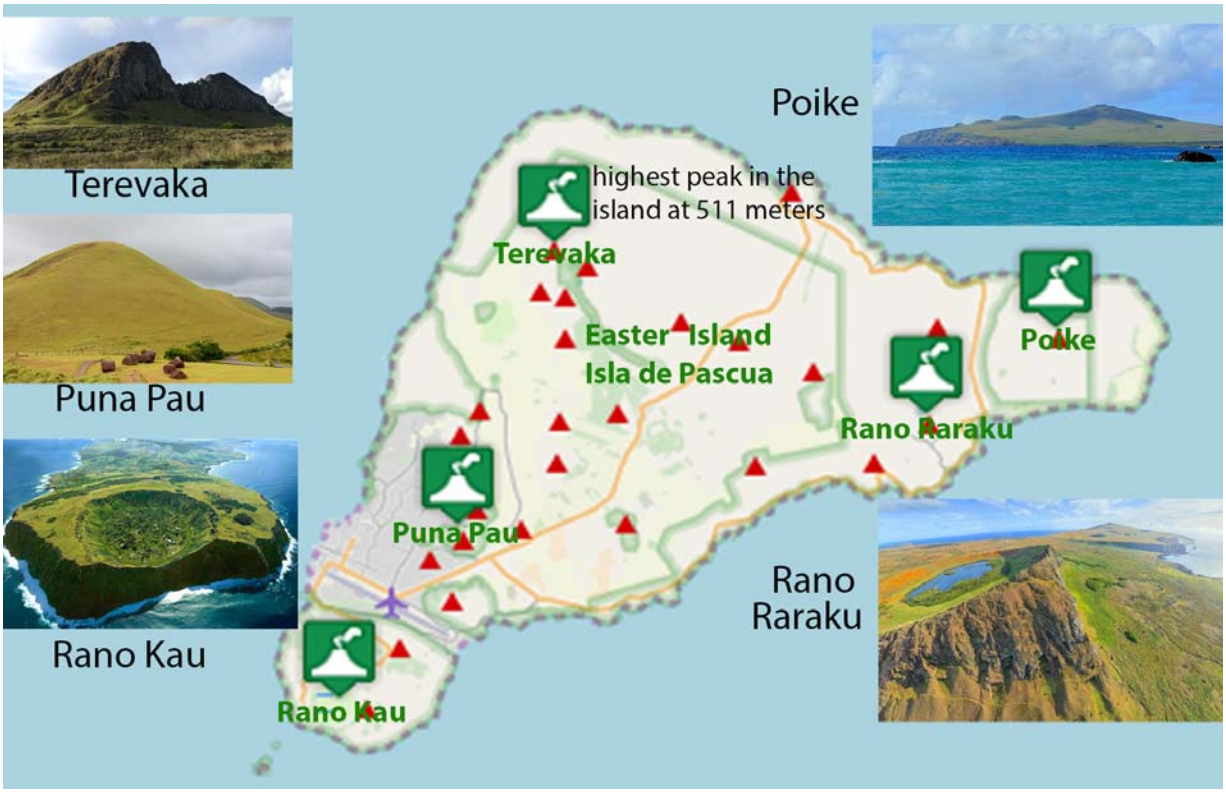
Landmarks include a church, monument, and a radio mast, all situated in the vicinity of Barril Beacon. A flagstaff, with white boards attached, is prominent N of the range beacons. Three notable white-colored crosses stand on the hill of Maunga Tuutapu (27°08.7'S., 109°24.1'W.).

Anchorage is available with the range beacons mentioned above in alignment bearing 144°, and the outermost rock off Punta Roa Bearing 206°. The berth offers depths of 25m, sand. In very good weather, anchorage can be had further in on the range line, with the rock bearing 220°, in a depth of 20m over a sand bottom.

Caleta Hanga-Piko is a cove about 0.2 mile S of Punta Roa. Its inner part forms a natural basin and is the landing place for all passengers and cargo for Hanga-Roa. Above and below-water rocks lie up to 0.2 mile WNW of the W entrance point. Small craft drawing less than 1.5m can enter the basin through a narrow channel between rocks. Local knowledge is absolutely necessary. Cargo is loaded and discharged during the day from a pier 80m long, with a least depth of 0.9m at its head.

This anchorage is recommended for small vessels, with winds from N through E to S, but is open to the W. A vessel moored here must be ready to put to sea at short notice, but may find that her anchor has fouled on the bottom.

Anchorage can be had off the cove, in a depth of 50m, with the red and white radio mast bearing 093°, and the NE of the three high rocks off the island's SW end, in alignment with the cliff edge below the peak on the island's SW extremity bearing 180°.



Isla de Pascua—(Easter Island) main Volcanoes

The bottom is rocky, and badly fissured.

Anchorage in Hanga-Roa is preferable, where the holding ground is better and three 30-ton lighters are available to assist with landing and embarking cargo.

1.25 Anakena (27°04'S., 109°20'W.), a cove on the N side of the island, is approached in depths of 7.3 to 14.6m, and has depths of 3.7 to 9.1m in the preferred E part of the cove. A level sandy beach provides the best landing on the island for small boats. There is very little sea or swell. A monument within the SE shore of the cove is a good landmark. There is a concrete quay.

Anchorage can be taken just within the cove entrance and in the middle of the E part of the bay. With winds from S to W, the cove affords the best anchorage on the N coast, with good holding ground. Anchorage is also available, in 21.9m, good holding ground of sand, about 0.3 mile WNW of Punta Rosalia and with this point aligned with Cabo O'Higgens, bearing 109°.

Bahia La Perouse (27°05'S., 109°18'W.) is an open roadstead entered between Punta Angamos (27°05'S., 109°18'W.) and Punta Rosalia. The terrain in the area is low and landing can be effected W of Punta Angamos and in Rada Benepu, about 1 mile WNW of the same point.

Anchorage can be taken, in a depth of about 21.9m, rock and shells, 0.3 mile NW of Punta Angamos and off Caleta Ovali. East and SE winds raise a heavy sea in the bay, which is also exposed to N and NW winds. The anchorages are tenable with light N winds, and when the trade winds are blowing.

Hutuiti Anchorage (27°07'S., 109°17'W.) affords shelter from N and W winds in about 18.5m, 0.3 mile NE of Punta Yama (27°08'S., 109°17'W.). Several other inlets and coves along the SE coast of Isla de Pascua afford anchorage to small vessels and shelter from all but S winds, but the sea breaks heavily on this coast.

Rada Vinapu (Benepu) (27°10'S., 109°25'W.) is a cliff-ringed, open roadstead located about 3 miles NE of the island's SW extremity. Five small islets lie off the roadsteads SW entrance point.

Anchorage.—Anchorage, secure in N or W winds, but open to winds of other directions, is available in the E portion of the roadstead, clear of the tanker berth, but requires local knowledge. The holding ground is good, the bottom being sand.

1.26 Vinapu Oil Terminal (27°10'S., 109°25'W.) consists of an offshore oil berth situated at the seaward end of a buoyed submarine pipeline. The berth is able to accept vessels up to 150m in length, with a maximum draft of 8.5m.

Six silver-colored storage tanks stand at the terminal on the shore behind the berth and are prominent.

Pilotage is compulsory.

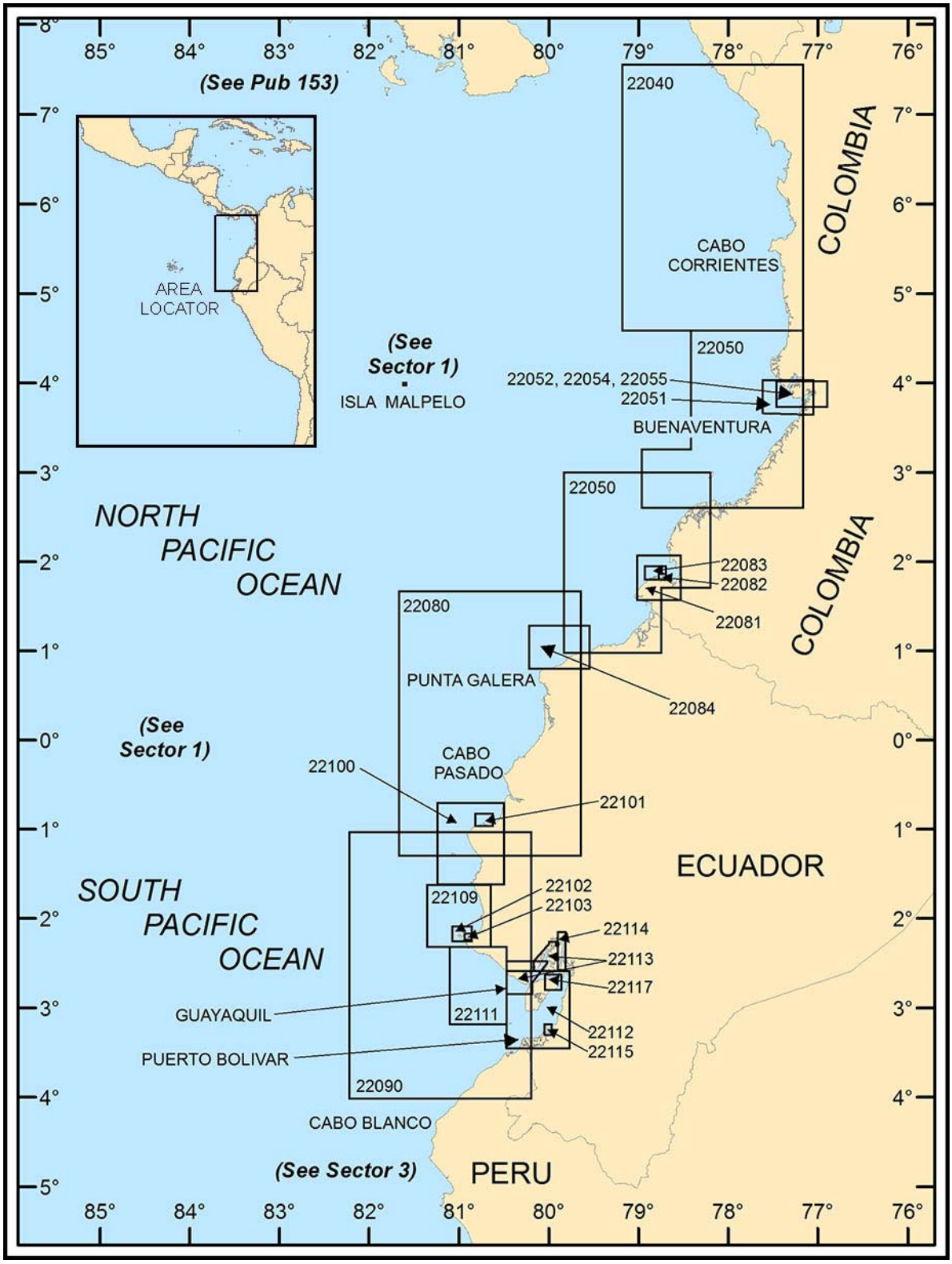
Directions.—Two range beacons, situated on a point about 0.7 mile NE of the oil tanks, mark the initial approach to the berth. The beacons consist of an orange pedestal, surmounted by a white daymark with a black triangle in its center, point down.

Vessels 120 to 150m in length approach on the alignment of the beacons mentioned above, in line bearing 018°; but vessels under 120m in length should steer for a prominent triangular patch of

grass located about 137m NW of the front beacon on a bearing of 016°. Steer on either the beacons or the grass until a second set of beacons, identical to the pair mentioned above, situated about 137m S of the tanks, are in alignment bearing 284°. At this point, the starboard anchor should be let go. Veer about 5 to 6 shots of chain, turning the vessel to starboard. Let go the port anchor when, in large vessels, the ship's head is about 050°, or in smaller vessels when the rear range beacon S of the oil tanks bears 274°, and the front range beacon N of the tanks bears 020°.

With both anchors down, maneuver the vessel to pick up two wire stern lines suspended from a small white buoy; the mooring lines are laid out on the bottom from the shore and are suspended from the buoy by wire messengers. When secured, the vessel should be on a heading of 140°, with about 7 shots of chain out on each anchor, and its stern about 0.1 mile seaward of 10m depths. Smaller vessels should secure with the vessel's head between 127° and 137°. A boat is available to assist in picking up the stern lines and the cargo hose, that is rigged to the vessel's port side.

Caution.—It is normal to allow for a slight W set.



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

SECTOR **2** — CHART INFORMATION

SECTOR 2

COASTS OF COLOMBIA AND ECUADOR

Plan.—This sector describes the W coast of South America from Isla Mono, at the Panama/Colombia boundary, to Canal de Jambeli, at the Ecuador/Peru boundary. The sequence of the description is from N to S.

General Remarks

2.1 Most of this coast is low, with sandy beaches interrupted by rocky points and prominent headlands. Inland, mountain ranges often parallel the coast. There are also detached mountains and hills backing the coast in various places. Numerous islands, some contiguous with the shore, lie near river deltas and off the many bays which indent this coast.

Buenaventura and Guayaquil are the most important ports on this coast. There are many secondary ports where cargo is loaded and discharged while at anchor in open roadsteads.

Winds—Weather.—The climate of this region is influenced by the Peruvian Current. Along the N part of the W coast of Colombia, winds from the NW to NE prevail, except in September and October, and are quite dependable from December to April. From May to August they alternate with SW winds. In September and October, SW winds prevail, but with frequent changes to N. Gales from the N or NE occur occasionally, chiefly from December to February, but they are rare from any other direction.

Along the S coast of Colombia, a SW wind sets in about April and becomes increasingly steady until September and October. It then diminishes in steadiness and is replaced in February and March by N winds. The SW wind is dependable only from August to December. Gales are practically unknown along this part of the coast.

The prevailing winds along the coast of Ecuador are S to W throughout the year, but are more steady from that quarter from June to November. North winds occur occasionally from late January to early April. Gales are practically unknown. The average velocity of the wind is about 8 knots. Heavy squalls and thunderstorms sometimes occur.

Fog is extremely rare over the open sea along the coasts of Colombia and Ecuador.

Tides—Currents.—The currents off the coast are influenced by the northerly Peruvian Current and by a S current, known locally as "El Nino" that occurs in the first part of the year along the coast of Ecuador.

On the main shipping tracks between Panama and the Equator, the current may set in any direction throughout the year. The majority of the currents observed exceed a rate of 1 knot, except for the predominantly N current off the coast of Colombia. A small percentage of the currents observed have exceeded 2 knots, except from August to September, and set mainly in W directions. Currents of a local nature are described in the various parts of this chapter with the features off which they occur.

The tidal currents between Isla Mono and Cabo Blanco are not reckoned with, as the ocean current effect is much greater.

Regulations.—For details on regulations pertaining to vessels approaching the coast and waters of Colombia and Ecuador, see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Caution.—Offshore oil fields are encountered off this coast roughly from a point NW of Punta Malpelo (3°30'S., 80° 30'W.), to a position S of Punta Parinus (4°40'S., 81°22'W.). Rigs, production platforms, submarine pipelines, and various other types of hazards, both above and below-water, may be associated with these oil fields, some of which may be lighted. Vessels are urged to exercise the appropriate caution when navigating along this coast.

Peruvian authorities advise that oil rigs may be found between the parallels of 3°S and 5°S.

Isla Mono to Buenaventura

2.2 **Isla Mono** (7°13'N., 77°53'W.) lies 0.5 mile offshore in the vicinity of the boundary between Panama and Colombia. The intervening coast between Isla Mono and Bahia Ardita is high, rugged, heavily wooded, and steep-to within 0.5 mile of the shore.

Punta Marzo Hazards

Between Isla Mono and Punta Solano, about 65 miles SE,

the coast is indented by several bays, and numerous small rivers flow into the sea. Much of the coast is high, partly steep-to, with bluff headlands fringed with rocks and reefs. There are also stretches of sandy beaches backed by low land.

Bahia Ardita (7°08'N., 77°48'W.), 6.5 miles SE of Isla Mono, is a coastal indentation with a village on its N side. The bay may be identified by an islet lying about 0.5 mile S of Punta Ardita, the bay's W entrance point.

A light is exhibited on the coast, about 13 miles NW of Punta Ardita. A light is shown from a structure, 70m high, close SE of the town of Ardita.

Punta Marzo (6°50'N., 77°42'W.) is bold, rugged, densely wooded, and lies about 20 miles SSE of Punta Ardita. A light is shown from a tower, 15m high, standing on a small island close off the cape. Detached rocks lie up to 1.8 miles S of the cape. Rocas Octavia (6°47'N., 77°42'W.) are high bare rocks on a detached reef lying 3 miles S of Cabo Marzo.

Bahia Octavia (6°51'N., 77°40'W.), formed by Cabo Marzo and the shore E of it, affords anchorage, in depths of 9.1 to 27.4m.

Punta Cruces (6°39'N., 77°32'W.), about 15 miles SE of Cabo Marzo, is the prominent S end of a peninsula which forms the W side of Bahia de Cupica. Rocky islets lie on foul ground which extends about 1.8 miles SE of Punta Cruces. Golfo de Cupica is a large, open bight between Punta Cruces and Punta Solano, about 22 miles S. Several small bays indent the coast within the gulf.

Bahia de Cupica (6°41'N., 77°27'W.), located close E of Punta Cruces and indented in its NE part by small bays formed between headlands, has ample depths for vessels in its middle. A beach at the head of the bay is fronted by shoal ground. Anchorage, exposed to S winds, can be taken in suitable depths between 0.3 and 1 mile offshore.

Bahia de Solano (6°18'N., 77°25'W.) is entered between Punta Solano (6°18'N., 77°28'W.) and Punta Nabuga, a lofty promontory about 6.3 miles NE. Above and below-water rocks lie off its slopes and a chain of rocky islets, some conspicuous, lies about 2 miles SW of Punta Nabuga. Rocky patches make up a reef extending 1.5 miles NNW from Punta Solano. There is a depth of 7.5m off the outer end of the reef. A light is shown from a red and white banded tower, 44m high, standing on Punta Solano. Ciudad Mutis is a small town at the head of Bahia de Solano. A green directional light, 13m high, stands in the town.

Anchorage can be taken, in a depth of 27.4m, about 1.5 miles from the head of the bay. Cargo is handled by lighters at the anchorage.

Caution.—An ODAS buoy, marked with a flashing light, is moored about 5 miles NW of Bahia de Solano in position 6°22'00"N, 77°30'18"W. A rocky obstruction lies with a approximate minimum depth of 0.8m in position 6°18'59"N, 77°28'40"W and is marked with a lighted buoy.

Ensenada Utria (6°02'N., 77°21'W.) is a constricted inlet extending about 3 miles N from its entrance, which lies about 19 miles SSE of Punta Solano. The W side of the inlet is formed by a narrow peninsula; the E side by the mainland. Two islets and detached above-water rocks lie up to 1.5 miles S of the S end of the peninsula. The inlet is approached E of the islets. Ensenada Utria is easily identified by Playa Baia (6°04'N., 77°24'W.), a sandy beach fringed by coconut palms, which extends 4 miles NW of the peninsula. Landing can be made on a spit at the E side of the inlet, about 1 mile within the entrance. Anchorage can be taken S of the spit, in depths of 22 to 45m.

2.3 Cabo Corrientes (5°29'N., 77°33'W.), a high steep-to promontory, is easily identified by the dome-like Picos de Ananas, which rise about 457m, 4.5 miles ENE of the cape and are densely wooded with the peaks bright green in color. A light is shown from a metal tower, 18m high, standing on the cape. Punta Arusi (5°37'N., 77°30'W.) is the steep-to N end of Cabo Corrientes. A constant N current runs in the vicinity of the cape.

Caution.—A large marine reserve has been established west of Cabo Corrientes.

Bahia Cuevita (5°28'N., 77°28'W.), open S, has above and below-water rocks lying up to 0.3 mile off its E entrance point. Good anchorage can be taken, in 29.3m, about 1.3 miles ENE and 0.5 mile off the W entrance point.

Bocana de Virudo (5°26'N., 77°25'W.) empties into the sea about 1.5 miles SE of Bahia Cuevita. Iglesia de Sevira, an unusual perforated rock, lies 0.5 mile off the S entrance of the river.

The coast S of Bocana de Virudo is fronted by shoal water for several miles offshore and the low, sandy shore is broken by numerous creeks and river deltas.

2.4 Punta Charambira (4°18'N., 77°30'W.) is the W entrance point of Boca Charambira, one of the N mouths of the Rio San Juan, which is reported navigable for about 180 miles inland by craft of 1.5m draft. A sand bar at the river mouth makes entry difficult. Punta Charambira, consisting of a series of low spits, is difficult to distinguish. It is the N extremity of an island which is separated from the mainland by a river. The point is reported to be a good radar target at 20 miles. There is a strong outgoing current in the river on an ebb tide and strong cross currents in the river entrance. Heavy logs are rafted down the river and off-loaded at the anchorage. Vessels, with a draft of less than 4.5m and local knowledge, can anchor in Boca Charambira. A light is shown from the point.

Between Punta Charambira (4°18'N., 77°30'W.) and Punta Aji (3°14'N., 77°33'W.), the low, swampy coast recedes about 20 miles E to form Bahia Choco. Bahia Buenaventura and the mouth of the Rio Buenaventura lie at the head of this bay. About 2 miles N of Punta Magdalena (3°56'N., 77°21'W.) the low cliffs begin. Ensenada de Juanchaco (4°00'N., 77°19'W.) recedes about 8 miles N between Punta Magdalena and Punta Sande, 2.8 miles SE. Low cliffs back the shore between the latter point and Punta Bazan (3°50'N., 77°11'W.), the N entrance point of the Rio Buenaventura. This entire coast from Punta Charambira to Punta Soldado is fronted by shoals and foul ground for several miles.

A ballast water exchange zone is located to the west of the explosive dumping area off of Punta Chrambira.

2.5 Bahia de Malaga (3°55'N., 77°20'W.) lies in the approach to Ensenada de Juanchaco, which is entered between Punta Magdalena and Punta Sande.

Tides—Currents.—There is a strong tidal current, reported to be 5 to 6 knots, inside the N channel approach to Bahia de

Bahia de Malaga Naval Base

Malaga. Strong currents in excess of 6 knots have been reported in vicinity of the piers alongside the naval base. The tidal range has been reported to be 3.5m.

Isla La Palma Light (NGA #188 Isla Palmas)

Depths—Limitations.—Bahia de Malaga is approached by passing either E or N of Isla La Palma. The preferred approach N of Isla La Palma through Canal de Juanchaco is marked by lights and lighted buoys, as shown on the chart. The entrance to Canal de Juanchaco is about 450m in width and narrows to approximately 185m in width in the vicinity of Buoy No. 13. However, caution needs to be exercised because it has been reported that numerous buoys are missing or have drifted from their charted position. Depths within Canal de Juanchaco are well in excess of 10m, as shown on the chart.

The alternate approach E of Isla La Palma passes through Canal Sur Bahia Malaga (Canal Juan de Dios) and is marked by lighted buoys. Depths within this approach are more shallow than the preferred approach but are still in excess of 10m, as shown on the chart.

Depths are irregular after passing through the approaches but will still accommodate vessels with drafts up to 7.6m.

The only docking facilities available are for vessels attached to or visiting the Colombian Naval Base located near Punta Alta (3°58.4'N., 77°19.4'W.). There are two piers capable of accommodating vessels with drafts of 6m or less. These piers are used mostly by Colombian patrol craft which are commonly moored abreast at the same berth. There are no port services available.

Pilotage.—There are no pilots or tugs available for Bahia de Malaga. Local knowledge is suggested for transiting the bay. It has been reported that Colombian Naval officers have made themselves available to be used as onboard advisors.

Regulations.—An area, indicated on the chart, where movement restrictions apply, has been established off Punta Alta.

Buenaventura—Naval Base and Puerto Aguadulce

Buenaventura

Anchorage.—Anchorage Area A, Anchorage Area B, and Anchorage Area C lie 3.5 miles, 4.5 miles, and 5 miles S, respectively, of Punta Alta; Anchorage Area D lies 1.5 miles E of Punta Alta. These anchorages are best seen on the chart. There are no designated anchorage areas outside of the harbor but anchorage has been taken, in depths near 30m, rock, with thin layer mud and shells SW of Bajo Los Negritos.

2.6 **Isla La Palma** (3°55'N., 77°21'W.) lies about 1 mile S of Punta Magdalena. It was reported that this island was the only reliable radar target in the area. A light is shown from a metal tower, 36m high, standing at the SW end of the island, but the tower is situated within a wooded area and difficult to identify. The light is also obscured in the bay. A light marks the shoals close N of the N end of the island. There are strong currents in the vicinity of the island.

It was reported (1990) that access to the island has been restricted by order of the Colombian military.

Los Negritos (3°54'N., 77°24'W.), about 2.8 miles W of the S end of Isla La Palma, is a dangerous reef consisting of several detached rocks which nearly cover at high water. Depths of less than 5m exist up to 0.5 mile S and 0.7 mile SE of the reef. Keeping in mind the depths in the vicinity of Bajo de Negritos and Los Negritos, vessels should keep in depths greater than 20m, especially during bad weather, while in the vicinity.

Bajo de Negritos (3°54'N., 77°26'W.), a shoal area about 2.3 miles W of Los Negritos, has a least depth of 8.8m, which is marked by a lighted buoy. The shoal was reported to be extending to the S.

Canal de Juanchaco (3°56'N., 77°21'W.), the N channel leading N of Los Negritos and Isla La Palma, is about 0.5 mile wide, but the navigable portion, with depths of over 10m, is only 0.2 mile wide. The channel has a least charted depth of 16.7m, situated about 1.3 miles WSW of Punta Magdalena. The fairway is marked by lighted buoys and an approach lighted buoy, equipped with a racon, is moored about 5.3 miles W of Isla La Palma. Islote Magdalena and another islet lie on foul ground extending at least 0.5 mile NNE and E of the NE extremity of Isla La Palma.

Canal Juan de Dios (3°54'N., 77°20'W.), the E channel between Isla La Palma and the coast E, is about 1.5 miles wide and shows depths of 5.5 to 7.3m at its seaward entrance, but there are unmarked shoal patches with depths of 1m lying adjacent to the narrow fairway.

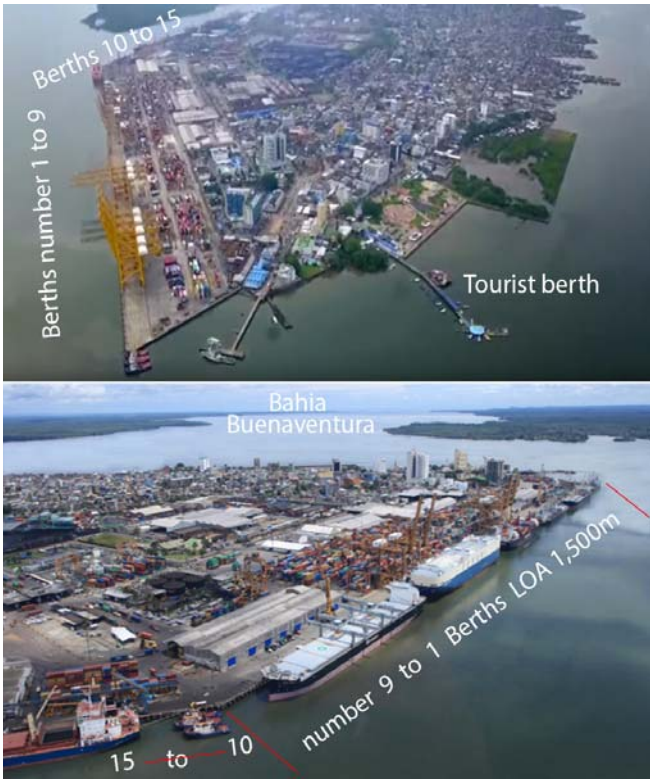
Ensenada de Juanchaco (4°00'N., 77°18'W.) is the inner part of Bahia de Malaga. It extends about 8 miles NE from its entrance and opens out to a width of 5 miles. Much of it is unsurveyed. Archipelago de la Plata (4°01'N., 77°16'W.), at the head of Ensenada de la Plata, consists of many cultivated, wooded islets.

Buenaventura (3°54'N., 77°05'W.)

World Port Index No. 15370

2.7 Buenaventura, the principal port on the W coast of Colombia, lies about 8 miles within the mouth of the Rio Buenaventura, which empties between Punta Bazan and Punta Soldado. The river harbor is well-protected with berthing facilities.

Port of Buenaventura Home Page
http://www.sprbun.com



Buenaventura Terminals

Buenaventura Terminals 13, 14 and 15

Winds—Weather.—Buenaventura is a tropical port with practically no seasonal variations in weather. Daily tempera-

ture variations range from about 23° to 43°C, with an average temperature about 27°C. The humidity remains constant at about 89 per cent. The air is still, sultry, and uncomfortable, except when there are cooling breezes which frequently accompany the rising tide.

The port is in one of the heaviest rainfall belts of South America. Rain occurs almost every day, usually at night or during the early morning. However, there may be one or two brief heavy showers while the sun is shining. The greatest intensity of rainfall occurs in October and November, when tropical thunderstorms are frequent. Heavy rain almost all year round may cause cargo operations to be disrupted for up to 12 hours at a time.

Tidal Ranges for Buenaventura	
HAT	4.6m
MHWS	4.0m
MHWN	2.9m
MSL	1.98m
MLWN	0.8m
MLWS	-0.1m
LAT	-0.6m

Notes:
1. Predicted heights are in meters above charted datum.
2. HAT—Highest astronomical tide.
3. LAT—Lowest astronomical tide.

Tides—Currents.—See the table titled **Tidal Ranges for Buenaventura**.

The first of the rising tide comes from N at a rate of a little more than 1 knot. The current off the city attains a rate of 6 knots. Depending on the state of the tide, there is a current of up to 3 knots off the berths of the town.

Depths—Limitations.—Both the Rio Buenaventura and the port of Buenaventura are subject to siltation: The main channel through the river to the port is marked by lighted buoys which cannot be relied upon as they may be removed without notice, shifted, or carried away by the strong tidal currents in the river. They may also not mark the deepest portion of the channel, owing to the shifting nature of the banks.

The bar, which extends across the approach to the Rio Buenaventura S of Culo de Barca, has general depths of 5.5 to 9m, but lesser depths may exist. The maximum draft a vessel may carry over the bar, and through the entrance channel, is governed by the height of tide at the port. The area is periodically dredged. The least charted depth over the bar is 6.3m.

Sand bars sometimes build up across the channel in the vicinity of Buoy No. 5 and Buoy No. 6, and NW of Buoy No. 13.

Shoal banks and shoal patches are charted up to 1.3 miles off the N shore of the river, while a large 5.5m shoal is charted about 2 miles SW of the same island. Depths of less than 5.5m extend up to 7.8 miles SW of Punta Soldado. Two obstructions lie 1.7 miles and 1 mile W, respectively, of Punta Soldado. It was reported that less water than charted was found in the vicinity of Lighted Buoy No. 2 and Lighted Buoy No. 7. Two dangerous wrecks are located about 0.5 mile WSW and SW of Isla Alba.

The port proper lies on the N side of Isla Cascajal (3°53.1'N., 77°04.1'W.), and consists of a marginal concrete wharf 2,126m long, plus a 200m long angled berth at the W end.

The port consists of three major terminals as follows:

Terminal Maritimo (3°53'34˝N., 77°04'50˝W.) has 15 berths, with a least depth of 10.3m. Refer to the berthing facilities table for berth information.

Buenaventura—Berthing Facilities

Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Beam	Size	
1	205m	14.0m	368m	Unrestricted	150,936 dwt	General and containers. Continuous berthing length of 1,500m.
2	185m	14.0m	366m		154,538 dwt	
3	130m	14.0m	335m		123,587 dwt	
4	130m	14.0m	337m		131,095 dwt	
5	140m	14.0m	333m	Unrestricted	141,448 dwt	Containers. Continuous berthing length of 1,500m.
6	210m	13.9m	232m		77,950 dwt	
7	100m	—	229m		73,296 dwt	
8	196m	—	220m		73,296 dwt	
9	204m	—	220m	Unrestricted	73,296 dwt	Bulk sugar, general, and dry bulk.
10	175m	—	220m	Unrestricted	63,655 dwt	Grain and fertilizers.
11	175m	—	220m	Unrestricted	63,963 dwt	Grain and fertilizers.
13	175m	—	200m	Unrestricted	81,616 dwt	Multipurpose.
14	190m	11.0m	199m	Unrestricted	64,712 dwt	Chemical tankers, general cargo, liquid and dry bulk

Buenaventura—Berthing Facilities						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Beam	Size	
Terminal de Contenedores de Buenaventura (TC Buen)						
1	—	14.0m	350m	48.0m	131,095 dwt	Containers. Continuous berthing length of 440m. Can accommodate two vessels simultaneously.
Almagrario S.A.						
12	175m	10.0m	229m	Unrestricted	81,783 dwt	Bulk and general cargo.
Terminal Compas Buenaventura						
15	123m	10.5m	—	52.0m	63,533 dwt	Breakbulk and general cargo. Berthing length of 258m (including dolphins).

Terminal de Contenedores de Buenaventura—(TCBuen)

TC Buen Container Terminal (3°53'35″N., 77°02'37″W.) handles containers and general cargo. The berth has a continuous length 440m with a depth of 14.0m.

Aguadulce—Sociedad Puerto Industrial Aguadulce (SPIA) (3°54'12″N., 77°05'16″W.) the berth has a continuous length of 850m and divided into two berths handling bulk cargos and containers. It can accommodate vessels with length of 250m and 14.0m draft. For further berthing informstion refer to the talbl titled **Buenaventura—Berthing Facilities** .

Aspect.—Punta Piedra is a prominent point located about 2 miles SSE of Punta Sande.

Punta Bazan, about 7.8 miles ESE of Punta Piedra, is low and wooded with a few houses. The coast between is composed of wooded, red sandstone cliffs. Culo de Barca, about 2.5 miles SE of Punta Piedra, and Vigia de San Pablo, about 4 miles W of Punta Bazan, are two small islets lying off this coast. The latter, triangular in shape, is easily identified.

Punta Soldado is located about 1.3 miles S of Punta Bazan. A light is shown from a framework tower, 17m high, standing on the point. A prominent grey building stands on the point close to the light structure. Punta Soldado Light, red tower with white bands, 50m in height, is exhibited about 0.2 miles S of Punta Soldado point. The point is low and wooded with a few houses, E limit of sandstone cliffs.

A conspicuous red roofed house is situated about 2 miles W of Punta Bazan. Above Punta Bazan, the shore is low and wooded with an occasional cliff.

The S shore of the river is a mangrove swamp divided by small rivers and fronted by mud flats.

At the city of Buenaventura, a conspicuous church spire lies 0.3 mile SE of the spur mole, and conspicuous piles lie 1 mile W and 0.8 mile SE of the spire. Several conspicuous water tanks, antennas, and a conspicuous yellow building are situated within the town and are best seen on the chart.

Pilotage.—Pilotage is compulsory for vessels of more than 500 gt and is available at any time, however, there is an additional charge if the pilot boards between the hours of 1800 and 0600. It is advisable to enter the channel or leave the wharf one hour after LW or 2 hours after HW.

The pilot boards near Buoy No. 1 (3°47.7'N., 77°18.9'W), which is fitted with AIS. In case of a delay in service, vessels should drift outside the sea buoy and request the pilot by four short blasts.

Regulations.—Vessels are berthed no later than 2200 but departures occur at any time. Tankers may berth only during daylight hours, but around the clock arrivals are allowed at the general cargo berths.

Vessels should send an ETA to the Port Captain and agents 72 hours, 48 hours, 24 hours, and 12 hours in advance of arrival. Contact with the pilot station should be made using VHF 3 hours prior to arrival. The ETA message must contain the following information:

1. Quantity of cargo expected to be discharged.
2. Expected arrival draft.
3. Number of passengers onboard, how many will be disembarking, and how many will remain on board throughout the stay in port.
4. Quantity of dangerous or inflammable cargo on board, if any, and if so include any other information that would be useful in conformance with international regulations. Special regulations are in effect for vessels carrying explosives

Contact Information.—See the accompanying table titled **Buenaventura—Port Contact Information** for details.

Buenaventura—Port Contact Information	
Pilots	
VHF	VHF channels 11, 12, and 16
Telephone	57-(09)2 241 1509 57-(09)2 241 1953
Facsimile	57-(09)2 241 3709
E-mail	informacion@pilotosdelpacifico.com
Web site	http://www.pilotosdelpacifico.com
Port Authority	
VHF	VHF channels 13 and 16
Telephone	57-(09)2 241 0700 57-(09)2 241 0709
E-mail	servicioalaccionista@sprbun.com
Web site	http://www.sprbun.com
Harbormaster	
VHF	VHF channels 16, 24, 25, 26, 27 and 71
Telephone	57-(09)2 242 3702
Facsimile	57-(09)2 241 7867
	57-(09)2 242 3702
E-mail	jefcp01@dimar.mil.co cp01@dimar.mil.co

Buenaventura—Port Contact Information	
Web site	https://www.dimar.mil.co/capitania_buenaventura

Anchorage.—Vessels may anchor in the charted anchorage areas, which are located, as follows:

Buenaventura—Designated Anchorage Areas		
Number	**Position**	**Remarks / Depth**
Outer Anchorage		
CPO1-K	3°44.18'N, 77°19.35'W	Explosives; 13m to 19m
CPO1-J	3°45.23'N, 77°19.56'W	Quarantine; 10m to 19m
CPO1-I	3°46.10'N, 77°19.58'W	11m to 20m
CPO1-H	3°49.35'N, 77°19.80'W	10m to 16m
Inner Anchorage		
CPO1-G	3°49.08'N, 77°11.33'W	08m to 13m
CPO1-F	3°49.62'N, 77°09.30'W	08m to 12m
CPO1-E	3°50.50'N, 77°08.34'W	07m to 08m
CPO1-D	3°50.92'N, 77°07.32'W	06m to 09m
CPO1-C	3°51.63'N, 77°06.20'W	07m to 12m
CPO1-B	3°52.53'N, 77°05.45'W	05m to 09m
CPO1-A	3°53.28'N, 77°05.27'W	06m to 12m
Caution—A dangerous wreck was located at 3°49.27'N, 77°19.61'W within Anchorage CP01-H.		
Caution—A dangerous wreck was located at 3°51.86'N, 77°05.89'W within Anchorage CP01-C.		

Caution.—Vessels are generally docked and undocked only at slack water, due to the strong tidal currents off the berths.

It was reported that very strong ebb tidal currents were experienced at the anchorages within the river. Buoys may drag from their charted positions.

It was reported (1991) that surveys showed significant changes to depths in Bahia Buenaventura; many areas have depths of 1 to 2m less than charted.

Mariners are advised to be alert to abnormal or hostile activities due to piracy, especially during evening hours.

2.8 Punta Guascama (2°37'N., 78°25'W.) lies about 100 miles SW of Punta Soldado. The coast between these two points is low, flat, and heavily wooded, interrupted by mangrove swamps, river deltas, and the mouths of streams. There are no prominent headlands. Coastal shoals, with depths of less than 5.5m, lie up to 6 miles offshore. Pico Tortugas, with an elevation of 162m, stands about 20 miles S of Punta Soldado and is the only hill above a flat and featureless coast. The many river deltas and streams emptying into the sea between the various points discharge a considerable volume of water, debris, and tree trunks, causing a rolling swell and currents.

The mouth of the Rio Guapi, about 29 miles ENE of Punta Guascama, can be reached through a narrow channel. Local knowledge is required. A light is exhibited from the E bank at the river entrance. Another light marks Punta Chocon, about 11 miles NE. A lighted buoy lies about 20 miles W of Punta Chocon.

The mouth of the Rio Sanguianga, about 23 miles W of the Rio Guapi, can be entered through breakers via a passage with depths of 9 to 22m. A coral reef extends NNE from Punta Mulato (02°39'N., 78°17'W.) and is marked by a lighted buoy. A shoal patch, with a depth of 6.4m, lies in mid-channel. Local knowledge is required.

Tides—Currents.—Currents near the coast run parallel with it and generally set N on a rising tide and S on a falling tide with a velocity of 1.3 knots. Up to 40 miles offshore the current sets NE.

Caution.—A dangerous wreck, in a depth of 16m, is located WNW of Punta Guayabal in position 3°30'30"N, 77°24'48"W.

2.9 Off-lying islands.—Isla Gorgona (2°58'N., 78° 11'W.), about 25 miles NE of Punta Guascama, is rugged, mountainous, and has five distinct peaks visible from the E and NE. Rocky foul ground lies off the SW side of the island; landings can be made on the E side.

Anchorage.—Anchorage can be taken in Watering Bay (2°58'N., 78°10'W.), off the island's E side, about 0.4 mile offshore, in a depth of 55m.

The best landing places are found on the E side of the island. **Isla Gorgonilla** (2°57'N., 78°13'W.) is located close SW of Isla Gorgona. A light is shown from a framework tower, 22m high, standing on the islet. Roca del Viudo lies 1 mile WSW of Isla Gorgonilla. An ODAS buoy is located in position 2°58.1'N, 78°15.8'W, about 3 miles NW of Isla Gorgonilla.

The coast between Punta Guascama and Cabo Manglares, about 72 miles SW, is low, wooded, and intersected by streams and river deltas. Eusenada Tumaco, about 40 miles SW of Punta Guascama, is 11 miles wide at its mouth. The port of Tumaco lies on the S shore of the bay entrance. This entire low coast should be approached with caution as depths are very irregular. The treetops are the first objects seen on the horizon. Depths give no warning of approach, as depths of 37m are found within 1 mile of the banks. An ODAS buoy (3°34.0'N., 77°44.3'W.) is located 45 miles NE of Isla Gorgona, 25 miles off the coast.

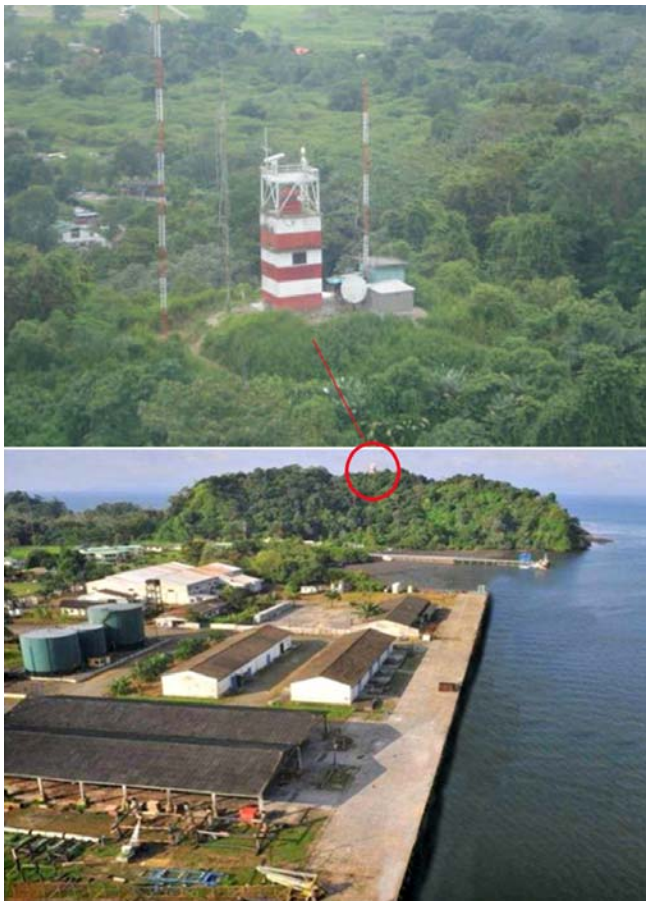
Pasa Caballos is located about 13 miles SW of Punta Guascama. A light is shown from a metal tower,36m high, standing on the S side. A depth of 11m was reported to lie about 13.5 miles NW of the light tower.

Bahia San Ignacio, lying about 19 miles SW of Pasa Caballos, has a drying sandpit extending 2 miles W from its entrance, with depths of 64 to 73m close off it.

An explosives dumping area is situated about 22 miles W of Pasa Caballos.

A ballast water exchange zone is located just west of the explosive dumping area as seen on the chart.

Punta Cascajal (1°59'N., 78°41'W.) is the SW extremity of Isla del Gallo, an island lying near the N entrance of the shallow Ensenada de Tumaco, about 10 miles S of Bahia San Ignacio. Punta Cascajal, consisting of a reddish cliff with two hills



Tumaco Pier—Tumaco Island Light

over it, is prominent along this flat coast. Between Punta Cascajal and Boca Grande, 15 miles SW, the coast recedes forming a bight of which Ensenada de Tumaco occupies the greater part. An ODAS buoy (1°58.6'N., 78°47.8'W.) is located about 8 miles W of Isla del Gallo.

Tumaco (1°49'N., 78°45'W.)

World Port Index No. 15360

2.10 Tumaco, the S port of entry of Colombia, is entered via Rada de Tumaco, which lies at the SW end of Ensenada de Tumaco between Boca Grande (1°49'N., 78°51'W.) and the Rio Chilvi, about 7.5 miles E. A steep-to shallow bank extends almost 0.8 mile off Boca Grande and 3 miles offshore as far as Isla del Morro, 6.5 miles NE. Isla del Guano, with two islets close SW, lies on this bank 1 mile NW of Isla del Morro. Isla Tumaco lies close W of the S end of Isla del Morro and is connected to it by a bridge with a vertical clearance of 1.8m. Isla del Morro fronts the mouths of the Rio Chilvi. The port of Tumaco consists of Isla de Tumaco (1°49'N., 78°46'W.), Isla del Guano (1°50'N., 78°46'W.), and Isla del Morro (1°49'N., 78°45'W.). The town of Tumaco is situated on the E side of Isla de Tumaco.The port handles the export of lumber and crude

oil.

Port of Tumaco Home Page
http://www.dimar.mil.co/capitania_tumaco

Winds—Weather.—The inner harbor and town are protected from the prevailing winds. There is heavy rainfall during the year.

Tides—Currents.—The mean spring rise is 3.1m while the neap rise is 1.8m.

Currents on the bar set in a WNW-ESE direction, at a rate of 1.1 knots. Currents off the wharf set in a NE-SW direction, at the same rate.

Depths—Limitations.—Numerous shoals, best seen on the chart, encumber the harbor. There are depths of 3.9m within 0.5 mile off the outer edges of the previously-described shallow bank. Depths shoal gradually from the 15m curve, in the vicinity of Entrance Buoy No. 1, to the bar 0.8 mile N of Isla del Morro. El Viudo (1°51'N., 78°43'W.) is flat-topped and dries about 3.7m. Shoals, which form the bar, extend at least 3 miles W and 2 miles N of El Viudo. The channel to the wharf has a least depth of about 8m, but the area between Buoy No. 7 and Buoy No. 9 must be navigated with extreme caution due to the rocky bottom and the narrow width of the channel. Depths in this area are subject to continuous change.

Vessels must berth with a suitable tide due to the bar between Buoy No. 2 and Buoy No. 3, with a depth of 3.7m at LWST; this increases to 6.1m at HW. There is no restriction on length.

The municipal wharf, situated 0.3 mile SW of the E extremity of Isla del Morro, is 310m long, with depths of 6.7m alongside. Vessels berthing at this wharf are limited to a maximum draft of 6.1m. A turning basin off the wharf is about 732m long and 411m wide, with a depth of 10.1m.

The Trans-Andean oil pipeline extends to Pindo Oil Terminal, an offshore terminal situated about 4.8 miles WNW of the N end of Isla del Morro. A submerged oil pipeline leads to the loading berth, a multi-point buoy mooring (MBM) for tankers, situated in depths of 32m. There are six buoys available for mooring. This terminal can handle tankers up to 100,000 dwt, 250m in length, and a maximum draft of 31.1m. The loading berth is marked by a lighted buoy, painted white, with a radar reflector. Hoses are marked by red and yellow pick-up buoys. A mooring master boards ships in the vicinity of the sea berth and will remain onboard throughout the loading operation so accommodation will need to be provided. Ships are handled during daylight hours only. Tugs are available and compulsory for berthing.

A restricted area, best seen on the chart, surrounds the terminal.

Aspect.—Boca Grande, the largest and northernmost mouth of the Rio Mira, can be identified by a village encircled by coconut palms. A white cliff at the NE end of Isla del Morro is conspicuous. A light is shown from a concrete tower 11m high, standing at the E end of Isla del Morro. A lighted beacon stands on El Viudo. An aeronautical radiobeacon is situated at the W end of the Isla del Morro near the airport.

Pilotage.—Pilotage is compulsory for vessels over 250 net tons for both the port and Pindo Oil Terminal. Pilots are available 24 hours but entrance to the port is available during daylight hours only. The pilot boards in position 1°52'00"N, 78°46'27"W. Vessels bound for the oil terminal must embark a pilot 1 mile before reaching the prohibited area around the terminal.

Regulations.—The vessel's ETA at the pilot boarding position should be sent to the Harbormaster, Port Medical Officer, and the agent 3 days, 48 hours, 24 hours, and 12 hours prior to arrival. The ETA message must contain the following information:

1. Date and time of ETA in local time.
2. Expected arrival draft.
3. Number of crew, including the master.
4. Any special requirements such as tugs needed or preferred berthing configurations.

Speed limit in the channel is 12 knots, reduced to 6 knots when near oil installations or vessels berthed alongside.

Contact Information.—For further information, see the table titled **Tumaco—Contact Information**.

Tumaco—Port Contact Information	
Port Authority	
Telephone	57-09-1-334 3574
	57-09-1-2835528
Harbormaster	
VHF	VHF channel 16
Telephone	57-09-2-727-2788
	57-09-2-727-5796
E-mail	jefcp02@dimar.mil.co
Terminal	
VHF	VHF channel 16
Telephone	57-09-30-272-457
Facsimile	57-09-30-272-457

Anchorage.—Outer anchorage areas are available close to the pilot boarding position, as follows:

1. Alpha (1°53.68'N, 78°47.05'W), in 35 to 40m, sand.
2. Bravo (1°51.26'N, 78°45.72'W), in 8 to 9m, sand.
3. Quarantine anchorage (1°55.76'N, 78°44.24'W), in 20 to 25m, sand.

Inner anchorage areas are, as follows:

1. Charlie (1°48.49'N, 78°45.45'W), in 4 to 10m, SW of Isla Del Morro.
2. Delta (1°49.26'N, 78°43.13'W), in 4 to 7m, about 0.5 mile SE of Isla del Morro Light.

Caution.—An area of shoal water, the limits of which may be seen on the chart, was reported to lie about 7.5 miles N of Isla del Morro.

2.11 Cabo Manglares (1°36'N., 79°03'W.), about 22 miles SW of Isla del Morro, is the low SW end of an island and contiguous with the shore. Shoals of less than 5.5m extend 1.5 miles off the cape. A light is shown from a framework tower, 36m high, standing on the cape.

The low coast for 40 miles SW of the cape recedes E to form Bahia de Ancon de Sardinas. Vessels should not approach this coast unless seeking an anchorage. Numerous streams and rivers intersect this coast.

Note.—The border between Colombia and Ecuador is situated approximately 16 miles SE of Cabo Manglares. See see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for details on regulations pertaining to vessels entering Ecuadoran waters.

All vessels entering waters within 200 miles of Ecuador and between the mainland and the Archipelago de Colon must send an ETA and destination to the naval radio station at Guayaquil. Additional reports required by the reporting system are contained in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

2.12 Bahia de San Lorenzo (1°27'N., 79°02'W.), in the N part of Bahia de Ancon de Sardinas, is fronted by shoals extending 7.5 miles offshore from its entrance which is marked on its W side by Buoy No. 1. The channel leading through the shoals to the entrance of the bay has a least depth of 3.7m. The bay extends 4 miles S from the entrance, is at least 0.5 mile wide, and has a 3.7m bank fronting its W side for about 0.4 mile.

Palo Seco Light (orange rectangular daymark, 8m high), in alignment bearing 140° with a small white spherical beacon, leads into Bahia de San Lorenzo. A channel connects the heads of this bay and La Posa del Puerto, forming Isla de Santa Rosa. A light is shown from a tower on the W side of Isla San Pedro which lies NE of Isla de Santa Rosa.

Lights are shown from three white concrete beacons with orange-colored daymarks situated at the SW end of Isla San Pedro, near the middle of the E side of Isla de Santa Rosa, and on a shoal N of Puerto de San Lorenzo pier.

Puerto de San Lorenzo (1°16'N., 78°51'W.) is a very small port situated on the N part of Ecuador's coast. It is a natural harbor at the entrance of the Bolivar Canal.

The minimum depth over the sand bar leading to the port is 3.4m; larger vessels, up to 6.6m draft, must pass over at HW.

There is one steel pier 85m long and 10m wide, with a depth alongside of 7m. Vessels of 5,000 tons can berth. There is a coast and port radio station in town. Port officials board at the pier. Pilots will board vessels in the vicinity of No. 1 approach buoy. Pilotage is compulsory, but is carried out during daytime only. The port captain should be contacted on VHF channel 16. Pilots advise that the best time to enter the channel is 2 or 3 hours before HW.

La Posa del Puerto, located about 8 miles SW of the mouth of Bahia de San Lorenzo, is entered by a channel leading SE through the offshore breaking shoals. The channel, 0.8 mile wide, has a depth of 3.7m. The harbor inside the entrance is sheltered, large, and has depths of 4.6 to 7.3m between the shore banks. A channel connects La Posa del Puerto with the Rio Santiago, about 4 miles SW. The Rio Santiago has a shallow entrance marked by a light. Poblacion de La Tola (1°13'N., 79°06'W.), a town, is situated 1 mile within the river entrance. A channel, with a depth of 5.5m, leads inland for 30 miles from the town. A light is shown from a tower on an islet lying 1 mile NE of the W entrance point of the Rio Santiago. A pilot for the Rio Santiago can be obtained at Poblacion de La Tola.

Puerto de San Lorenzo

Punta Verde (1°05'N., 79°27'W.) is a cliffy bluff backed by a high hill from which a light is shown. The mouth of the Rio Verde, about 1 mile WSW of Punta Verde, is entered over a bar which is navigable at high tide. The Rio Vainillita lies 13 miles E of Punta Verde.

Caution.—Vessels should not enter the channels within Bahia de Ancon de Sardinas without a pilot, due to the numerous isolated shoals and sharp curves. Local knowledge is essential.

Ecuador major ports

Punta Coquitos (0°59'N., 79°40'W.) is located about 15 miles WSW of Punta Verde. A light is shown from a tower,

13m high, standing on a hill with an elevation of 150m at the point. The low coast SW of Punta Verde becomes higher and more cliffy towards Punta Coquitos. The Rio Esmeraldas is located close E of Punta Coquitos.

Esmeraldas (1°00'N., 79°39'W.)

World Port Index No. 15330

2.13 Esmeraldas, a port and tidal basin, is located on the W side of the Rio Esmeraldas, about 1 to 2 miles S of Punta Coquitos, the W entrance point of the river. Punta Este, the E entrance point, marked by a round peak, lies 2 miles E of Punta Coquitos. The river, fed by many streams inland, flows rapidly between steep-to banks.

Port of Esmeraldas Home Page
http://www.puertoesmeraldas.com/paginas/index.php

The port consists of a general and bulk cargo port, with three berths located inside a natural harbor, and the Balao Oil Terminal, located offshore NW of the port. See paragraph 2.14 for details of the oil terminal.

Winds—Weather.—The climate is humid and hot. There is an afternoon breeze. Rainfall is heavy from January through April. West to SW winds prevail, except during the wet season (December-May), when NE winds predominate. Entry is suspended with winds greater than 10kn.

Tides—Currents.—Spring tides rise 2.9m; neaps rise 1.7m. Currents set N to NE in the at one to three knots in the harbor area. Strong tidal currents occur in the river anchorage and across the entrance to the harbor basin.

Depths—Limitations.—The entrance channel to the Rio Esmeraldas, which is deep, cuts between coastal banks extending 2 miles N and 4.5 miles NNW, respectively, of Punta Coquitos and Point Este. Dangerous shallow rocks lie on the coastal bank adjacent to the W side of the entrance channel.

The port proper consists of a basin situated on the W river bank, separated from a fishing harbor S of it by a point of land. The main harbor is protected from the N by a breakwater. The main basin was reportedly dredged to a depth of 11.5m, but shows charted depths of 0.2 to 11.6m, while the fishing harbor shows charted depths of 0.9 to 7m. The fishing harbor basin is fronted by a bar with a charted depth of 4.2m. A rock, with a charted depth of 1.7m, lies about 137m NE of the fishing harbor's E entrance point.

Maximum authorized draft for entry is 7m (2022), with a tide of at least 3m. The port is subject to silting and local authorities should be contacted for the latest information.

The entrance to the Rio Esmeraldas, located SE of the harbor entrance, is shallow and subject to freshets. During a freshet, depths within the entrance are subject to rapid and extensive changes, as is the channel through it. It is quite possible for a vessel navigating within or near the river entrance to ground, or strike floating debris carried down river by the current.

Aspect.—Punta Gorda (0°58'N., 79°44'W.), a steep bluff with a reef extending 0.5 mile off it, and Punta Este, are conspicuous, as is the narrow precipitous gorge through which the river flows. Several oil tanks standing on a small plateau about 2.5 miles E of Punta Gorda can be seen at a great distance. A radio mast close E of the tanks, and a water tower situated 1 mile S of Punta Gorda are conspicuous.

An airport is situated 1 mile SSW of Punta Este, while a radio mast exhibiting red fixed obstruction lights and several huts lie 1.5 miles SSW, and 0.5 mile SW, respectively, of the same point.

Lights are exhibited from the entrance points of the harbor basin and the fishing harbor, as well as the breakwater. Two sets of range lights and lighted buoys mark the channel from seaward to the main harbor basin and are best seen on the chart.

Pilotage.—Pilotage is compulsory and is available at any time day or night, however, mooring operations are only completed between 0600-1700hrs under normal weather conditions. Unmooring operations are available anytime day or night. Pilots will board in an area bounded by lines joining the following positions:

a. 1°01'37"N, 79°40'07"W.
b. 1°01'37"N, 79°39'10"W.
c. 1°00'46"N, 79°39'22"W.
d. 1°00'46"N, 79°40'07"W.

Contact Information.—See the table titled **Esmeraldas—Contact Information**:

Esmeraldas—Berth Information

Berth	Depth	Maximum Vessel			Remarks
		LOA	Draft	Beam	
Port of Esmeraldas					
Nos. 2-3	11.5m	350m	10.5m	44.0m	Breakbulk, multipurpose, chemicals, and containers.
Balao Oil Terminal					
Buoy X	36.58m	250m	15.0m	44.0m	Crude.
Buoy Y	36.58m	250m	15.0m	44.0m	
Terminal Maritimo Esmeraldas (TME)	16.4m	248m	12.0m	43.0m	Chemicals, clean products (CPP), and dirty products (DPP)

Esmeraldas—Contact Information	
Pilots and Port	
VHF	VHF channel 16
Telephone	593--6-272-1351
	593--6-272-1353
	593--6-272-2367 (extension 463/464) (operations)
Facsimile	593-6-272-3671
E-mail	gerencia@puertoesmeraldas.gob.ec
	jefedoperaciones@puertoesmeraldas.gob.ec (operations)

Anchorage.—There is anchorage, in 12m, about 2 miles N of Punta Coquitos Light. Several other anchorage areas have been designated at specified distances from the breakwater head that protects the natural harbor. See the table titled **Esmeraldas—Anchorage Areas** for a description of these areas.

A prohibited anchorage area, covering the harbor entrance, extends about 2.3 miles N and 1.5 miles E of Punta Coquitos Light. Lighted buoys, the pilot waiting area, and the quarantine anchorage area for Esmeraldas lie adjacent to and NE of the Prohibited Area.

2.14 Balao Oil Terminal (1°02'N., 79°42'W.), an offshore loading terminal NW of Esmeraldas, consists of two outer berths and one inner berth situated within a Tanker Operating Area in which navigation is restricted. The limits of the area may best be seen on the chart.

The outer berths are formed by two single point mooring buoys designated Buoy X and Buoy Y, situated about 4 miles offshore. There are least depths of 36.5m at the berths. Buoy X can handle tankers up to 107,000 dwt, 260m in length, with a beam of 46m and a maximum draft of 15.2m. Buoy Y can handle tankers up to 107,000 dwt, 305m in length, with a beam of 41m and a maximum draft of 15.85m.

Balao Oil Terminal Home Page
http://www.suinba.com

The inner berth is formed by four mooring buoys situated about 2.3 miles offshore, with depths of 16.4m at the berth. This berth can handle tankers up to 40,000 dwt, 185m in length, with a beam of 31.4m and a maximum draft of 12m.

Submarine pipelines extend from the coast to the berths and may best be seen on the chart. Berthing is carried out during daylight hours (0500-1700); unmooring is conducted 24 hours.

Pilotage.—Pilotage is compulsory. The vessel's ETA should be transmitted 72 hours, 24 hours, and 4 hours prior to arrival. Pilots will board in an area bounded by lines joining the following positions:

a. 1°03'48"N, 79°44'08"W.
b. 1°03'48"N, 79°41'08"W.
c. 1°02'48"N, 79°41'08"W.
d. 1°02'48"N, 79°44'08"W.

Vessels are not permitted to enter the terminal area without a pilot on board. Vessels are to remain at the pilot boarding area.

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

Balao—Contact Information	
Pilots	
Call sign	Balao Radio
VHF	VHF channels 16 and 68
Telephone	593-6-2724420
E-mail	suinba@dirnea.org
Balao Oil Terminal	
Telephone	593-6-2723008
	593-6-2725191
Facsimile	593-6-2722262 (extension 110)
E-mail	bater01@andinanet.net
	suinba@dirnea.org

Anchorage.—Areas have been designated at specified distances from the breakwater head that protects the natural harbor. See the table titled **Esmeraldas—Anchorage Areas** in paragraph 2.13 for a description of these areas.

Esmeraldas—Anchorage Areas		
Area	**Distance and Bearing from Breakwater Head**	**Vessel Type**
Esmeraldas Quarantine	2.8 miles NNE	All
Balao Terminal Quarantine	6.5 miles WNW	All
A-F	2.3 to 4.5 miles NW	Handysize tankers
H	5.3 miles WNW	Aframax tankers
Q and R	6 miles WNW	Aframax or Suezmax tankers
S and V	6.8 miles WNW	VLCC or Suezmax tankers

Esmeraldas to Cabo San Lorenzo

2.15 The coast to Punta Galera, 26 miles WSW, is quite regular. The coast between Punta Coquitos and Punta Gorda, which was described in paragraph 2.13 with Esmeraldas, consists of cliffs interspersed with valleys.

Punta Sua (0°52'N., 79°56'W.), marked by a light, with a cliffy islet lying close off it and to which it is joined at low water, marks a section of low coast and the entrance to Ensenada de Atacames, a shallow bight. A small inlet, used by local shallow-

draft fishing craft, is located close SE of Punta Sua.

Arrecife de Atacames (0°57'N., 79°50'W.) is a coral reef which lies on the coastal bank extending 6 miles offshore between Punta Sua and Punta Gorda. An extensive area of rocks, with depths of 5.3 to 10.4m, extends seaward for up to 15 miles offshore N of the above-mentioned coral reef.

Punta Galera (0°50'N., 80°03'W.), about 10.5 miles WSW of Punta Sua, is a low, shelving point at the N extremity of a wide promontory of which Cabo de San Francisco, about 10 miles S, forms the S end. A light is shown from a tower, 11m high, standing on the point.

Most of the coast for about 125 miles SSW to Cabo San Lorenzo consists of long, sandy beaches backed by white cliffs, some of which are wooded. There are several headlands. Detached mountains are visible inland.

The promontory consists of steep cliffs topped by tall trees. It is generally steep-to, though rocks marked by heavy breakers lie close off the coast in places. The terrain backing the coast is mountainous and wooded.

Caution.—Dangers in the form of detached islands and rocks lie less than 4 miles offshore and with the shore banks are usually steep-to. It was reported that uncharted dangers may exist within a radius of 20 miles N of Punta Galera. A ship, with a draft of 8m, reported striking an underwater rock about 21 miles NNE of Punta Galera.

2.16 Cabo de San Francisco (0°39'N., 80°05'W.) forms the W side of a small cove with depths of 4.6 to 5.5m. A the village of San Francisco is situated on the shore of the cove and landing can be made near the mouth of a small river emptying into the W side of the cove. A light is exhibited approximately 3 miles SE of the village.

The coast between Cabo de San Francisco and Cabo Passado consists of an open bight broken by smaller bights and coves.

Ensenada de San Francisco (0°36'N., 80°05'W.), a small bay with several villages on its shores, is entered between Cabo de San Francisco and **Punta Mompiche** (0°31'N., 80°05'W.). The Rio Muisne is the largest of several small rivers flowing into the bay. The Rio Bunche, 2 miles E of the cape, is identified by four prominent rocks off its entrance. Anchorage by small vessels can be taken with the four rocks bearing 053°, distant 1.3 miles. **Punta Zapotal** (0°27'N., 80°05'W.), on Isla Zapotal, is low and mangrove-covered.

Bajos de Cojunes (0°23'N., 80°08'W.), an extensive shore bank about 4 miles offshore, extends S from Punta Zapotal for 5 miles. Depths of 11m exist 1 mile from the bank, but then increase abruptly to 73.2m. From the S end of the shore bank to Cabo Passado, the coast is fronted by a bank with depths of less than 9.1m extending up to 2.5 miles offshore.

Punta Pedernales (0°04'N., 80°07'W.) is a narrow and cliffy ridge with rocky islets lying off it. The village of Pedernales is situated NE of the point. Depths of 11.3 to 12.9m can be found up to 7.5 miles offshore about 10 miles NNW of Punta Pedernales. The point is marked by a light.

Punta Ballena (0°10'S., 80°20'W.) is the W extremity of a small bay backed by a wide plain through which two rivers flow and empty into the bay. A reef is charted about 1.5 miles NE of the point. The coast NE of the bay is backed by a high mountain range. South of Punta Ballena the coastal terrain changes to bare white cliffs fronted by long sandy beaches as far as Punta Borrachos (0°13'S., 80°25'W.), thence wooded cliffs back rocky beaches to Cabo Passado. The point is marked by a light.

2.17 Cabo Passado (0°21'S., 80°30'W.) is high and rounded, with the adjacent land densely wooded and bound by white cliffs on the S side. A reef, with depths of less than 3.7m, extends about 0.5 mile N and E of the cape, which is reported to be a good radar target. A light is shown from a concrete tower, 9m high, standing on the cape.

The **Rio Chone** (0°37'S., 80°25'W.) empties into the sea about 14.5 miles S of Cabo Passado. The estuary lies between Punta Del Napo, 12.3 miles SSE of Cabo Passado, and Punta Bellaca 3 miles SSW. Punta Bellaca, where a light is shown, appears as an island with a grey-green tint.

2.18 Bahia de Caraquez (0°35'S., 80°25'W.) is the small port that lies at the mouth of the Rio Chone. Poblacion de Bahia de Caraquez, containing the port facilities, is located on the W bank of the river near the mouth, about 2 miles ENE of Punta Bellaca. Tides in the estuary rise about 2.7m at MHWS.

Depths—Limitations.—From Punta Bellaca to a point on the coast about 4 miles N, the approaches to the Rio Chone are encumbered by shoals with depths of less than 5.5m. Many of the shoals shift positions. Within the shallow river entrance, there are extensive drying shoals. Bajo de Santa Martha, a rocky patch on which the sea always breaks, lies 1.5 miles N of Punta Bellaca.

The entrance to the port is marked at a distance by the constant breakers on top of Santa Martha Shoal. However, navigation is impossible from the outer mouth to the mouth of the Rio Chone due to the countless shoals.

Coming from the N, to assume proper position, one must take Cape Passado as reference; it has been sighted by radar at 40 miles.

Approaching from the S, one must pass N of Cape Lorenzo and the Bay of Manta until one spots Bellaca Point, where there is a lighthouse. The elevation of this point makes it very noticeable; then one notices the beach with a seawall against which the waves break.

In general, there are no port facilities here, although there is a municipal wharf.

On the other shore, in the little town of San Vicente, there is another municipal wharf.

The port has lighters to transport cargo or vehicles from Bahia de Caraquez to San Vicente, as well as small craft to transport passengers and light cargo.

Canal de Manavi, trending along the NE shore of the estuary, leads into the river, but has a sandy bar and is silted so that local knowledge is necessary to effect transit. Canal Viejo, the shallow S approach channel, trends along the S shore. It was reported that vessels with a draft of about 7m can cross the bar at HW, but only small craft and lighters enter the port. Large vessels anchor outside the port.

Aspect.—Monte San Vicente, 275m high, stands about 3.8 miles ENE of Punta Bellaca and is prominent. The river is a remarkable coastal feature because of the ravine formed by it.

Pilotage.—Pilotage is not compulsory due to the fact that only inland coastal navigation vessels sail here; however, pilotage services are available.

Manta—Muelles Marginales

Anchorage.—Anchorage is available, in a charted depth of 12.5m, about 1.5 miles off Punta Bellaca Light, with the light bearing 122°. Depths vary from those in the vicinity of the charted recommended anchorage, with shoaling reported S of the charted anchorage area.

A recommended anchorage can be situated 1 mile away and on a true bearing of 133° from Bellaca Point, where the depths are 10m.

2.19 The coast from Punta Bellaca trends SSW for 9 miles to Punta Charapoto, then turns SW for about 15 miles to Punta Jaramijo (0°56'S., 80°40'W.). The Rio Charapoto empties into the open bay formed between these points. The bay is backed by an extensive plain bound by high, white cliffs. Bars obstruct the delta of the river. A light is shown from a square concrete tower, standing on Punta Jaramijo. Three lighted buoys are moored 2.5 miles N of Punta Jaramijo. A shoal patch, with a least depth of 6.7m, lies about 1.8 miles NNE of Punta Jaramijo and several rocks lie between this patch and the shore close E of the point.

Manta (0°57'S., 80°43'W.)

World Port Index No. 15310

2.20 Manta is the largest fishing port in Ecuador and is located in the W end of Bahia de Manta. Bahia de Manta recedes nearly 1 mile S between Punta Jaramijo and Punta Muercielago (0°57'S., 80°44'W.), about 5 miles W. An extensive fishing fleet operates out of the port, but other products such as coffee, cocoa, and oils are also exported from Manta. This is the only port in Ecuador equipped to handle ships with a draft of up to 9.7m at any state of the tide.

Port of Manta Home Page
http://www.puertodemanta.gob.ec

Tides—Currents.—Spring tides rise 2.3m, while neap tides rise 1.3m. Mooring lines should be checked frequently while in port.

Manta—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
Fish Dock Marginal Quay			
No. 1	150m	2.0-5.4m	—
No. 2	100m	5.4-5.7m	—
No. 3	150m	5.9m	—
No. 4	40m	5.9-9.2m	—
No. 5	180m	9.2-9.7m	—
Terminal Portuario de Manta (TPM)			
No. 1 (N)	200m	11.0m	Ro-ro/lo-lo, containers, breakbulk, cruise vessels, and reefer.
No. 2 (S)	200m	11.0m	PCC, containers, breakbulk, cruise vessels, and reefer.
No. 3 (S)	300m	11.0m	Bio-fuels, CPP, PCC, containers, breakbulk, and cruise vessels.
No. 4 (S)	300m	11.0m	Bio-fuels, CPP, PCC, containers, breakbulk, and cruise vessels.

Depths—Limitations.—There are depths of less than 10m up to 1 mile N of Punta Muercielago. A bank, with a depth of 5m, extends E across the entrance of the bay from Punta Mal Paso (0°56'S., 80°45'W.) to the jetty; from the freight yards E to Estero Salitral the bank has a depth of 2m.

Bahia de Manta is shallow, with depths of less than 5.5m throughout its W part. Dangerous wrecks lie close N and NE of the freight yards. They are marked by a lighted buoy that lies 0.6 mile SSE of the breakwater head.

The port is approached directly from sea and entered N of the breakwater.

The breakwater (Muelles Marginales) extends about 0.5 mile NNE from a position ashore 0.5 mile E of Punta Muercielago, then bends N for another 0.3 mile. Extending E from the portion of the breakwater where it bend to the N are two international pier areas that contain four berths for deep-water vessels that cannot be accommodated further inland along the breakwater. International Pier 1 is located at the seaward end of the breakwater while International Pier 2 is parallel close S of International Pier 1. Each of the four berths on the International Piers are 200m in length, with depths alongside of 11m.

Two ro-ro ramps are situated near the S pier and can handle vessels up to 20,000 tons with ramps 12m in width. Two lighted mooring buoys, reserved for naval use, are situated S of the piers.

The Fish Dock Marginal Quay extends from S of the bend in the breakwater to the coastline and is 620m in length. There are five berths along the E face of this quay, numbered 1 to 5 from seaward with the characteristics described in the table titled **Manta—FBerth Information**.

Berth 1, Berth 3, and Berth 5 are wharves; Berths 2 and 4 are indented spaces in between the wharves. A small harbor, enclosed by breakwaters located SE of the main breakwater, has a depth of 2.7m and is used by fishing vessels and small craft.

An offshore tanker berth extends offshore from a position 0.4 mile E of the fishing harbor. Mooring buoys lie near the end of the pipeline. The local authorities should be consulted for information on depths at this berth.

Aspect.—A triangular church with a green roof SW of the port and a prominent building are situated in the town. A prominent gray gas tank stands on the breakwater head of the fishing harbor. Conspicuous radio towers stand near the airport E of the town and a group of conspicuous tanks stand on the shore about 0.5 mile E of the fishing harbor. A light and racon is exhibited from the main breakwater head. A pyramidal church building stands about 1.3 miles SW of the breakwater head. An aeronautical radiobeacon is situated at the airport.

Pilotage.—Pilotage is compulsory and is available at any time. The vessel's ETA and position should also be confirmed through VHF channel 16 one hour prior to arrival. Only one pilot is available and will board vessel about 1 mile N of the breakwater head.

Contact Information.—Pilots and the port can be contacted, as follows:

Manta—Contact Information	
Pilots	
Telephone	59-35-2622086
Facsimile	59-35-2622086
Web site	http://www.guerreropilot.com
Port	
VHF	VHF channels 12, 16, and 26
Telephone	59-35-3700545 (Switchboard)
	59-35-3700545 ext 102 (Operations)
Web site	http://www.puertodemanta.gob.ec
E-mail	info@puertodemanta.gob.ec

Anchorage.—Anchorage can be taken, in depths of 18m, sand, about 0.6 mile ENE of the main breakwater head. Caution should also be taken to avoid a submerged rock, with depth of 26m, located 2.5 miles NE of the breakwater light.

Emergency anchorage has been designated 0.3 mile ENE of the breakwater light, in 18m, sand and mud. Small fishing vessels will also be found to be anchored E of the berths.

During the rainy season (December-April), vessels anchor farther offshore, as there is usually a heavy swell and the sea breaks in a depth of 4.9m. The anchorages are unprotected from wind, sea, and swell. It has been reported (2011) that swell conditions described to prevail during the rainy season have been also observed at other times of the year as well.

Directions.—When approaching Bahia de Manta from the S, it is advisable to make landfall at Cabo San Lorenzo and then sail parallel to the coast at a distance of 3 miles until reaching a point N of Cabo San Mateo (0°57'S., 80°49'W.); then sail a true course of 075° until the breakwater lighthouse and the racon are on a true bearing of 170°, thereafter, falling to starboard until that same lighthouse is on a bearing of 180°, whereupon, one can make the approach to the wharves with the purpose of mooring. An approach from the N is preferred.

The only major hazard is located W of the breakwater and in the vicinity of Muercielago Point where there are shallows of a rocky nature.

Caution.—It is reported that the landmarks and aids are very difficult to identify until the vessel is within about 1 to 2 miles of the breakwater.

It has been reported (2002) that long period swell entering the harbor has parted mooring lines and forced vessels to leave the piers for anchorage.

A firing practice area, best seen on the chart, is located NW of Manta.

It was reported (2003) that a wreck lies outside the harbor in approximate position 0°53'S, 80°43'W.

2.21 Cabo San Mateo, about 6 miles W of Manta, is a salient point and forms a plain 40m high.

Punta Jome is the W end of Cabo San Mateo. A light is shown from a concrete tower, 7m high, standing on the point.

Cabo San Lorenzo (1°03'S., 80°49'W.), about 8 miles SW of Punta San Mateo (0°57'S., 80°51'W.), is the outer part of a high projection of the coast which terminates in a tongue of land about 0.5 mile long. Above and below-water rocks lie off Cabo San Lorenzo. One of the rocks is pinnacle-shaped, white in color, and prominent. A light is shown from a concrete tow-

er, 10m high, standing on the cape.

Cabo San Lorenzo Light (NGA # 424)

Caution.—Naval operating areas lie N and W of Cabo San Lorenzo, as follows:

1. Area A—bounded by lines joining the following positions:
   a. 0°35'S, 81°00'W.
   b. 0°35'S, 80°45'W.
   c. 0°48'S, 81°00'W.
   d. 0°48'S, 80°45'W.
2. Area B—bounded by lines joining the following positions:
   a. 0°44'S, 82°39'W.
   b. 0°44'S, 81°29'W.
   c. 1°45'S, 81°29'W.
   d. 1°45'S, 82°39'W.

Cabo San Lorenzo to Punta del Morro

2.22 Isla de La Plata (1°16'S., 81°05'W.) lies about 14 miles offshore and 16 miles SW of Cabo San Lorenzo. This brownish dried-up appearing island is formed of precipitous cliffs on its W side, off which there are a few islets. There are below-water rocks off the W extremity of the island and a reef extends 0.3 mile E of the SE extremity. A light is shown from the NW summit of the island. At night, the tower displays white light flashes with a range of 11 miles.

Anchorage can be taken, in depths of 32.9 to 36.6m, about 0.2 mile off the beach on the E side of Isla de La Plata, but local knowledge is required.

Bajo Cantagallo (1°17'S., 80°58'W.), about 8 miles E of the E extremity of Isla de La Plata, is a shoal area 0.5 mile in extent with a least depth of 8.9m. A 10.3m shoal lies 1.6 miles NE of Bajo Cantagallo.

The coast between Cabo San Lorenzo and Punta Santa Elena, 70 miles S, is indented by two large open bays separated by Punta Piedra Verde.

Puerto Cayo (1°21'S., 80°45'W.) is a minor port situated at the head of a small bight, about 21 miles SE of Cabo San Lorenzo. Cargo is loaded from lighters on vessels anchored about 0.3 mile offshore, in a depth of 8.2m, hard sand.

Punta Cerro Viejo is a bluff marked by a tower with radar reflector located 2 miles SW of Puerto Cayo. Islote Cayo (El Islote) lies 1 mile N of Punta Cayo and Roca Daphne (Islote La Viuda) lies 1 mile SSW.

2.23 Puerto de Machalilla (1°28'S., 80°46'W.), about 7.5 miles S of Puerto Cayo, is a small, sheltered port situated on the E side of a small bight, easy to approach. Cliffs fringe the coast N of the port. There is a beach, with cliffs to the W, along the SE side of the bay. Islets and below-water rocks lie up to 1.5 miles N and NE of the W entrance point of the bay. Anchorage can be taken, in 18.3m, N of the islets at the W entrance point or, in 12.8 to 14.6m, about 0.4 mile offshore and W of the village.

Isla Salango (1°36'S., 80°52'W.) lies about 10 miles SSW of Puerto de Machalilla. The island is 160m high and covered with vegetation. The narrow channel between the island and Punta Piedra Verde on the mainland is obstructed by submerged and drying rocks and is not navigable. Some above-water rocks, which are steep-to, lie about 0.3 mile W of the island.

A light is shown on Isla Salango and two towers, equipped with radar reflectors, stand on the island.

Anchorage may be taken, in 47m, NE of the island with the NW extremity bearing 235°, and the E extremity bearing 172°. Anchorage may also be taken, in 29m, with the NW extremity of the island bearing 264°, and Punta Piedra Verde bearing 191°.

Punta Blanca (1°41'S., 80°48'W.) is a conspicuous point located about 6.5 miles SE of Isla Salango. Above and below-water rocks lie close off the point.

Islas Los Ahorcados, a small group of rocky islets, lie about 1.5 miles NW of Punta Blanca. There is clear passage between the islets and the point. A rock, with a depth of 7.3m, lies close NW of the islets.

Punta Montanita is a conspicuous point about 8 miles SSE of Punta Blanca. Above and below-water rocks lie close off the point.

Bajo Montanita (1°50'S., 81°03'W.) is a shoal with a least depth of 10m, lying about 17 miles W of Punta Montanita. In 2000, shoal patches were reported to exist W of Bajo Montanita, as seen on the chart.

Punta La Leona (1°58'S., 80°46'W.), a rocky promontory, is located about 24 miles SSE of Isla Salango. The coast between is backed by a low range of mountains lying 3 to 7 miles inland.

Islote El Pelado, a rocky islet 22m high, lies about 3 miles NW of Punta La Leona. A reef extends about 0.2 mile from its N side and a dangerous rock lies close NW. A light is shown from a concrete structure, 7m high, standing on the summit of the islet.

Between Punta La Leona and Punta Santa Elena, about 19 miles SW, the coast consists of beaches interspersed with rocky bluffs.

Puntilla de Santa Elena (2°11'S., 81°00'W.) is a narrow, bare, and sandy promontory projecting about 4 miles NW from a blunt peninsula. The N end of the promontory rises to a steep,

flat-topped hill which appears as an island when seen from seaward. A light is shown from Puntilla de Santa Elena, which is the W extremity of the promontory. Radio masts stand on the outer part of Puntilla de Santa Elena and are conspicuous unless obscured by the hill.

A light is shown from a tower, 12m high, standing on the promontory; a radiobeacon is situated at the light tower.

A measured mile, indicated by beacons, is situated close N of the promontory and may best be seen on the chart.

Banco Cope, over which heavy seas break, lies about 1 mile N of Puntilla de Santa Elena and is marked by a lighted buoy.

2.24 Bahia de Santa Elena (2°12'S., 80°55'W.) is a bight extending about 10 miles E of Puntilla de Santa Elena. The small ports of Salinas and La Libertad are contained within the bight. Several of the points contained within Bahia de Santa Elena make good radar targets. There are many excellent landmarks including tall buildings, church spires, towers, tanks, and stacks within the points and towns along the shores of the bay.

Depths shoal gradually from the 20m curve, which lies 2 to 4.5 miles N of the bay coastline, to about 5.5m at 1 to 1.5 miles offshore or 0.5 mile off the points.

Punta San Lorenzo lies close E of Salinas, about 2.5 miles SE of Punta Santa Elena. A light is shown from the point.

Caution.—Several dangers lie in the approaches to the ports.

Roca Belshaw, with a depth of 5.4m, lies about 1.5 miles NE of Punta San Lorenzo and is marked by a lighted buoy.

Bajo de Ballenita, with a depth of 8.2m, lies about 2.8 miles NNE of the pier at La Libertad and is marked by a lighted buoy.

A dangerous wreck, with a depth of 9.4m, lies about 1 mile NE of Punta Santa Elena.

Bajo de Columbia, with a least depth of 3.9m, lies about 0.5 mile from the shore, about 1.5 miles SSE of Bajo de Ballenita.

An abandoned Submarine Cable Area, the limits of which are shown on the chart, extends about 3 miles N of Punta Santa Elena.

2.25 La Libertad (2°13'S., 80°55'W.) (World Port Index No. 15290) is a small oil-loading port located in the S part of Bahia de Santa Elena situated 2.8 miles E of Punta San Lorenzo.

Tides—Currents.—Tides rise about 2.1m at springs and 1.2m at neaps.

Depth—Limitations.—A submarine pipeline extends from shore to an offshore CBM oil berth situated about 2.5 miles N of the town. A lighted buoy and four mooring buoys indicate the seaward end of the pipeline. Tanker vessels up to 55,000 dwtand 200m in length, with maximum draft of 10.5m, can be accommodated at the terminal. Mooring masters assist in berthing.

Vessels are moored port side-to on a W heading. Vessels moor to three buoys aft and one forward, using the starboard anchor off the starboard bow. Berthing is restricted to daylight hours only.

Aspect.—There is one pier, Muelle de Cepe, at La Libertad which is about 322m long. Its minimum depth is 5m and it can handle ships of 10,000 dwt with a length of up to 98m and a draft of 4.8m. The pier is used by coastal vessels, while larger vessels work cargo at the anchorage. A number of mooring buoys and wrecks are situated in the vicinity of the pier and may best be seen on the chart.

Pilotage.—Pilotage is compulsory. The pilot boards 2 miles NW of the terminal. Boardings are located for: Position No. 1, 2°07.52'S, 80°55.48'W., (draft greater than 15m) and Position No. 2, 2°09.50'S, 80°55.26'W., (draft less than 15m).

Regulations.—The vessel's ETA should be sent to the Port Captain and to the ship's agent 72, 48, and 12 hours prior to expected arrival. The ETA message should be addressed to the Port Captain, Immigration, Customs Authorities, and Health Department. The Port Captain will ensure that it is delivered to all the addressees.

The initial ETA message must include the following information:

1. Last port of call.
2. Estimated arrival draft, fore and aft.
3. Quantity (in tons) of cargo for discharge.
4. Quantity (in tons) of cargo for in transit.
5. Quantity (in tons) of dangerous cargo for discharge and in transit, including the IMO class.
6. Number of passengers onboard.
7. Number of sick onboard (including crew).
8. Bunker consumption during navigation and at berth.
9. Normal speed.

Contact Information.—See the table titled **La Libertad—Contact Information**.

La Libertad—Contact Information	
Port	
Call sign	La Libertad Radio
VHF	VHF channel 16
Telephone	59-34-2785785
E-mail	suinli@dirnea.org
Terminal	
Telephone	59-34-2785781
Facsimile	59-34-2785785
E-mail	suinli_operaciones@mtop.gob.ec
Web site	http://www.suinli.gob.ec

Regulations.—Several regulatory areas are situated offshore and designated for maneuvering, anchoring, and waiting. The limits of these areas may best be seen on the chart. The local authorities and the pilot should be consulted for information on these areas, and for regulations pertaining to their use.

Anchorage.—A quarantine anchorage is located 4 miles NE of Punta San Lorenzo in depths of 12 to 18m, sand. The berthing master and port officials will board the vessel in this area. Tankers bound for the CBM are required to remain in the anchorage area or the pilot boarding area that is adjacent until the tanker maneuvering area is clear.

For vessels bunkering that have a draft of 12m or less, anchorage is available in an area bounded by lines joining the following positions:

a. 2°08'S, 80°54'W.
b. 2°08'S, 80°55'W.
c. 2°10'S, 80°55'W.
d. 2°10'S, 80°54'W.

For larger vessels with draft of more than 12m, anchorage is available in an area bounded by lines joining the following positions:

a. 2°06'S, 80°52'W.
b. 2°06'S, 80°56'W.
c. 2°08'S, 80°56'W.
d. 2°08'S, 80°52'W.

Caution.—An old abandoned underwater pipeline extends from the shore for about 1.8 miles, close W of the pipeline described above. This old pipeline should not be confused with the pipeline leading to the terminal.

2.26 Monteverde (2°04'S., 80°45'W.), lies about 15 miles NE of La Libertad, The port consists of a finger pier with two berths handling LPG. The pier length from the shore is 0.8 mile, the northern berth is 310m long including dolphins and can handle vessels of up to 75,000 dwt with a draft of 12m and LOA of 230m and the southern berth is 170m long including dolphins and can handle vessels of up to 54,000 dwt, with a draft of 12m and LOA of 230m.Useful landmarks include: Church (2°03.41'S., 80°44.05'W.), Tanks (2°04.09'S., 80°44.12'W.), and a chimney (2°04.63'S., 80°43.71'W.)

2.27 Salinas (2°12'S., 80°59'W.) is situated about 4 miles WNW of La Libertad. There are several good landmarks in the town and vicinity, including conspicuous buildings at Punta Chipipe, located 1.3 miles W of Punta San Lorenzo. It is basically a tourist port.

The terrain on which this town stands is flat, with La Puntilla Hillock standing out.

The La Puntilla Hill is abrupt, 95m high, flat at the top, and forms the S side of the Bay of Santa Elena. From a considerable distance it appears to have a yellow, arid-dry color, without any vegetation on it, except in the upper part.

Two lighted mooring buoys, situated about 0.8 mile NNE of Punta Chipipe, are for the use of naval vessels. Small craft may use several mooring buoys situated close N of a pile standing about 0.5 mile NNW of Punta Chipipe. There is a small pier, with depths of 3m alongside, which is used by fishing craft and lighters. Larger vessels work cargo at anchor.

Anchorage can be taken, in depths of 12.8 to 14.6m, sand, about 1 mile NNE of Punta San Lorenzo.

2.28 Punta Ancon (2°20'S., 80°54'W.), from which a light is shown, is located about 11 miles SE of Puntilla de Santa Elena. The point, although projecting 1.3 miles from the coastline, blends with the background and is inconspicuous from seaward. Punta Carnero, 2.5 miles NNW of Punta Ancon, although lower in height, is more prominent. Foul ground, which breaks, lies about 1 mile off the points, and several detached shoal patches of less than 5.5m lie up to 2.5 miles off Punta Ancon. A dangerous wreck is charted about 4.3 miles SSW of the point. A platform is situated about 8 miles SW of the light. Numerous shoals, with depths of less than 11m, lie up to 4.5 miles off the coast, extending for 20 miles SE of Punta Ancon. Many of these shoals break during a moderate ground swell.

Posorja—Deep-draft Port Under Construction

Caution.—Due to the presence of many dangers, vessels are advised to stay in depths of more than 100m while transiting the coast.

Offshore oil exploration is being carried out in the vicinity of the coast in these waters.

2.29 Punta Chanduy (2°24'S., 80°42'W.) lies about 12 miles ESE of Punta Ancon. The point, with the village of Chanduy at the head of a cove close E, is fronted by rocks and shoal patches. A steeple is situated within the town. A light is shown about 2 miles WNW of the point. Pipelines, for the discharge of fish from small vessels, extend seaward for up to about 0.5 mile from positions close NW of the point.

Punta Piedras del Morro (Punta Chapoya) (2°39'S., 80°26'W.), about 21 miles SE of Punta de Chanduy, is marked by a white tower from which a light is shown. A high hill rises 1.3 miles ENE of the point, which is a good radar target. Depths of less than 5.5m lie up to 2.5 miles offshore. Cerro El Morro, 6 miles E of Punta Piedras del Morro, is a prominent hill with a distinctive shape of two peaks, one rounded and one sharp, close together.

Posorja (2°42'S., 80°14'W.), is situated in the southern most point of Ecuador about 38 miles SW of Guayaquil. The port is opposite Isla de Puna across canal del Morro. It has three berths designated for fishing vessels. A new container berth is under construction and expected to be completed in two years. It includes the dredging of a new access channel, depth 16 meters, and 400 meter berth with 15 meter draft alongside. It will

handle containers and bulk carriers. There are anchorage areas which lie between the TSS and the shore off Posorja. Phase 1 has been completed. Mooring buoys lie within some of the anchorages and also a dangerous wreck that lies in position 2°42.25'S 80°14.40'W.

Port of Posorja Home Page
http://www.dpworldposorja.com.ec

Punta del Morro (2°44'S., 80°15'W.) lies about 12.5 miles SE of Punta Piedras del Morro. The coast between is low and sandy. The point forms the N entrance point of Canal del Morro and is fringed by rocks and foul ground which extend S and W in close proximity to the entrance channel leading to Canal del Morro.

The dangers off this point will be described in paragraph 2.30 with the port description for Puerto Maritimo de Guayaqil.

The coast between the point and Punta Payana (3°19'S., 80°16'W.) recedes about 28 miles E, forming a large bight occupied N by Isla de Puna (2°50'S., 80°10'W.). Canal del Morro and Canal de Jambeli lie N and S, respectively, of Isla de Puna. The mainland is generally low and wooded, with many creeks and estuaries intersecting the terrain. The Rio Guayas discharges into Canal de Jambeli N of the NE end of Isla de Puna.

Puerto Maritimo de Guayaquil (2°17'S., 79°54'W.)

World Port Index No. 15275

2.30 Puerto Maritimo de Guayaquil (Puerto Nuevo), the marine terminal for Guayaquil, handles most of the commerce that formerly moved through Guayaquil. The approach to this port lies between Punta del Morro and Punta Trinchera (2°45'S., 80°14'W.), where the width at the entrance of Canal del Morro is about 1.5 miles.

The port is reached through Canal del Morro, through Estero Salado, and S of Isla Trinitaria. Puerto Maritimo de Guayaquil can also be approached from Guayaquil in the Rio Guayas through Estero Cobina but this requires passage through a lock located close SW of La Josefinas, which marks the entrance to Estero Cobina.

Port of Guayaquil Home Page
http://www.apg.gob.ec

Tides—Currents.—Tidal data for Puerto Maritimo de Guayaquil, using Guayaquil as a reference station, has been reported, as follows:

1. Low water at the sea buoy occurs 3 hours earlier than at Guayaquil and at the dock 52 minutes earlier.
2. High water at the sea buoy occurs about 2.5 hours earlier than at Guayaquil and at the dock about 30 minutes earlier.

The mean spring range at Puerto Maritimo de Guayaquil is about 3.6m, while the mean neap range is about 1.8m. At Posorja (2°42'S., 80°15'W.) the mean spring range is about 1.8m.

A heavy swell and strong tidal currents may be experienced in Golfo de Guayaquil and the outer approach to Canal del Morro. The current generally flows N across the entrance of the gulf, but a set E or W occurs within the gulf depending on the incoming or outgoing tidal current in the Rio Guayas and tributaries. Off Isla Santa Clara, the ebb sets to the S and the flood to the E. Currents up to 6 knots have been reported in the vicinity of the sea buoy and tide rips of 2.5 to 3 knots in Canal del Morro. Currents of 5 knots in the stream at Canal del Morro decrease to 0.5 knot at Puerto Maritimo.

Depths—Limitations.—The port handles general cargo, bananas, bulk solids and liquids, containers, and LPG vessels.

Vessels up to 30,000 dwt and 210m in length, with drafts up to 9.75m, can be accommodated within the port.

Depths in the Rio Guayas are constantly in a state of change. Local authorities should be consulted for the latest controlling depths prevailing in the channels and the river. Vessels will cross the bar only at HW.

The sea bed consists of rock SW of Isla Centinela in the entrance to the main channel.

Vessels with drafts of 6.4m and less may enter the channel at any time, while vessels with drafts greater than 6.4m up to 7.9m should enter only at slack water. Vessels with drafts greater than 7.9m should plan on passing the sea buoy 1 hour before HW.

It has been reported that vessels with drafts of over 8.8m had reported that their intakes became blocked when navigating between Buoy No. 62 and Buoy No. 39. It was also reported that the departure of these deep-draft vessels was controlled by the local authorities to coincide with the tide. Vessels may be required to anchor off Posorja to await the next tide before completing the passage to sea.

Estero Cobina, leading off the E end of Puerto Maritimo de Guayaquil, is a busy waterway used chiefly by lighter and barge traffic from the Rio Guayas. The inlet is connected with the Rio Guayas by a lock 122m long, 23m wide, and 4.2m deep, situated at La Josefina close S of the city of Guayaquil. The waterway has a least depth of 5m.

Estero del Muerto, leading off the W end of Puerto Maritimo, turns N to a private fertilizer and chemical pier and a Naval Dockyard situated on the E bank of the inlet. The fertilizer quay is 70m long and can handle vessels with drafts up to 7.8m.

El Salitral, part of Estero Santa Ana, leads NNW for about 6 miles, then turns E towards Guayaquil. On the W side of the inlet there are three berths handling fuel oil and gas, within 7 or 8 miles upstream from the inlet entrance. Vessels turn off the LPG terminal and are limited to a length of 128m and a draft of 6.4m.

Aviation gasoline is discharged into barges from small tankers at moorings W of Trinitaria Island. The maximum draft allowed at the moorings is 10m.

The main berthing area is situated NE of Isla Trinitaria and consists of a multi-purpose terminal for bananas, general, and ro-ro type cargo, and a container terminal. Bananas can be loaded at the container terminal as well.

There are five berths, each 185m in length, numbered 2 through 6 at the multi-purpose terminal, with depths alongside

of about 10m. Bananas, general cargo and ro-ro are handled at this terminal.

The container terminal has three berths, also each 185m in length, numbered 1, 1A, and 1B, with depths alongside about 10m. Containers and bananas are handled at these three berths.

Muelle Granalero, connected to the container terminal at the E end and extending 560m SE, provides a pier, 152m in length, with depth alongside of 10m for working bulk cargo such as molasses and vegetable oil.

There are numerous private piers used for bulk and liquid cargoes located along the banks of the Rio Guayas about 8 hours of steaming time inland of the sea buoy N of Isla Puna. the maximum draft allowable is generally 6.5m (fresh water.)

Pilotage.—Pilotage is compulsory for vessels proceeding to Puerto Maritima de Guayaquil, the old port of Guayaquil, and for all cargo terminals in the Rio Guayas. The pilots board near Lighted Buoy 1 (2°44.5'S., 80°23.1'W.). Requests can be made to have the pilots board at the sea buoy.

Guayaquil

Another pilot station situated at Puna (2°44.3'S., 79°53.4'W.) is only for vessels proceeding to the old port of Guayaquil or the private terminals in Rio Guayas. The approach is made through Canal de Jambeli for Puna Pilots.

Pilot boats have a white superstructure with a black hull.

Regulations.—Vessels should send their ETA 72 hours in advance of arrival at either the sea buoy N of Isla Puna (2°44'39"S., 80°24'53"W.) or at the sea buoy S of Isla Puna (3°06'02"S., 80°04'47"W.). Entrance S of Isla Puna is used only if proceeding to the old port of Guayaquil or the private terminals in Rio Guayas.

Vessels should also inform Data Pilots of their ETA 8 hours prior to arrival at either sea buoy.

Passing or overtaking is prohibited between Buoy No. 33 and Buoy No. 45; vessels with a following current have priority.

An overtaking vessel must not cross ahead of the vessel it is overtaking in the Rio Guayas.

Any vessel inbound on the flood tide at night is required to wait off Sitio Nuevo (2°18'S., 79°49.8'W.) until daylight or the tide turns before continuing on either to the explosives anchorage off Magdalena or points further N.

Berthing and turning maneuver requirements in Estero Santa Ana (02°16'S., 79°55'W.), the inlet where the Trinipuerto, Bananapuerto, and TPG private terminals are located, are as follows:

1. For vessels 190m in length or less and draft of 9.75m—Berthing allowed anytime with turning allowed with favorable tide restrictions. The use of one port pilot is compulsory and a speed limit of 6 knots must be observed. the assistance of at least two tugs is also compulsory.
2. For vessels of over 190m up to 245m in length and draft of 9.75m—Berthing allowed anytime. Turning is only allowed between 0600 and 1800 from 2 hours before HW until 1 hour after HW. The use of two port pilots is compulsory and a speed limit of 6 knots must be observed. the assistance of at least two tugs is also compulsory.
3. Vessels over 245m in length and up to 275m in length should be authorized once security parameters are verified.
4. Navigation should be in a clockwise direction with LPG vessels having priority for docking and undocking maneuvers.

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

Guayaquil—Contact Information	
Guayaquil Pilots	
VHF	VHF channels 12, 14, and 16
Telephone	593-4-390-4174
	593-9-92478707 (mobile)
	593-9-78853709 (mobile)
Facsimile	593-4-234-1955
E-mail	administrativo@guayaquilpilots.com
Web site	http://www.guayaquilpilots.com
Merchant Marine Pilots SA	
Telephone	593-4-246-3525
	593-9-87210802 (mobile)
E-mail	info@merchantmarinepilots.com
	merchantmarineoper@on.net.ec
	merchantmarinepilot@hotmail.com
Web site	http://www.merchantmarinepilots.com
Port Control	
VHF	VHF channels 6, 12, 14, and 16
Telephone	593-4-24-80687
Port Authority	
Telephone	593-4-201-2000
	593-4-248-0120
Facsimile	593-4-248-4728
Web site	http://www.apg.gob.ec

Anchorage.—Two anchorage areas, best seen on the chart,

lie NW and SW of the sea buoy. The S anchorage area is for vessels carrying dangerous cargo. Anchorage is also available in suitable depths outside the fairway of the channel enroute to Puerto Maritimo, for which the pilot should be consulted.

Note that INMARSAT communication is not possible. Radio Costera Guayaquil is the recommended station for use at long range. This station operates between 0800 and 2359.

Anchorage can be obtained in Canal del Morro about one mile off the W shore, 4 miles NNW of Punta Trinchera, in depths of 9 to 12m, mud. Caution should be taken with use of the anchor chain due to the strong tidal currents that can reach 3 knots in this area. Anchorage is available close inshore for small vessels about two miles north of Posorja.

Continuing NNE through Estero Salado, an area designated for explosives, best shown on the chart is centered near (2°20'S., 79°58'W.). Another area designated as Quarantine, also shown on the chart, is centered near position 2°18.5'S, 79°56.5'W.

The anchorage sectors are left up to the opinion of the pilots, according to the needs or to the order of arrival of ships that wish to enter the Maritime Port.

Directions.—Vessels should approach the lighted sea buoy, moored about 10 miles W of Punta del Morro, avoiding the numerous offshore dangers. Vessels should then follow the recommended tracks E and SE through the entrance channel, which is marked by buoys, to Canal del Morro. Estero Salado is an estuary which extends NE from Canal del Morro for about 30 miles to the S point of Isla Santa Ana, where it divides and passes E and W of that island. The E branch leads NE passing E of Trinitaria Island and joins Estero del Muerto, where Puerto Maritimo is situated on the E bank just within the entrance.

The fairways are marked by buoys and ranges. The lighted sea buoy is equipped with a racon.

Caution.—Vessels should exercise caution when approaching the seaward end of the entrance channel due to the frequent spells of low visibility over this coast, the strong tidal currents, and the tendency of the channel to silt.

The presence of unlit fishing craft in Golfo de Guayaquil has been reported.

The S entrance to Canal del Morro, which is unmarked and almost blocked by shoals, should not be approached without local knowledge.

A cable car (2°11.18’S, 79°52.05’W) spans the river between the cities of Guayaquil and Duran with a reported least vertical clearance of about 7m at mean sea level. Local authorities should be contacted for details.

At Puente Santay (2°13.07’S, 79°52.99’W), a foot and cycle bridge, spans Rio Guayas from Guayaquil to Isla Santay. It is a bascule bridge with the opening span towards the W over the deeper water of the river. Vertical clearance when the bridge is closed is 14m. The bridge is opened twice daily, dependent on the times of HW.

Less water than charted has been reported (1997) in Canal de Morro, Estero Salado, and in Puerto Maritimo de Guayaquil.

Caution is advised near a wreck located in position 2°45'21.1"S, 80°25'50.1"W. and a wreck located in position 2°40'28.2"S, 80°13'49.8"W.and in position 2°42'15"S, 80°14'24"W.

Another dangerous wreck is reported in approximate position 2°57'S, 80°25'W at an unknown depth.

2.31 Canal de Jambeli (3°10'S., 80°10'W.), used as the main approach to private ports on the Rio Guayas or if directed for use by port authorities, is an inlet extending about 50 miles NE from its entrance between Punta Salinas (3°01'S., 80°16'W.) and Punta Payana (3°19'S., 80°16'W.); the latter low and inconspicuous.

Puerto Bolivar

The main approach to the old port of Guayaquil or to Puerto Maritimo de Guayaquil is through Canal del Morro, boarding pilots off Posorja.

Isla Puna (2°50'S., 80°10'W.), a thickly-wooded and high island, lies on the NW side of Canal de Jambeli. A channel on the N side of the island leads to Estero Salado from Canal de Jambeli. The previously-mentioned shoal bank extends at least 7 miles W, 4 miles SW, and 2 miles S of Punta Salinas, but converges to 0.5 mile off Punta Arenas (3°02'S., 80°08'W.). A lighted buoy marks the outer (SW) edge of the shoals off Punta Salinas, the low, wooded SW end of Isla Puna. A light is shown on Punta Arenas, the wooded SE end of Isla de Puna.

Isla Santa Clara (3°10'S., 80°26'W.), on which a light is shown, has steep-to fringing and detached dangers lying up to 3 miles off its shores. A dangerous underwater rock lies about 3 miles SSW of the island, which gives a good radar return at 20 miles. Isla de Santa Clara, lying in the approach to Canal de Jambeli, is high, prominent, and a good mark. The island, divided into two parts which are joined at low water by a sandpit, should not be approached closer than 4 miles or within depths of 21.9m.

The approach to Canal de Jambeli can be made by passing either 6 miles N or S of Isla de Santa Clara; however, the S track, in depths of more than 36.6m, is preferable. The island, when approached from N, is visible from about 16 miles as three hummocks. Cerro Zambapala (2°58'S., 80°13'W.), the highest of several peaks, can also be seen at the same time.

Tides—Currents.—In Canal de Jambeli, the tidal currents follow the shoreline. The flood current runs at a rate of 3 to 4 knots and the ebb current reaches 8 knots in winter. Off Puna the flood current sets NW and the ebb current sets SSE at a rate of about 2.5 knots at springs. The flood current has a mean duration of 6 hours 6 minutes and the ebb current runs for 6 hours 14 minutes. The difference in times of the tidal current between Puna and Guayaquil is 1 hour 12 minutes for the flood and 2 hours 27 minutes for the ebb.

Depths—Limitations.—Canal de Jambeli has general depths of 6.5 to 13m. Depths of less than 5.5m lie up to 2 miles off the NW shore and up to 4 miles off the SE shore. A light is shown from Punta Jambeli (3°12'S., 80°01'W.). Banco de Mala (2°53'S., 79°52'W.) is an extensive, partly drying shoal which parallels the SE side of Isla de Puna. Bajo de Afuera (3°01'S., 80°03'W.), with a least depth of 0.5m, lies at the S end of Banco de Mala. A narrow shoal, with a least depth of 0.5m, lies close E and parallel to the N part of Banco de Mala. Lighted buoys, moored clear of all shoals, mark the side of the channel. A depth of 6m shoal has been reported to exist at 6.8 miles WNW of Punta Jambeli.

Anchorage.—The island offers no protection against winds, waves, and currents; it is recommended that anchorage can be obtained within an area off the SE side of Isla Santa Clara, between parallels of 3°10.6'S and 3°11.1'S, and between meridians of 80°24.7'W and 80°25.2'W.

Caution.—A submarine gas pipeline is located in the approaches to the canal. It extends WSW from the shore to a platform 5 miles SSW of Isla Santa Clara as seen on the chart. Vessels should not trawl or anchor in the vicinity of this pipeline.

Four mooring buoys have been placed about 5 miles SSW of Isla Santa Clara at the following positions:

a. 3°15'25"S, 80°28'59"W.
b. 3°15'23"S, 80°27'43"W.
c. 3°16'52"S, 80°29'01"W.
d. 3°15'50"S, 80°27'40"W.

A wreck, with only its masts visible at chart datum, is located in position 2°52'57"N, 79°53'55"W within Canal de Jambeli.

2.32 Puerto Bolivar (3°16'S., 80°00'W.) (World Port Index No. 15250) is situated on the E side of Estero de Santa Rosa (3°14'S., 80°01'W.), about 4 miles within the inlet which is entered 1 mile NNE of Punta Jambeli. Puerto Bolivar is the principal banana exporting port in Ecuador.

Tides—Currents.—The tidal range averages 1.6m.

Tidal currents can run as strong as 1 knot with the direction parallel to the marginal wharf.

Depths—Limitations.—The port is approached through Canal de Jambeli and entered through Boca Jambeli and Estero Santa Rosa. The approach channel is 4.5 miles in length with a minimum charted depth of 10.1m.

Puerto Bolivar has four berths on two piers, as follows:

1. Muelle Marginal Wharf is oriented parallel to the direction Estero Santa Rosa as a vessel would approach from the N and is joined to the shore by three bridges. Muelle Marginal Wharf has two berths numbered 1 and 2 from N to S. Construction works in progress (2023) at the N end of Muelle Marginal.
2. Muelle Espigon, close S of the marginal wharf, is on a mole extending 250m out into the inlet at right angles to the shoreline. Muelle Espigon also has two berths numbered 1 and 2 with No. 1 on the N side of the finger pier and No. 2 on the S side. Berthing at the Muelle Espigon should be accomplished within 1 hour before or after slack water.

Characteristics of the berths on both piers are described in the table titled Puerto Bolivar—Berths.

The estuary of Guayeala has wooden wharfs which are used to load fruit brought in on small, short flatboats because the estuary is narrow and rather shallow. It can accommodate vessels with drafts up to 2.7m during low tide.

Puerto Bolivar—Berth Information

Berth	Length	Depth	Max. Draft
Muelle Espigon			
No. 1	125m	12.5m	10.0m
No. 2	125m	12.5m	10.0m
Muelle Marginal			
No. 3 *	180m	12.5m	10.0m
No. 4 *	180m	12.5m	10.0m
No. 5	300m	14.0m	10.0m
No. 6	Port under construction. Completion expected in 2018		
* Berth No. 3 and Berth No. 4 can also be combined for a single berth to accommodate a vessel with a length of 360m.			

Aspect.—Boca de Jambeli, the entrance of Estero de Santa Rosa, is about 0.3 mile wide and has a depth of 11m, but caution is advised when entering by this channel, as depths within it are constantly changing. An approach lighted buoy is moored on the outer side of shoals, about 1.2 miles NNE of Punta Jambeli.

When approaching the port, the buildings of the city of Machala, the port lights, the ocean buoys, and the lighthouses, particularly that of Punta Jambeli can be clearly seen.

The access channel is deep enough to accommodate ships with drafts up to 9m and there is ample room for maneuvering ships in its interior. The port is situated 5 miles from the open sea.

Pilotage.—The use of pilots is compulsory for all vessels and pilots are available at any time day or night.

The vessel's initial ETA should be advised to the agents 72 hours before expected arrival, then reconfirmed at 48 hours and 24 hours before arrival as well as any time the ETA changes.

The pilot boards in vicinity of the Canal de Santa Rosa buoy in position 3°11'02"S, 80°01'42"W.

Contact Information.—The harbormaster can be contacted, as follows:

Puerto Bolivar—Contact Information	
Harbormaster	
VHF	VHF channel 16
Telephone	593-7-292-9999
Facsimile	593-7-292-9634
E-mail	appb@eo.pro.ec
Web site	http://www.puertobolivar.gob.ec

Anchorage.—Anchorage can be taken, in depths of 5.5 to 11m, good holding ground of mud and clay, in the stream off the piers. Anchorage can be taken about 1 mile N of Punta Jambeli, if necessary while awaiting a pilot.

A quarantine area, which is the port's internal anchorage area, is located in the vicinity of 3°15.3'S and 3°16.75'S, and has a 5m shoal can best be seen on the chart on its E shore and a 10m shoal on the W shore of the Santa Rosa estuary.

A waiting anchorage area lies NE of Canal de Santa Rosa buoy, centered on 3°11.1'S, 80°01.7'W.

A designated anchorage lies NW of Canal de Santa Rosa buoy, and is bounded by lines joining the following positions:

a. 3°10.9'S 80°02.5'W.
b. 3°11.2'S 80°02.5'W.
c. 3°10.9'S 80°02.9'W.
d. 3°11.2'S 80°02.9'W.

Caution.—During summer months, heavy rainfall can be expected with loss of visibility, causing the port to close.

2.33 Canal de Jambeli (continued).—The E side of Canal de Jambeli, between Punta Jambeli and Punta Mondragon (2°39'S., 79°54'W.), is low, wooded, and intersected by many streams. Isla Mondragon (2°37'S., 79°52'W.) is low, mangrove-covered, and forms the E side of the entrance to the Rio Guayas. A drying bank and depths of less than 5.5m extends up to 3.5 miles S of Isla Mondragon. Punta Mondragon is the E entrance point of the Rio Guayas.

The NW side of Canal de Jambeli, between Punta Arenas (3°02'S., 80°08'W.) and Cerro Mala (2°48'S., 80°00'W.), consists chiefly of mangrove swamps intersected by inlets. Cerro Mala, with its two prominent peaks, appears as an island from the offing. The coast NE of Cerro Mala is cliffy and fronted by a beach. Punta Espanola (2°48'S., 79°56'W.), from which a light is shown, is cliffy and a useful clearing mark for Banco de Mala. Shoaling is reported (1992) about 3 miles SSE of Punta Espanola. Punta Mandinga (2°45'S., 79°54'W.), on which a light is shown, is a bold bluff forming the NE end of Isla de Puna. Bajo de Puna, with a least depth of 0.3m at its N end, lies 2 miles off Punta Mandinga.

Puna (2°44'S., 79°55'W.) is a port for ships unable to reach Guayaquil. Cargo is discharged into lighters at the anchorage. There is a prominent white painted church in the town.

Faro Cerro Santa Ana Light overlooking through Rio Babaheyo (L) and Rio Guayas (R)

Puna is the pilot boarding place for vessels bound for the Rio Guayas and Guayaquil. A short pier, marked by two lights and

a flagstaff, has depths of about 1 to 3m alongside. Passenger barges operate between Puna and Guayaquil. Anchorage for several vessels is available in the charted area about 0.5 mile NE of town, where there are depths of 11 to 14.6m, sand.

Directions.—From about 6 miles S of Isla Santa Clara, steer 060° for 30 miles to a position with Punta Arenas Light bearing 270°, distant 7 miles. Then steer 038° for about 10.5 miles passing E of a stranded wreck, marked by a lighted buoy, 9 miles ENE of Punta Arena Light to a position with Punta Mandinga bearing 000°, distant 8.5 miles; care should be taken not to get into depths of less than 7.3m. Change course to 005° for about 8.8 miles to a position about 0.8 mile E of Punta Mandinga. Then steer NW to the anchorage off Puna. On this latter course Punta Mandinga can be rounded at a distance of about 0.5 mile.

Caution.—Caution should be exercised as strong tidal currents have been reported to run off Banco de Mala.

The position of the buoys in Canal de Jambeli cannot be relied on.

It is reported that a stranded wreck, marked by a lighted buoy, lies about 9 miles ENE of Punta Arenas.

2.34 The **Rio Guayas** (2°40'S., 79°55'W.), the largest river on the W coast of South America, is navigable for about 80 miles. The river, about 3 miles wide at its main entrance between Punta Mondragon (2°39'S., 79°54'W.) and Isla Verde (2°39'S., 79°56'W.), leads N for 28 miles to the river port of Guayaquil. The lower part of the Rio Guayas, about 1 mile wide, is bordered by low mangrove-covered islands fronted by drying mud banks. Isla Mondragon and Isla Matorillos, on the E bank of the river, are actually large banks covered with mangrove trees encircled by partly drying mud flats.

Note.—A draft of 5.8m has been established for the entrance to the Rio Guayas for larger-sized ships.

Canal Naranjal and Canal Matorillos are connected with the Rio Guayas about 11.5 and 15 miles N of Punta Mondragon. These two channels discharge at their S ends into Canal de Mondragon, on the E side of Isla Mondragon, and are used by small craft.

The W bank of the lower part of the river is also low and tree-covered, but has occasional clear spaces on which landing may be made. The first of these, Puerto Balsa, is situated about 9.5 miles N of Punta Mandinga. Punta de Piedra, about 9.5 miles farther NNE, is more extensive and has a small pier. A light is shown from Punta de Piedra. Other landing places on both banks of the river as far as Guayaquil are shown on the chart.

2.35 **Isla Santay** (2°13'S., 79°52'W.) lies in the river E and SE of Guayaquil. A bank and shoals encircle the island and extend into the main channel of the river W of the island. The channel E of the island is shallow. About 2 miles above Guayaquil, the Rio Guayas is joined by the Rio Daule and the navigable stream is known as the Rio Babahoyo. Fixed road bridges span the two rivers close N of their junction; navigable spans beneath the bridges have vertical clearances of 7.2 to 10.6m. An overhead cable, with a vertical clearance of 24m, and a submarine water main cross the river at the N end of Guayaquil.

Depths—Limitations.—The Rio Guayas is encumbered by a bar that extends NNW between Punta Mondragon and Puerto Balsa (2°35'S., 79°55'W.). There is a least depth of 3.7m at low water, soft mud, over the bar located 8 miles N of Puna. No. 4 lighted buoy is moored on the bar. A black and white striped lighted buoy is moored in the constricted channel and W of several submerged rocks about 2.5 miles NNW of Puna. Bajo de Mondragon (2°40'S., 79°55'W.), a drying mudflat, lies in the entrance of the Rio Guayas and at the E side of the channel. Roca de Santa Rita (2°28'S., 79°52'W.), with a depth of 0.3m, lies in mid-channel and is marked close W by a lighted buoy. There are many other dangers in and near the channel leading to Guayaquil. Buoys, shown on the chart, mark these dangers. The channel sometimes shifts and the buoys may be out of position. There are lights shown on the E and W shores and a lighted range, in line bearing 150°, is shown from Sito Nuevo.

Caution.—Large quantities of debris, tree trunks and branches, silt, etc. are carried downstream on the ebb tide, particularly during the rainy season. Buoys marking the channel and adjacent dangers could be missing or out of position. Depths in the river channel change often and silting is a problem.

The time taken from pilot station to berthing in New Port is approximately 4 hours.Numerous fishing craft may be encountered off the entrance of the river.

Guayaquil (2°12'S., 79°53'W.)

World Port Index No. 15270

2.36 Guayaquil, the old port, encompasses the city of Guayaquil on the W bank of the Rio Guayas and the town of Duran (Eloy Alfaro) to the NNE on the E bank with its adjacent river facilities. There is a city owned pier at the N end of the city along with 6 privately owned berths along the city waterfront S of the city owned pier. Anchorage berths are also available in the river for working cargo via small boats to the shore.

The approach to this port lies between Punta del Morro and Punta Trinchera (2°45'S., 80°14'W.), where the width at the entrance of Canal del Morro is about 1.5 miles. The port is reached through Canal del Morro, Canal de Cascajal, Rio Guayas and Estero Cobina. Puerto Maritimo de Guayaquil (Puerto Nuevo) is located about 5 miles SSW and can be reached through Estero Cobina.

Winds—Weather.—Windstorms are infrequent. Guayaquil has a dry season from May to December and a wet season from January to the latter part of April. Humidity is high during the wet season. There is a weather advisory service at Guayaquil.

Tides—Currents.—The spring range at Guayaquil is 3.6m; the mean neap range is 2.2m. Between Punta Mondragon and Guayaquil, there is no regularity in the times of the tides, probably due to the winds and velocity of the river current. Off Guayaquil, the tidal current has a rate of 3 to 4 knots; the ebb has a rate of 6 knots at times. Rates as high as 8 to 12 knots have been recorded in the river off Guayaquil during the rainy season. There is a difference of about 30 minutes in the duration of the flood and ebb currents, the flood being shorter. The mean duration of the incoming current is 4 hours 56 minutes, and that of the outgoing current is 7 hours 38 minutes. The ebb and flood currents do not commence until at least 10 minutes after high and low water, with an average of 20 to 25 minutes. Occasionally the in-

terval is as great as 1 hours 30 minutes with the ebb current, in which case it is never greater than 10 minutes with the flood current. During the rainy season, from December to April, the flood current lasts only 3 hours.

Depths—Limitations.—In the N part of the city Escuela Politecnica, the public pier, has a length of 152m and a depth of 4.5m at the pilings.

The privately-owned piers located close S are, as follows:

1. Cipresa has a 25m long wharf, with a maximum depth alongside of 8m. This wharf is equipped to handle bulk cement and liquid bulk cargo.
2. Minaoil has a 55m long wharf, with a maximum depth alongside of 7.6m. It has ten tanks with capacities of 400,000 gallons each. The type of cargo handled at this wharf consists of oil for lubricants. Discharge is carried out by pipeline only.
3. Molinos del Ecuador has a wharf, 78m in length, with a depth alongside of 9.7m. It can accommodate vessels up to 25,ooo dwt and 182m in length, with a maximum draft of 7.1m. The type of cargo handled at this wharf includes wheat and petroleum products.
4. Industrial Molinera has a wharf, 140m in length, with a depth alongside of 10.6. It can accommodate vessels 20,000 dwt, with a maximum draft of 7m. Grain is handled at this wharf.
5. Timsa has a 200m long wharf, with depths alongside 10m, capable of accommodating vessels up to 150m in length with a maximum draft of 7.2m. It is currently only used for loading or discharging fish.
6. La Favorita has a 15m long wharf, with depths alongside of 7m. It handles bulk soy beans and crude oils.

Port of Guayaquil—Berth Information

Berth	Length	Depth	Maximum Vessel				Remarks
			LOA	Draft	Beam	Size	
Terminal Portuario Internacional Puerto Hondo							
Pier 1	77m	8.0m	88m	7.5m	15.3m	3,467 dwt	Ro/ppx, ro-ro, project/heavy cargo, amd bunkers.
Pier 2	77m	8.0m	88m	7.5m	15.3m	3,467 dwt	Ro/ppx, ro-ro, project/heavy cargo, amd bunkers.
Terminal Portuario de Guayaquil (TPG)							
No. 1	240m	12.0m	368m	9.75m	51.0m	150,936 dwt	Containers and reakbulk. Continuous berthing length of 480m Apron width 31.5m.
No. 2	240m	12.0m	368m	9.75m	51.0m	150,936 dwt	
Puerto Trinitaria (Trinipuerto S.A.)							
No. 1	70m	11.5m	304m	—	48.2m	111,040 dwt	General cargo, breakbulk, and soybean meal, Berthing length of 267m (including dolphins),
Bananapuerto							
No. 1	360m	11.0m	301m	10.3m	48.2m	110,697 dwt	Bananas, breakbulk, containers, and wood chips. Can simultaneously berth two vessels.
Guayaquil Container and Multipurpose Terminals (GCMT)							
No. 1	181m	10.5m	212m	9.75m	32.26m	63,562 dwt	Multipurpose, cruise vessels, ro-ro, containers, and breakbulk. Continuous berthing length of 905. Apron with 38m.
No. 2	181m	10.5m	225m	9.80m	32.26m	69,990 dwt	
No. 3	181m	10.5m	212m	9.75m	32.26m	69,301 dwt	
No. 4	181m	10.5m	299m	9.75m	48.20m	110,629 dwt	
No. 5	181m	10.5m	365m	9.97m	48.4m	67,601 dwt	
No. 6	181m	—	365m	10.97m	48.4m	150,893 dwt	Containers, breakbulk, and bunkers. Continuous berthing length of 724m. Apron with 38m.
No. 7	181m	—	366m	10.97m	48.4m	141,377 dwt	
No. 8	181m	10.5m	346m	9.75m	48.2m	110,679 dwt	
No. 9	181m	10.5m	294m	9.75m	37.4m	67,222 dwt	
Andipuerto Guayaquil S.A.							
Delta	151m	10.0m	200m	—	32.26m	—	Chemicals, fertilizer, multipurpose, and steel. Berthing length 105m (incuding dolphins).
Ecuagran Terminal Portuario							

Port of Guayaquil—Berth Information							
Berth	Length	Depth	Maximum Vessel				Remarks
			LOA	Draft	Beam	Size	
Pier 1	126m	8.0m	199m	7.70m	32.26m	63,466 dwt	Wheat and corn.
Store Ocean S.A.							
Pier 1	175m	7.5m	199m	—	32.26m	63,466 dwt	Mineral ore, cruise vessels, and breakbulk.
Muelle Municipal Caraguay							
Pier 1	200m	—	104m	6.3m	16.4m	—	Ro-ro and vehicles, breakbulk, and bunkers,
Industrial Molinera C.A.							
Pier 1	90m	—	182m	7.3m	32.0m	39,894 dwt	Breakbulk and bunkers. Can berth two vessels simultaneously.
Fertisa Terminal Portuario							
Pier 1	288m	10.5m	210m	10.2m	36.0m	—	Scrap metal, containers, steel products, and breakbulk. Berthing length of 388m (including dolphins). Can berth two vessels simultaneously.
Ecuabulk S.A.							
Pier 1	—	12.0m	199m	—	32.26m	63,611 dwt	Clean products, breakbulk, and multipurpose. Berthing length of 105m (including dolphins).
QC Terminales Ecuador							
Dock 1	90m	—	199m	10.2m	32.26m	63,465 dwt	Chemicals and dirty products. Berthing length of 116m (including dolphins).

Puerto Maritimo de Guayaquil

In addition to the commercial wharfs, there are nine numbered anchorages, best seen on the chart, for working cargo in the Rio Guayas off Guayaquil, as follows:

1. Anchorage 1—Naval Anchorage.
2. Anchorage 2—All cargo.
3. Anchorages 3 through 6—General cargo
4. Anchorages 7 through 9 —Bananas.

Local port authorities should be consulted for latest information regarding depths allowed in the anchorages and alongside.

There are strong tidal currents in the Rio Guayas offshore of Guayaquil and at all river berths, making it preferable to berth heading downstream.

Pilotage.—Pilotage is compulsory. See paragraph 2.30 for details.

Rio Babaheyo

Regulations.—See paragraph 2.30 for details, including ETA reporting and communications plus information regarding vessel movements in the Rio Guayas.

Anchorage.—Pilots select the proper anchorage off Guayaquil. The anchorage is often congested and the holding ground poor in spots. Ocean-going ships anchor 0.3 mile off the city, or in mid-stream. It is reported that vessels of 180m and a fresh water draft of 7m are permitted to anchor.

An area designated for explosives, best shown on the chart, is centered near position 2°17'S, 79°50'W.

Long rafts of balsa logs are floated down the river and constitute a danger to anchored vessels at night. Floating debris and quantities of hyacinths drifting downstream may foul a ship's anchor chain. Due to the strong currents, it is advisable to be prepared to use the engines when necessary.

Anchoring is prohibited in the vicinity of a submarine pipeline, shown best on the chart, extending from a position 2 miles N of La Puntilla (between Anchorage 6 and 7) on the W bank of Rio Guayas ENE to the E bank.

Directions.—Specific directions for the Rio Guayas to Guayaquil are not given as pilotage is compulsory and the channel is subject to silting and constant change. It was reported that vessels should arrive at Puna 3 hours before desired time of arrival at Guayaquil. Vessels can arrive at Guayaquil from 30 minutes before to 1.5 hours after HW at Guayaquil. Vessels leaving Guayaquil can sail from 1.2 to 2.2 hours after LW at Guayaquil.

It is preferable for vessels to berth heading S on the last of the flood tide, as there is a greater depth of water for turning the vessel; whereas, ships berthing heading N have to turn ship on departure soon after LW.

Caution.—A dangerous wreck located at 2°16'27.6"S, 79°50'22.8"W located NW of the designated explosive anchorage area noted above.

2.37 Duran (2°10'S., 79°51'W.), also known as Eloy Alfaro, is a small town located upriver from Guayaquil on the E side of Rio Guayas, just before entering the Rio Babahoyo.

Depths—Limitations.— There are offshore tanker-handling facilities for refined molasses and petroleum products. The maximum draft allowable for the oil berth is 6.8m but this should be verified with the local port authorities through the port of Guayaquil.

Several piers used by small vessels are located all along the waterfront, with the largest of these being 70m in length with depths of 3 to 4m alongside.

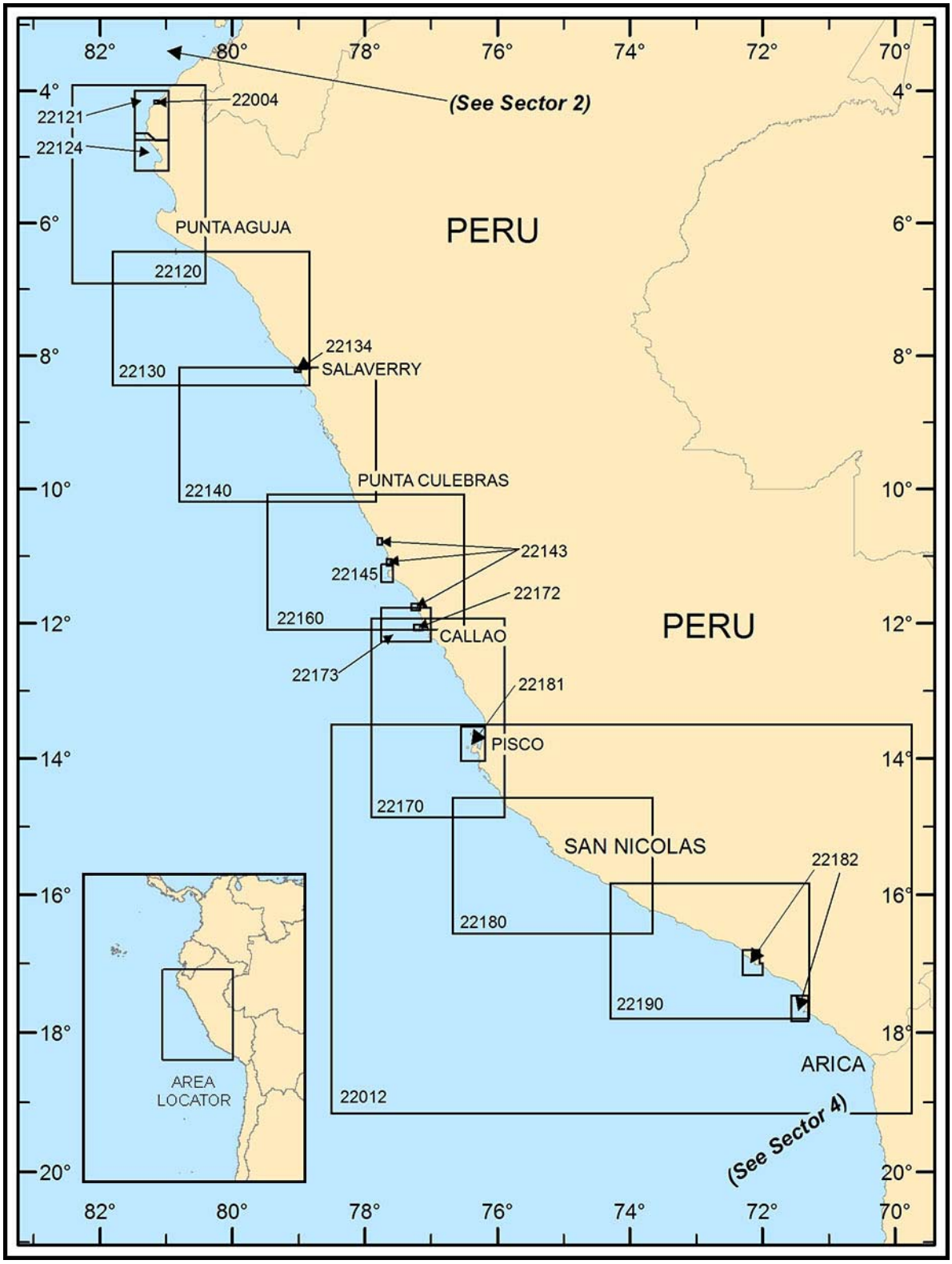
Tankers usually berth heading N with the port anchor down. The tidal current sets off the pier and at times attains a velocity of 6 knots.

Pilotage.—Pilotage is compulsory. See paragraph 2.30 for details.

Regulations.—See paragraph 2.30 for details including ETA reporting and communications plus information regarding vessel movements in Rio Guayas.

Anchorage.—Vessels can anchor N of the tanker-handling facilities and piers, in 9m, close to the shore, allowing for swinging room.

Caution.—A fixed bridge, with vertical clearance between 7.2m and 10.6m spans the Rio Babahoyo from position 2°09.8'S, 79°50.8'W to La Puntilla with a vertical clearance of 12.9m, then continues across the Rio Daule to the W bank close N of the naval base near position 2°09.3'S, 79°52.6'W.with a vertical clearance of 15.2m. This bridge connects Duran with the mainland to the W leading to Guayaquil.



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

SECTOR **3** — CHART INFORMATION

SECTOR 3

COAST OF PERU

Plan.—This sector describes the coast of Peru from Canal de Jambeli, at the Ecuador/Peru boundary, to the Peru/Chile boundary, including the off-lying islands. The sequence of the description is from N to S.

General Remarks

3.1 The coast trends about 100 miles S from Cabo Blanco to Punta Falsa and is indented by several bights, the S and largest of which recedes about 15 miles E to form Bahia de Sechura. From the S end of the Punta Aguja headland, the coast trends SSE for about 665 miles to Punta Dona Maria, where it turns and trends almost 400 miles in a more ESE direction to Arica. The coast is quite regular in outline, with small bights fit only for small vessels with local knowledge, and a few deep-water bays large enough for ships.

Most of the Peruvian coast consists of a very low, narrow desert plain made arable in places by irrigation. The coastal plain varies between 1 to 50 miles wide and is backed inland by the great range of the Andes Mountains. Spurs of the mountains rise abruptly from the coast in some places, and sandy beaches, interrupted by points, and small rivers are common.

Generally, the coast is steep-to with depths of 11 to 91.4m less than 3 miles offshore. Above and below-water dangers fringe many parts of the coast, and shorebanks extend up to 3 miles offshore and 6 miles off the E shore of Bahia de Sechura.

Caution must be exercised because of the lack of sufficient soundings along many parts of this coast and the possibility of uncharted dangers. In addition, the charts have been reported not to conform with the actual coastal configuration in a number of places.

Note.—See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for details on regulations pertaining to vessels entering Peruvian waters.

It is reported that all foreign vessels regardless of type or tonnage, entering waters within 200 miles of the coast, must participate in the Peruvian Maritime Information System on Position and Safety. Details are found in Pub 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Oil fields.—Oil fields may be encountered off this coast from a point NW of Punta Mapelo (30°30'S., 80°20'W.) to a position S of Punta Parinas (4°40'S., 81°20'W.). Rigs, production platforms, submarine pipelines, and various other forms of hazard may be associated with these oil fields, some of which may be lighted. Vessels are urged to exercise the appropriate caution when navigating along this portion of the coast. Peruvian authorities advise that oil platforms may be met between the parallels of 3° and 5°S.

Winds—Weather.—Close to the coast of Peru and N Chile, winds are predominantly S to SW throughout the year. From September through December, when there is a marked contrast between sea and land temperatures, the winds known locally as "virazon" increase in strength to such an extent as to hinder the loading and discharging of ships cargoes. Winds vary considerably over the ocean off the Peruvian coast as a result of the movement N and S of the doldrums belt. Gales are rare off the Peruvian coast.

Humidity prevails throughout the year along the almost rainless coast of Peru. At Lima, the relative humidity averages over 90 per cent throughout the year during the early morning hours. At Arica, where it seldom rains, the humidity averages 76 per cent. Fog occurs frequently along this coast from the latter part of December to the end of April.

Temperatures along the coast of Peru become cooler than other areas near the Equator because of the Humboldt Current flowing N. The prevailing coastal winds carry warm surface water away from the coast, bringing to the surface the cool waters from below.

Tides—Currents.—The currents off the coast of Peru are influenced by the Peru Current, which predominates along this coast, and to a lesser extent by the El Nino Current. In general, the current sets N parallel to the coast of Peru at a rate of about 0.5 to 1 knot. It is strongest between Punta Falsa and Puerto Eten and between Punta San Juan and Mollendo. A S set of equal or greater strength occurs occasionally and suddenly at any time of year, and it does not necessarily follow a change of the wind to a N direction. Currents setting S parallel to the coast and close inshore have been encountered, particularly off Cabo Blanco, Isla Lobos de Tierra, and between Callao and the Peninsula de Paracas. The S set of the Holy Child Current sometimes extends as far S as Punta Dona Maria, but usually it has little effect S of Golfo de Guayaquil.

Currents of a local nature are described in the various parts of this sector with the features off which they occur. Tidal currents are similarly described.

Discoloration of the water, known as “aguaje,” may be encountered on the Peruvian coast.

Caution.—Navigating, anchoring, and fishing are prohibited within 0.5 mile of offshore tanker moorings and buoys used for the loading and discharging of inflammable liquids along the Peruvian coast.

Canal de Jambeli to Punta Falsa

3.2 Between **Isla San Gregorio** (3°19'S., 80°16'W.), the S entrance point of Canal de Jambeli, and Cabo Blanco, about 82 miles SW, the coast is indented by numerous bays and inlets. A light is exhibited close SW of Punta Payana.

Punta Capones, about 4.5 miles SSW of Punta Payana, is located on the S side of a channel which forms part of the border between Ecuador and Peru. A light is shown from the point.

Bahia de Tumbes lies between Punta Capones and Punta Malpelo, about 12 miles SW, with two radio masts standing along the coast.

The mouths of the Rio Tumbes lie within a delta which extends from Punta Malpelo, about 6 miles E to Puerto Pizarro, situated in the S part of the bay. Small craft can navigate the river as far as the town about 5 miles upstream. Local knowl-

Peru Coastal Ports Locators

edge is required.

Anchorage can be taken about 3 miles ENE of Punta Mapelo and 1 mile offshore, in depths of 9.1 to 11m.

Caleta La Cruz, a small cove, is located about 10 miles SW of Punta Malpelo. A light is shown from a jetty and a prominent water tank is situated at the fish factory. Three lighted platforms are situated about 10 miles offshore from Punta Malpelo to Punta Mero. Anchorage can be taken about 2 miles offshore, in depths of 8 to 10m, sand.

Caution.—A production platform is located approximately 14 miles W of Bahia de Tumbes in position 3°24'44"S, 80°35'07"W.

3.3 Contralmirante Villar (Puerto Zorritos) (3°40'S., 80°40'W.), situated about 6 miles SW of Caleta La Cruz, occupies a cove between Punta Santa Rosa and Punta Sechwita, 1.5 miles WSW. The small port can be contacted by VHF. Oil derricks and tanks are conspicuous from the offing, and a pier, in ruins, extends off Punta Santa Rosa. Sunken wrecks lie 0.5 mile WNW and 0.2 mile WSW of the point. There is a jetty, 180m long, 0.1 mile E of Punta San Rosa.

Mooring buoys lie off the pier head. Most of the port activities have been transferred to Caleta Los Organos, about 9 miles NE of Cabo Blanco. Anchorage can be taken, in 5.5 to 9.1m, up to 1 mile off Punta Santa Rosa. A light is shown from a black and white banded tower close SW of Contralmirante Villar.

The coast SW of Contralmirante Villar is both sandy and cliffy, with several small coves used by small local vessels. Detached mountains rise inland in some areas. Caleta Mero is located about 15 miles SW of Contralmirante Villar. This cove, which is moderately sheltered, has anchorage, in depths of 9 to 12m, sand. Care should be taken to avoid the obstruction situated about 1.5 miles offshore.

Los Organos (4°15'S., 81°08'W.) is a village at the E end of a cove situated about 40 miles SW of Contralmirante Villar. Two tanks and several buildings are prominent. A jetty extends about 220m from the shore and is marked by a light at seaward end, but is out of use.

Caution.—A marine farm has been established (2012) within an area bounded by lines joining the following positions and needs to be avoided:

a. 4°10'05"S, 81°07'54"W.
b. 4°10'13"S, 81°07'44"W.
c. 4°10'28"S, 81°07'54"W.
d. 4°10'19"S, 81°08'06"W.

A rock, awash, is located in position 4°10'35'S, 81°08'51'W. A shoal depth of 2.1m lies 285m NW of Punta Organos Chico; a shoal depth of 4.5m lies 630m NE of the same point.

3.4 Punta Cabo Blanco (4°16'S., 81°15'W.), about 7.5 miles SW, is a guano-covered bluff which rises to an elevation of 275m. A light is shown at the cape. The cape, sloping gradually seaward, has two sharp hillocks near its extremity. Above and below-water rocks lie 0.2 mile off the cape. Oil tanks are conspicuous at the town of El Alto, situated on the heights above the cape, about 1.3 miles SE. At night, gas flares and the lights of the town are visible for many miles seaward.

Monte Organos, about 422m high, stands 7.5 miles E of Cabo Blanco. The W side of the mountain resembles a pipe organ.

Puerto Cabo Blanco (4°16'S., 81°15'W.) (World Port Index No. 15210) is a small port situated on the NE side of Cabo Blanco and a chief exporter of crude oil from El Alto, but is also a sport fishing center. The port is an open roadstead, sheltered from the S and partly from the SW, but exposed to N weather. There are four mooring buoys in 11.3m, 910m offshore.

Winds—Weather.—Except for December through February, the prevailing wind is SE in the morning and SW in the afternoon. In winter, showers may occur in early morning, but by noon the weather is clear.

Tides—Currents.—The tidal range is about 1.2m; the spring range is 1.5m. The current sets N except in summer, when it shifts to SSE.

Depths—Limitations.—A pier, at least 183m long and marked at its head by a light, extends N from a point ashore about 0.3 mile E of Cabo Blanco. A submarine oil pipeline, marked at its seaward end by a lighted buoy, extends about 0.2 mile N from the pier. There are depths of 14.6m in the berth at the outer end of the pipeline. Mooring buoys are laid NW of the pierhead and N of the oil pipeline. It is reported that generally ten hawsers, five forward and five aft, are required for mooring. Vessels up to 35,000 dwt, with drafts up to 12.2m, can be accommodated at the berth.

Anchoring in the vicinity of the pipeline is prohibited.

Pilotage.—Pilotage is compulsory. The pilot boards about 2

miles N of the berth. Vessels will be moored only during daylight, but can be unmoored at night. The port is under the jurisdiction of the port captain at Talara, from which customs officials and the pilot are supplied. The pilot can be contacted by VHF channel 16.

Caution.—A wreck is reported (1994) to lie approximately 6.8 miles W of Punta Cabo Blanco. An obstruction (4°13.1'S., 81°12.9'W.) lies 1.8 miles NNW of the pier. Numerous platforms, lit and unlit, are scattered to about 6 miles offshore within the 100m contour.

3.5 **Punta Lobos** (4°27'S., 81°18'W.) lies about 12.5 miles SSW of Cabo Blanco. The coast between is indented by shallow bights separated by cliffy points that are fronted by rocks and foul ground up to 0.5 mile offshore.

A small jetty situated at Pena Negra, about 1.8 miles SSW of Cabo Blanco, is used by small craft employed by the oil company.

Caleta Lobitos (4°27'S., 81°17'W.) (World Port Index No. 15200) is small port, also named Puerto Lobitos, and situated in a bight between Punta Folch (4°27'S., 81°17'W.) and Punta Lobitos (4°27'S., 81°18'W.). The port includes a roadstead NW of the bight. Conspicuous oil derricks, oil storage tanks, and buildings of the town of Lobitos stand along and within the shores of the bay.

The approach to port is free of all known dangers, except for several charted 10.1 to 11m patches lying close seaward of the 10m curve. Submerged rocks and reefs lie close off Punta Lobitos. Breakers are visible at least 0.3 mile off the point. There are depths of less than 5.5m as far as 0.4 mile off the SW side of the bight. Weather and current conditions are similar to those at Puerto Cabo Blanco, except for very heavy swells from January to March.

A pier, with a depth of 7m at its head, extends NW from shore at the town and is used by local fishing craft.

Anchorage.—Anchorage may be taken about 1 mile NW of the jetty head, in depths of 12 to 18m, but the anchorage lies within an oil field area.

Caution.—An oil field, in which there are numerous structures, some carrying lights, is situated off Caleta Lobitos.

Vessels should give this part of the coast a wide berth on account of the oil field.

The coast in the vicinity of Punta Lobos (4°27'S., 81°18'W.) is cliffy, but becomes low between Punta Capullana and Punta Malaca (4°32'S., 81°17'W.); then to Talara, is closely backed by a plateau with several high hills. Isla Sheba lies on a reef fringing Punta Yapato, about 1.3 miles S of Punta Lobos, and is reported to be conspicuous. The coast, fronted by rocky shoals and foul ground, should not be closed within 3 miles as there are detached patches of less than 7.3m. Roca Miguel Angel, submerged, is charted 1.7 miles WNW of Punta Lobos, but it has been reported as lying 0.2 mile W of its charted position.

Bahia de Talara (4°34'S., 81°17'W.) is entered between Punta Rocallosa, the NE extremity of Punta Talara, and Punta Macara (4°32'S., 81°17'W.), a small, rocky point backed by sand dunes located about 2.3 miles N. Punta Talara is the W end of a steep, rugged peninsula that forms the SW side of Bahia de Talara.

Talara (4°34'S., 81°17'W.)

World Port Index No. 15190

3.6 Talara, a lighterage port situated at the S end of Bahia de Talara, includes the coast from Punta Talara to Punta Arena, 1.5 miles S. The port and adjacent town are important because of oil fields nearby and the large oil refinery.

Port of Talara Home Page
http://www.petroperu.com.pe

Winds—Weather.—The prevailing wind, often fresh, varies from SE in the morning to S and SW in the afternoon. The harbor is sheltered except from the N, but there is little protection from strong S land (offshore) winds which may cause considerable swell in the harbor, particularly from June to October. Within the harbor the wind greatly moderates and there are only small swells. The prevailing weather is good. Rain is rare and fog occurs infrequently.

Tides—Currents.—The mean range of tide here is 1.2m, while the spring rise is 1.5m.

The current sets N offshore, but on closing the coast a countercurrent sets S. Approaching the harbor from the N of Punta Rocallosa (4°34'S., 81°17'W.), the current is reported as setting toward the coast. Within the harbor, the current may set N.

Depths—Limitations.—All known dangers in the immediate approach to port are contained within the 10m curve. Banco Oeste (West Bank), less than 9.1m deep, extends about 1 mile NNW and W from Punta Rocallosa. There are depths of less than 5.5m lying up to 0.2 mile off Punta Talara and Punta Rocallosa. Banco Este (East Bank), about 3.7 to 5.5m deep, extends from Punta Macara to the head of Bahia de Talara and W to the approach channel. Depths on Banco Este and Banco Oeste are variable and the positions of the banks edges are unreliable due to the shifting nature of the bottom. The entrance channel, clear of dangers in the fairway, is at least 183m wide. The fairway has a least depth of 18.5m, but is constricted by the 5.5m depths at the edge of the channel.

The harbor has depths of about 11 to 16m in the middle, which is steep-to and fringed to the shores by a bank of less than 5.5m. There are several mooring buoys in the harbor where vessels can secure while awaiting a berth; however, the harbor is confined and swinging room is limited. Cargo is lightered from vessels in the harbor, at the anchorages, and at mooring berths.

There are two piers for handling tankers plus an offshore tanker berth. Vessels up to 35,000 dwt and 190m in length, with a maximum draft of 10.6m can be handled at the piers. For the offshore tanker berth, tankers up to 55,000 dwt and 230m in length, with a maximum draft of 10.6m can be handled. There is also a minimum length restriction of 138m for the offshore berth.

Pier No. 1, which is used for general cargo, is 235m long and 15m wide at the N end, narrows to a width of 7.6m at the shore end, with a minimum depth of 5.5m alongside. Pier No. 2 has an alongside depth of 11.6m. A dangerous wreck lies SE of Wharf 3 in position 4°34'21.5"S, 81°16'35.3"W.

A new liquid cargo pier, 180m long, is located N of Pier No.

Port of Talara—Punta Talara Light

1. The ruins of the previous Pier No. 2 lie close to the W.

An offshore tanker berth, consisting of mooring buoys, lies in depths of about 12m 1 mile WSW of Punta Talara. An obstruction lies 0.8 miles W of the berth. A submarine pipeline extends E from the berth to the shore.

It is reported that due to the swell and strong undertow, vessels berthing alongside the moles are breasted off about 6m by hawsers to mooring buoys, which are situated nearby.

Aspect.—Landmarks in the vicinity of Talara are not readily identified if over 8 miles distant, as the terrain appears as an unbroken ridge of sand with mountains in the background. Cerro Tres Picos (4°33'S., 81°17'W.) is a conspicuous peak. A prominent building stands on Punta Macara, and two high and conspicuous tanks stand about 1 mile E of the point. A prominent water tower and a conspicuous television tower stand 0.4 mile and 1.5 miles, respectively, SSW of Punta Roca-llosa.

A light is shown from a prominent tower (black masonry tower, white band) (4°34'S., 81°17'W.), 10m high, standing on Punta Talara. A signal station stands close NE of the light tower. A lighted range indicates the entrance fairway to the harbor.

Pilotage.—Pilotage is compulsory. Pilots will board the ship anytime day or night. Pilots board tankers 1.5 miles WNW of Punta Talara and all other vessels about 1 mile NW, as shown on the chart.

Tankers should already have a pilot ladder ready on the port side for boarding to take place without delay. Cargo vessels are expected to have the gangway lowered for the pilot.

Regulations.—The vessel's initial ETA message should be sent 7 days prior arrival, including last port of call and any dangerous cargo being carried. The ETA should be reconfirmed should 72 hours, 48 hours, and 24 hours prior to arrival and should also include notification of any dangerous cargo on board. In addition to the information required above, all ETA messages should also include the expected vessel draft on ar-

Port of Talara Berths

rival, number of crew, and confirmation of any passengers on board, if any.

An IMO-adopted Traffic Separation Scheme is located in the approaches to Talara Port and may best be seen on the chart.

Vessels are not permitted to pass between the offshore oil terminal and the shore. Maximum length of a vessel that may maneuver in Puerto Talara roadstead must not exceed 200m.

Tankers are allowed to berth only during daylight hours with two tugs assisting; departure is allowed at any time day or night.

Contact Information.—The pilots and port can be contacted 24 hours as listed in the table titled **Talara—Contact Information.**

Talara—Contact Information	
Pilots (Ace Marine)	
Call sign	Ace Marine Pilots
VHF	VHF channel 14
Pilots (Tramarsa)	
Telephone	51-73-382270
Facsimile	51-73-385223
Web site	http://www.tramarsa.com.pe
Port—Terminal	
Telephone	51-73-284216
	51-73-284226
E-mail	talara@petroperu.com.pe
Web Site	http://www.petroperu.com.pe
Port— Harbormaster	
Call sign	Talara Control
VHF	VHF channels 14 and 16
Telephone	51-74-383032
Facsimile	51-74-383038

Anchorage.—Vessels may find good holding ground, in depths of 9 to 18m, between 0.8 to 1 mile NW of Punta Talara. Small vessels may anchor in an area, the limits of which are shown on the chart, about 0.3 mile NNW of Punta Talara. Tankers bound for the offshore berth may anchor about 1.5 miles WNW of Punta Talara, in a depth of 45m, good holding ground.

Anchorages will be assigned by the harbormaster prior to arrival.

Anchorage areas are designated, as follows:

1. Anchorage No. 1 lies 1 mile WNW of Punta Talara. It is used by tankers in general and has a least depth of 12m.
2. Anchorage No. 2 lies 0.5 mile WNW of Punta Talara. It is used by gas tankers and has a least depth of 9m.
3. Anchorage No. 3 lies 2.5 miles WSW of Punta Talara. It is a quarantine anchorage. An obstruction lies 0.6 mile E.
4. Anchorage No. 4 lies 2 miles N of Punta Talara. It is a quarantine anchorage.
5. Anchorage No. 5 lies 0.4 mile N of Punta Talara and is used by all other vessels.

Caution.—Vessels should avoid anchoring near the submarine cables charted NW of the harbor.

Vessels must not navigate between the offshore tanker berth and the shore.

Oil structures are situated within the approaches to the port.

Due to the current, vessels should exercise caution while awaiting a pilot, as steerageway may be lost with the ship setting E of the entrance range and grounding.

Vessels approaching from the S should keep at least 3 miles off Parinas Point, then steer to pass about 1.5 miles W of the Sea Line Buoy, then in toward Talara Point. Care must be taken to avoid the offshore drilling rigs in the Talara area.

Numerous wrecks, best seen on the chart, lie in the approaches to Talara. Mariners are urged to use caution.

3.7 Punta Parinas (4°40'S., 81°20'W.) lies about 5 miles SSW of Punta Arena. The coast between is cliffy in many places, with valleys fronted by dunes between the heights. A shoal bank fronts this stretch of coast. There are several reported dangers, consisting of detached shoals lying inside or close seaward of the 20m curve, and which are best seen on the chart. Vessels should pass at least 3 miles offshore.

Punta Parinas, a conspicuous bluff 50m high, is the W extremity of South America. The point is separated from a range of hills SE of it by low land, so that from N or S the point appears as two islets. Pinnacle rocks and a reef front the point. A light is shown at the point.

Negritos (Punta Parinas) (4°40'S., 81°19'W.), an oil center, is part of the Talara complex and comes under the Talara Port Captaincy. The town, about 1.5 miles NE of Punta Parinas, is conspicuous from offshore due to the lights of the derricks and other oil installations.

An offshore tanker berth lies in a depth of 12.2m, about 1.5 miles N of Punta Parinas. A submarine pipeline extends from the berth SSE to the shore. Vessels up to 35,000 dwt, with a maximum length of 203m, can be accommodated. Drafts of 10.6m can be handled. Pilots are embarked at Talara.

Anchorage.—Good anchorage may be taken, in depths of 8 to 12m, rock and sand, about 0.8 mile NW of the town.

Caution.—A platform has been positioned about 0.7 mile NW of Punta Parinas in position 4°39'34"S, 81°20'07"W. A platform has been positioned about 6 miles SW of Punta Parinas in position 4°45'51.3"S, 81°22'30.3"W. A charted obstruction lies about 2 miles SSE of the platform. Care must be taken to carefully navigate around numerous platforms, all marked by lights, as best seen on the chart, about 3 miles S of Punta Parinas.

3.8 Punta Paita (Punta Erada) (5°04'S., 81°09'W.) lies about 25 miles SSE of Punta Parinas. The coast between is low, sandy, and pounded by heavy surf. Generally, this stretch of coast is steep-to, but soundings are insufficient. Mariners are advised to pass at least 2.5 miles clear of the coast. A prominent tank stands near the coast about 4 miles SE of Punta Parinas Light. The Rio Chira is navigable by boats from its mouth, located 19 miles SE of Punta Parinas, as far as 7 miles inland. Caleta Colan, about 7 miles SE of the Rio Chira, affords anchorage, in 10 to 12m, sand, about 0.3 mile offshore. The town is a resort and has a conspicuous church with a belfry. Caleta

Colan is used by fishing craft, but local knowledge is required.

Bahia de Paita (5°02'S., 81°06'W.) is a large, open bight between Punta Nez, located 2 miles S of the Rio Chira, and Punta Erada, about 9 miles SSW. The latter point terminates in a dark bluff. Steep-to underwater rocks lie at least 183m off the point.

A Traffic Separation Scheme has been established in the approaches to Bahia de Paita; Rule 9 of the 72 COLREGS applies. Details are best seen on the chart. The Inshore Traffic Zones lie between the coast and the scheme and are used by local vessels.

Calata Tierra Colorada (5°04'S., 81°09'W.) lies between Punta Paita (Punta Erada) and Punta Chuy, 1.8 miles E.

The bay is backed by an uneven and broken plateau, distinguished by red patches on the surface from which it derives its name. There are some prominent tanks and buildings, including a fish processing plant and a whaling factory, at the head of the bight.

At night, care is necessary to avoid confusing the lights of the whaling factory and those of Puerto de Paita.

Two small piers extend from the shore and two mooring buoys are situated in the cove. A lighter, used by fishing craft, is moored in the cove and a submarine pipeline extends from the lighter to the shore. A small pier extends from a point on the E side of the cove, about 0.4 mile SW of Punta Interior.

Anchorage can be taken, in depths of 16 to 20m, at the entrance to the bay and about 0.5 mile N of the fish meal plant. Depths decrease irregularly between the anchorage and the head of the bay.

Paita (5°05'S., 81°07'W.)

World Port Index No. 15170

3.9 The port and town of Paita occupy the head of an open bight indenting the coast between Punta Interior and Caleta Colan, about 5.8 miles NE.

Bahia de Paita is entered through an IMO-adopted Traffic Separation Scheme (TSS) as seen on the chart. The pier is approached on a bearing of 150° as marked by the range lights.

Port of Paita Home Page
http://www.puertopaita.com

Winds—Weather.—Paita is the best of this type of open port on the coast. It is well-sheltered from the prevailing winds and there is no swell, so cargo can be worked without interruption. The weather is always hot; very little, if any, rainfall occurs and there is only an exceptional storm from the N quadrant. Fog does not occur.

The port is sheltered from the prevailing SE winds by the high ground, but heavy swells have been reported.

Tides—Currents.—The near range of tide is 1.2m, while the spring range is 1.5m. Tides here are affected by the winds, and may rise as much as 3.6m.

Pilotage.—Pilotage is compulsory for vessels over 500 gt. Pilots board in the following position:

a. 5°03.00'S,81°07.60'W.

Regulations.—The vessel's ETA should be sent at least 24 hours in advance. Vessels should send initial ETA 7 days in advance of expected arrival and include the last port of call and any dangerous cargo on board.

Depths—Limitations.—Muelle del Terminal Maritimo is the principal pier in the port. It is a finger pier, 365m in length, containing four berths, numbered 1A through 1D. Berth 1A and Berth 1C are along the W side of the pier; Berth 1B and Berth 1C are on the E side. A new container terminal was added, Terminales Portuario Eurodinos (TPE). The concrete pier is 300m in length with 12.5m depth. The bertth is labeled number 2. See the table titled **Paita—Berth Characteristics** for details regarding depths and vessels restrictions.

(US Navy)

USNS Comfort at Paita Harbor

An offshore tanker berth of CBM type, consisting of mooring buoys connected to the shore by submarine pipeline, is located 630m N of Punta Telegrafo. Tankers as large as 22,000 dwt, 155m in length, and a maximum draft of 10.0m at HW can be accommodated.

A turning basin with maximum depths of 9.75m, sand and mud, is located within the harbor. This area is dredged every 3 years.

Aspect.—The town, built on a slope and foot of a hill, is scarcely visible as the houses have identical colors with the cliffs behind them. Except at the town, sand cliffs rise abruptly from the shores of the bight.

A prominent cathedral and custom house building stand in the town. A prominent radio mast stands about 0.4 mile SSW of the root of the pier. A fish processing plant, with a conspicuous tower, stands about 1 mile WNW of the pier.

Paita Light is shown from a tower standing on the cliffs close W of Muelle del Pesquero. Range lights are shown from metal framework towers with daymarks, situated at the head and within the root of the main pier. The range leads through the approach and to the pier.

Additional ETA messages should be sent to the port captain and the agents 72 hours and 24 hours prior arrival; these messages should also include information regarding any dangerous cargo on board and expected arrival at the pilot station. All ETA messages should include the following information in addition to what has already been mentioned:

1. Date and hour of arrival.

Port of Paita—Paita Light

Paita—Berth Characteristics						
Berth	**Length**	**Depth**	**Maximum Vessel**			**Remarks**
			LOA	**Beam**	**Size**	
Terminales Portuarios Euroandionos (TPE)						
No. 1A	200m	10.0m	250m	Unrestricted	30,000 dwt	Containers, breakbulk, mooring tugs, and fishing vessels. Continuous quay length of 365m.
No. 1B	200m	12.5m	250m	Unrestricted	30,000 dwt	Containers and breakbulk. Continuous quay length of 365m.
No. 1C	200m	7.6m	—	Unrestricted	25,000 dwt	Mooring tugs, fishing vessels, and breakbulk. Continuous quay length of 365m.
No. 1D	165m	8.2m	—	Unrestricted	15,000 dwt	Mooring tugs, fishing vessels, and breakbulk. Continuous quay length of 365m.
No. 2	300m	12.5m	—	Unrestricted	55,000 dwt	Containers.
E Naval	200m	—	—	—	—	Naval vessels.
W Naval	200m	—	—	—	—	Naval vessels.
PENTA Tank Terminals						
MBM	—	12.8m	155m	24.0m	22,000 dwt	Loading/unloading ethanol.

2. Expected draft upon arrival.
3. Number of crew and if there are any passengers on board.

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

Anchorage.—Designated anchorage areas are situated in the bay and may best be seen on the chart. The bottom is mud and sand.

Caution.—Depths shoal regularly from the 20m curve to the 10m curve, about 0.3 mile off the town. A shorebank extends 0.3 mile offshore. Vessels are advised not to close the shore in depths less than 12.8m, as depths may shoal abruptly in places.Vessels should not confuse the lights in Tierra Colorada for those in Paita when approaching port from the S. Oil structures may be situated in the approaches to the port. An unlit, disused platform lies N of the NW end of the TSS in position 4°58.0.S, 81°13.8'W. A spoil ground area is situated in the approach to the port, in position 5°03.3'S, 81°07.6'W. Numerous wrecks, best seen on the chart, lie in the approaches and adjacent entrance channel to Paita. Mariners are urged to

use caution. Two dangerous wrecks lie just NW of the Northern Whaling Company Pier, 1.1 miles SW of Point Chuy. Another dangerous wreck lies 0.9 mile NNW of Punta Colan. A non-dangerous wreck lies about 0.7 mile NW of Punta Telegrafo.

Paita—Contact Information	
Pilots (Tramarsa)	
Telephone	51-73-213235
	51-73-212323
	51-73-213232
	51-73-211294
Facsimile	51-73-211304
Web site	http://www.tramarsa.com.pe
Pilots (Ian Taylor Agency)	
Telephone	51-73-213346
Facsimile	51-73-213099
E-mail	postmast@taycoperu.com.pe
Harbormaster	
Call sign	Costera Paita
VHF	VHF channels 14 and 16
Telephone	51-73-285670
E-mail	tppaita@enapu.com.pe

3.10 Punta Foca (5°14'S., 81°12'W.) 67m high, lies about 9 miles S of Punta Paita (Punta Erada). The coast between rises abruptly to high cliffs and is apparently steep-to; however, lack of sufficient soundings make it advisable to keep at least 3 miles offshore. Care must be exercised not to mistake Punta Capitala (5°08'S., 81°11'W.), a rocky spur projecting 1 mile offshore, for Punta Foca. Cerro Silla de Paita is a range of three isolated, high hills lying 4.5 miles ENE of Punta Foca. The hills make an excellent landmark, varying in color from bright yellow to black according to the sun's position; however, from the N only they appear as a saddle.

Isla Foca, marked by a light, lies 0.5 mile NW of the point. The passage is foul and rocks fringe the islet for about 0.5 mile. A dangerous below-water rock lies 1.2 miles NW of the N end of Isla Foca.

Anchorage can be taken, in a depth of 11m, about 0.2 mile off the NE end of the islet.

Caution.—A submarine exercise area is situated about 48 miles WSW of Isla Foca.

3.11 Bahia de Sechura (5°40'S., 81°00'W.) occupies a bight that recedes about 15 miles E between Punta Foca and Punta Aguja, about 36 miles SSE. The N shore of the bay is high and cliffy; whereas, the E and S shores are low and backed by sandhills. The terrain inland is a low coastal plain for miles. Depths are ample for ships in the bay and approaches. A shoal of 6m lies on the W edge of a shorebank extending about 6 miles off the SE side of the bay. Soundings are lacking in the S of the bay. A sunken wreck lies 17 miles S of Punta Foca.

Tides—Currents.—The current generally runs out of Bahia de Sechura. Off Isla Foca, the current sets NW, but vessels bound S into the bay have experienced a slight current setting S. Between Isla Foca and Punta Paita (Punta Erada) the current sets N, but it is hardly felt N of Punta Paita. Off Punta Falsa, when the current is setting strongly NW in the offing, a current setting S has been experienced close inshore and in Bahia de Sechura. Near Punta Falsa, a strong S or SW set is frequent.

The **Rio Piura** (5°34'S., 80°52'W.) empties into Bahia de Sechura about 29 miles SE of Punta Foca. The town of Sechura, about 4 miles upriver, can be reached by boat. The church in town has two high, prominent steeples and is a good landmark above the sandhills. One of the steeples has a considerable inclination N which, at a distance, gives it more the appearance of a tree than a stone building.

Anchorage can be taken, in depths of 9.1 to 21.9m, sand, about 1 mile off the mouth of the Rio Piura. The anchorage is exposed to wind and swell, but the holding ground is good. With local knowledge, anchorage can be taken 1.5 to 2 miles off the shore of Caleta Chullillache, 1.5 miles S of the Rio Piura, where the depths are 9.1 to 16.5m. An obstruction lies 2 miles NW of the mouth of the river.

Matacaballo (5°39'S., 80°51'W.) and La Salina (5°50'S., 80°57'W.) are two, small shipping places along the SE side of the bay which should be approached with local knowledge as depths are uncertain. Anchorage can be taken, in 9.1 to 12.8m, seaward of a shorebank which extends about 3 miles off La Salina.

3.12 Puerto Bayovar (5°50'S., 81°03'W.) (World Port Index No. 15140) is a roadstead in the S end of Bahia de Sechura off Punta Lagunas, which is located about 2.3 miles SE of Punta Aguja. Punta Bayovar and the small village of Bayovar lie about 1.3 miles SSE of low, sandy Punta Lagunas.

Puerto Bayovar is a large tanker port. Crude oil is loaded into VLCCs for international shipment and coastal vessels for domestic use. This marine terminal is used by Petroleos del Peru, serving the oil fields of the Peruvian Amazon region.

Puerto Bayovar Home Page
http://www.tramarsa.com.pe

Winds—Weather.—The port is sheltered from the prevailing winds. Land and sea breezes blow regularly. The sea breeze is moderate from between W and NW and lasts from 1000 or 1100 to 1400 or 1500. It then shifts to the S or SE and freshens. The land breeze starts about 2100 and continues for about 12 hours. Protection from the sea and swell is afforded by Punta Aguja.

Tides—Currents.—See the table titled **Tidal Ranges for Puerto Bayovar.** A strong set towards the main berth has been reported and should be guarded against.

Tidal Ranges for Puerto Bayovar	
HAT	1.6m

Tidal Ranges for Puerto Bayovar	
MHWS	1.3m
MHWN	1.0m
MSL	0.73m
MLWN	0.4m
MLWS	0.1m
LAT	-0.2m

Notes:
1. Predicted heights are in meters above charted datum.
2. HAT—Highest astronomical tide.
3. LAT—Lowest astronomical tide.

Puerto Bayovar—Tanker and Bulk Berths

Aspect.—A lighthouse, painted in black and white bands, stands on a hill behind the town and is prominent. Radio masts lie about 0.3 mile S of the light, and exhibit aircraft warning lights. Range lights, shown from two orange towers, in line bearing 235°, lead into port. Three radio masts stand on a hill about 1 mile SE of Puerto Bayovar.

Depths—Limitations.—Bayovar Oil Terminal (5°47'S., 81°03'W.), at the end of a Trans-Andean pipeline, consists of a T-head pier extending 118m offshore and connected to the shore by a 6m wide viaduct. the head of the viaduct consists of a loading platform 25m by 25m, as part of a berthing front 150m long, with four breasting dolphins and buffer fenders, in depths of 26.8m at LW. To the E and W, connected by metallic gangways, are two sets of mooring dolphins, staggered so that the inner pair take spring lines and the outer pair mooring lines. The overall length of the installation is 490m. The T-head pier will accommodate tankers of up to 250,000 dwt, with a maximum length of 330m and a maximum draft of 20.0m.

The Phosphate-Bulker Terminal, located 0.7 mile SE of the Tanker Berth, consists of a T-head pier extending 270m offshore. The T-head pier is 250m in length, with a width of 14m, will accommodate vessels of up to 100,000 dwt, with a maximum length of 235m and a maximum draft of 14.5m.

A small cargo wharf is situated at the land end of the viaduct in order to unload stores and supplies for the terminal; the depth is 10m.

JPQ Terminal Internacional Juan Paulo Quay berth status is closed. Berth length 126m (incl. dolphins).

Pilotage.—Pilotage is compulsory for all vessels. Pilots board about 3 miles ENE of Punta Aguja within the pilot waiting area, as best seen on the chart.

Regulations.—Vessels should send their ETA 72 hours, 48 hours, and 24 hours in advance of expected arrival time, including the last port of call and confirmation that there are no sick passengers, including crew, on board. PetroPeru and the vessel's agents also need to be advised of this same information.

Contact Information.—See the table titled **Puerto Bayovar—Contact Information**.

Puerto Bayovar—Contact Information	
Pilots	
VHF	VHF channels 14 and 16
Telephone	51-73-212323
	51-73-213235
	51-73-211294
Facsimile	51-73-211304
Bayovar Oil Terminal (Petroperu SA)	
VHF	VHF channels 14 and 16
Telephone	51-73-284122
Facsimile	51-73-284100 (extension 40229)
Web site	https://www.petroperu.com.pe

Anchorage.—Anchorage is available, in a depth of about

29m, with Punta Aguja 3.5 miles distant and bearing 250°.Four designated anchorages are located 0.7 to 0.9 mile NNE of Punta Patillos, in depths of 22 to 34m.

Caution.—Multiple marine farms have been established north of Puerto Bayovar as best seen on the chart.

Punta Aguja (5°49'S., 81°04'W.) is a cliffy headland with a conical hill at its N end. Submerged rocks lie at least 0.5 mile off the headland and vessels should stay at least 1.5 miles offshore when rounding the point. A light, equipped with a Racon is shown from the point.

There is a cove on the NE side of Punta Nonura, about 5 miles SW of Punta Aguja, which is sheltered and affords anchorage, in depths of 16.5 to 20.1m, about 0.25 mile off the stream that empties through the beach at the head of the cove.

Punta Falsa lies about 9 miles SW of Punta Aguja. The coast between rises abruptly to a tableland.

Punta Falsa to Morro Guanape

3.13 The coast trends generally SE for 208 miles from Punta Falsa to Morro Guanape. Fog is frequent off this coast between December and late April.

Depths off this coast tend to decrease less rapidly than along other portions of the South American coast, but the rate of decrease varies widely. The 100m curve is charted about 5.8 miles off Punta Falsa, while it lies up to 43 miles offshore S of Isla Lobos de Afuera.

The most dangerous area to navigation off this coast is the passage between Isla Lobos de Tierra and the coast, and also the coast S to Pimentel, as strong and variable current sets may be encountered.

The coast between Punta Negra and Punta Eten (6°57'N., 79°53'W.) is low, sandy, and backed by desert that continues inland to the Andes. Near Punta Eten, there are detached mountains about 7 miles inland.

3.14 Off-lying islands.—Isla Lobos de Tierra (6°26'S., 80°51'W.) lies 9 miles offshore. A light is exhibited from a round metal tower with white bands (6°28'S, 80°51'W.), on the summit of the S end of the island. This island, a source of guano, is 5.5 miles long, 2 miles wide, with rugged hills rising abruptly from its shores. The passage between the island and mainland is not recommended because of the irregular bottom and strong currents. Islets, rocks, and foul ground lie off the S end of the island as far as 9.5 miles SSW and SW, where there are depths of 12.8m. A small jetty and some buildings stand in Caleta Juanchuquita on the E side of the island, about 2 miles from the N extremity.

It is reported that the channel between the island and the coast has not been completely surveyed. Therefore, large vessels and small vessels without local knowledge are advised not to use the channel.

Anchorage can be taken, in depths of 11 to 18.3m, sand, about 0.3 to 0.5 mile off the landing and houses in Caleta Juanchuquita. This anchorage is sheltered from the prevailing SW swell.

Islas Lobos de Afuera (6°56'S., 80°43'W.), a small group of barrier islets and rocks, lie about 35 miles off the mainland. The island was reported (1992) to lie 1.4 miles W of its charted position. The entire group of high, rugged, brown, and white-colored islets is less than 3 miles long and steep-to. A channel, about 37m wide and 7.5m deep, separates the two largest islets. There is a settlement at the S islet. Local knowledge is required to approach the group. A shoal, with a least depth of 14.6m, lies about 2 miles WSW of the group.

Currents in the vicinity of both groups of off-lying islets are strong and irregular. Fog usually obscures the islets in early morning. Vessels approaching the islet groups from the S have been set as much as 36 miles W of their course in 24 hours, and at other times as much to the E. After a strong S breeze, a W set may be expected.

Sheltered anchorage can be taken in Puerto Grande, situated on the E side of the NE largest islet. The anchorage area is about 0.3 mile offshore, in a depth of 21.9m, sand. There is a 2.7m rocky patch about 0.2 mile offshore at the S part of the anchorage. Caleta del Horns, on the NW side of the group, lies in the SE part of a bay between the two large islets. The inlet is at least 0.2 mile wide and extends about 0.5 mile SE. Anchorage can be taken anywhere in the inlet, in depths of 10.1 to 29.3m, rock. There are several rocky, detached shoals in the approaches to the inlet. Local knowledge is necessary to enter the inlet and also Bahia Landrou, located between the SW large island and a chain of islets extending SE from the NE principal islet. The best anchorage in Bahia Landrou is near the head of the bay, in depths of 14.6 to 21.9m.

Caution.—The islands have been reported to lie 1.5 miles W of their charted positions.

3.15 Punta Falsa (5°55'S., 81°09'W.) is a bluff-like eminence, 50m high, projecting from the coast. A fog bank frequently covers the lower parts. A steep-to islet lies 1 mile WNW of the point and is difficult to identify. A light is shown from the point.

Punta Negra, from which a light is shown, lies 10 miles S of Punta Falsa.

Cerro Illescas, a massive summit sloping down to the sea, stands E of Punta Falsa. Punta Negra is the S spur extending seaward from Cerro Illescas.

Pimentel (6°50'S., 79°56'W.) (World Port Index No. 15110) is situated about 4 miles SSE of San Jose, a fishing village and summer resort. Pimentel, an open roadstead, is a port of entry and a lighterage port. Cargo handled at Pimentel consists mainly of sugar, oil, and general cargo.

Depths—Limitations.—There is one cargo wharf which is 750m long with a depth alongside of 3.6m. Vessels load and discharge by lighter. There is a pipeline from the shore to a depth of 12.1m. There are three mooring buoys for lighters near the end of the pipeline. The greatest possible draft is 9.1 to 9.7m.

Aspect.—The shore of the roadstead is formed of high sand dunes. A conspicuous sandhill, on which stands a beacon, is located 1 mile NNW of a prominent church at the N part of town. A radio mast and towers are conspicuous. A cross atop the church is highly visible from offshore.

An aeronautical radiobeacon is situated about 7 miles NE of the town.

Pilotage.—Pilotage is compulsory.

Regulations.—The vessel's initial ETA message should be sent 7 days prior arrival, including last port of call and any dangerous cargo being carried. The ETA confirmation should be

sent 72 hours prior to arrival and should also include notification of any dangerous cargo on board. In addition to the information required above, all ETA messages should also include the expected vessel draft on arrival, number of crew, and confirmation of any passengers on board, if any.

Contact Information.—VHF channel 16 is used. Communication through INMARSAT is also possible. For long range communication the use of coastal radio stations, as listed in the table below, is recommended.

Radio Contact Information	
Call sign	**RT Frequencies (kHz)**
Paita OBY2	Transmits on 8527 and 2182-2738.
	Receives on 8362.2-8366.4 and 2182.
Callao OBC3	Transmits on 460-50, 8546, 13015.5, and 2182-2738.
	Receives on 500, 8363.2, 8366.4, and 12544.8.
Mollendo OBF4	Transmits on 8490 and 2182.
	Receives on 8363.2, 8366.4, and 2182.

Anchorage.—Anchorage can be taken, in depths of 10 to 11m, about 1.5 to 2 miles SW of the pier. Vessels should use caution when approaching the port so as to avoid the many lighters and small craft in the vicinity of the anchorage areas, which do not carry proper lights or none at all. An oil transfer anchorage, best seen on the chart, lies SW of the pier.

Caution.—Both seas and swells, which often come up suddenly, interrupt cargo operations at the anchorage.

The port is frequently closed to maritime traffic due to strong storms which are more frequent from June to September.

A detached shoal, with a depth of 5.9m, is reported to lie about 3 miles WSW of San Jose. A dangerous rock, the position of which is doubtful, lies about 3 miles WSW of the pier head.

Two dangerous wrecks. depths unknown, lie W of San Jose in position 6°46'10"S, 80°00'02"W and position 6°47'22"S, 80°08'39"W.

Another dangerous wreck, depth unknown, lies SW of Pimentel in position 6°55'00"S, 80°01'18"W.

3.16 Punta Eten (6°57'S., 79°53'W.) lies about 8 miles SE of Pimentel. The coast between is low and sandy. Breakers extending about 1 mile offshore can, at times, be heard for several miles. Shorebanks, reported to extend 3 miles offshore, are to be avoided. Santa Rosa, a fishing village and resort, is situated in a cove 3.5 miles SE of Pimentel, near Punta Santa Rosa. Morro Eten is a double-peaked, high hill with a steep cliff facing the sea, less than 0.5 mile within the point. The hill is marked by two radio masts, a water tower, and a light shown from a concrete tower, 15m high, standing on the summit. It is an excellent mark from seaward.

Puerto Eten (6°56'S., 79°51'W.) consists of an open roadstead, a ruined jetty no longer in service, and an offshore tanker berth. Cargo is lightered to vessels at the anchorage. The depth of water in the harbor is 12.8m.

An offshore tanker berth is situated about 1.3 miles SSE of Punta Eten. A submarine pipeline extends NE from the berth to the shore. The berth lies in a depth of 12m and is equipped with mooring buoys. The local authorities should be contacted for the latest information on depths, dangers, and regulations at this terminal before attempting to berth here. Pilotage is available via the agent. The port monitors VHF channel 16.

An area prohibited to fishing and anchoring has been established around the berth and submarine pipeline and is bounded by lines joining the following positions:

a. 6°57'17"S, 79°51'32"W. (coast)
b. 6°58'14"S, 79°52'16"W.
c. 6°58'37"S, 79°51'44"W.
d. 6°57'41"S, 79°50'59"W. (coast)

A new anchorage area established SW of the restricted area described above is bounded by lines joining the following positions:

a. 6°58’42"S, 79°52'38"W.
b. 6°58'42"S, 79°52'08"W.
c. 6°59'12"S, 79°52'08"W.
d. 6°59'12"S, 79°52'38"W.

Anchorage can also be taken, in a depth of 12m, 0.8 mile SW of the pier head, clay and sand. Anchorage, in 21.9m, about 3 miles SW of the pier, is feasible, but the long swells cause heavy rolling. Even at the inner anchorage the swells that occur from June through October, but particularly in May and June, can make the anchorage very uncomfortable and interrupt lighter operations. Outer anchorage is available 0.8 mile NW or WNW of Punta Eten, in depths of 10 to 11m.

Puerto Eten

3.17 Punta Pacasmayo (7°25'S., 79°35'W.) lies about 33

miles SE of Punta Eten. The coast between is generally low with some cliffs in places. Punta Cherrepe, about 15.5 miles NNW of Punta Pacasmayo, is a highly visible coastal projection having above and below-water rocks, including Roca Antartica, lying up to 1 mile off it. Punta Pacasmayo is fronted by rocks and shoals on which the sea breaks heavily in bad weather. A light is shown from a square tower, 11m high, standing on the point.

Pacasmayo (7°24'S., 79°35'W.) occupies a bight which recedes 1 mile E on the N side of sandy Punta Pacasmayo. Except for Salaverry, this bight affords the best anchorage on the coast between Laita and Chimbote. It is fairly well-sheltered from the S sea and swell by Punta Pacasmayo, but that low point does not afford protection from the S winds. The latter usually blow hard after noon, particularly in winter. A heavy swell sometimes interrupts port operations, but vessels are not forced to put to sea. August, September, and October are the worst months for these sea conditions. Ashore there is very little humidity due to the prevailing S wind.

Depths decrease regularly from the 10m curve, which lies 2 miles seaward of the shores. Depths of less than 5.5m exist up to 0.5 mile off the pier head and rocky, foul ground of 6.5m lies 0.2 mile farther. There are depths of less than 2.5m up to 0.3 mile W of the pier head.

Depths—Limitations.—There is one pier, recently overhauled, with a depth of 3m that is served by a railway line and used for lighter operations only. On the head of the pier is a fixed red light.

The port handles shipment of minerals, tara powder, and rice, and imports fertilizers, paraffin wax, and general cargo.

The port is now no longer operating and is used as a boardwalk for surfing and windsurfing.

Aspect.—The town of Pacasmayo is situated along the shores of the bight NE of the point. Cliffs back the shore N and S of town, which is fronted by a beach. A dark, square building is very conspicuous atop the cliffs on the N side of the point.

Pilotage.—Pilotage is compulsory and may be arranged through the Port Captain's office on VHF channel 16 during working hours.

Anchorage.—The commercial anchorage area lies in a depth of 10m, about 1 mile W of the pier head. The quarantine and dangerous cargo area lies in depths of 10m, about 1.5 miles NW of the pier head.

Good anchorage can be taken, in 5.4m, with the pier head bearing 096° and the lighthouse 170°, just outside the lighterage anchorage. There is a 0.5 knot NW current.

3.18 Punta Malabrigo (7°42'S., 79°28'W.), a high islet lying close off a promontory, is located about 19 miles SSE of Punta Pacasmayo. The coast between is low, with sandy beaches backed by cliffs. Punta Arcana, 7 miles SSE of Punta Pacasmayo, with a village on its N side, is low and fronted for about 0.5 mile by rocks on which the sea breaks. Cerro Puemape, 259m high with sharp peaks and steep sides, is a prominent landmark rising 1 mile NE of Punta Arcana. Cerro Malabrigo, 248m high and marked by a cairn, rises 1 mile ESE of Punta Malabrigo and appears as an island from seaward. A rock, awash, can be found 0.2 mile N of Punta Malabrigo.

Puerto Malabrigo (Puerto Chicama) (7°42'S., 79°27'W.) is a privately-owned small port occupying a bight that recedes 2 miles E on the N side of Punta Malabrigo. Cargo, mainly fishmeal, is lightered for export. A radio mast is conspicuous along the coast in position 7°41'42.6"S, 79°25'56.9"W.

Depths decrease gradually from the 10m curve, about 2 miles off the town. Roca Reindeer and Roca Garcia, with depths of 3.9m and 2.1m, respectively, lie about 0.8 mile and 0.2 mile WNW of the pier head in port. An area of shellfish cultivation extends up to about 0.5 mile NE of Punta Malabrigo. A 4.5m rocky patch lies close ESE of Roca Reindeer, also a 6.5m rocky patch, lies 0.8 mile NNW of the pier head.

Berths at an 823m long pier are confined to the N side, which can be used only by lighters, due to the heavy swell and N current, which make the S side unsafe.

Pilotage is not needed and pilots may not be available.

Submarine pipelines lying N of the pier connect mooring dolphins, used by fishing craft, to the fish processing plants ashore.

Anchorage.—A commercial and waiting area, shown on the chart, lies in a depth of 10m about 1.5 miles NW of the pier head. A quarantine and dangerous cargo area, shown on the chart, lies about 2 miles W of the pier head, in a depth of 11m. A depth of 7.6m lies close N of the commercial anchorage area.

Caution.—At night, vessels should not pass inshore of Roca Reindeer, as lighters, without lights, are moored in the vicinity.

Fresh breezes occur in port from noon to sunset and are more prevalent during June, July, and August. Strong squalls and swells accompany the winds.

Numerous wrecks lie in the approaches to Puerto Malabrigo and adjacent to the entrance channel. They may best be seen on chart. Mariners are urged to use caution.

3.19 Islas Macabi (7°49'S., 79°29'W.), lying 5 miles SSW of Punta Malabrigo, are two islets separated by a boat passage spanned by a bridge. The islets, which appear as one from a distance, are marked by a light. The N islet is somewhat higher than the other at 31m. The islet on the S side of the passage has a rounded summit. A lighthouse is also situated on this islet. Both islets are covered by guano, thereby giving them a distinctive yellowish color.

Anchorage can be taken, in depths of 16.5 to 27.4m, sand, off the E side of the N islet. Vessels should navigate with extreme caution near Islas Macabi, at night or in poor visibility, due to the many small craft normally operating in the vicinity.

Punta Huanchaco (8°05'S., 79°06'W.) lies about 30 miles SE of Punta Malabrigo. The coast between is indented by many, unimportant small bights. As far as the Rio Chicama, 16 miles SE of Punta Malabrigo, the coast is low and sandy. The river valley is verdant and conspicuous in contrast to the arid land on either side. Village lights in the valley, visible from offshore, include a lighted sugar mill E of the river mouth. Three conical sandhills, in the form of a triangle, lie 1 mile S of the mouth of the river.

From the Rio Chicama to Huanchaco, the coast is cliffy and interspersed by sandy beaches. Surf, breaking heavily on this coast, can be heard well offshore. Cerro Campana is 993m high, with three peaks, and conical Cerro Huanchaco are prominent peaks rising 5 and 6 miles inland.

Punta Huanchaco is fronted by dangerous rocks and shoals

on which the sea breaks. A dangerous rock is reported to lie about 7.5 miles SW of the point. Another rock can be found 2 miles SSE of the point.

Huanchaco, a former small port which is now a resort, is situated on the N side of the point. No port activities are being conducted. The dock, which is 110m long and made of iron, is not being used.

An aeronautical radiobeacon is situated close SE of the point.

Morro Guanape, a very high and prominent hill, stands about 25 miles SSE of Punta Huanchaco. The coast between consists of sandy beaches, backed by low sandhills and cliffs. Heavy surf pounds this coast. Ranges of peaked mountains, about 7 to 9 miles inland, back the coast between Morro Guanape and the port of Salaverry 13 miles NNW. Trujillo, a city and provincial capital, is situated SE of Huanchaco and 1.5 miles inland. Because of its higher altitude, the city lights make a good landmark. Morro Guanape, rising within a low point, appears as an island when seen from S. Depths of 14.8m, 16.4m, and 10.6m lie 0.8 mile SW, 4 miles NW, and about 5 miles N, respectively, of Morro Guanape.

Salaverry (8°14'S., 78°59'W.)

World Port Index No. 15050

3.20 Salaverry, a town and rail terminal, is the shipping port for Trujillo and the surrounding sugar producing area including a mining complex 75 miles inland. The port consists of a basin protected by a main breakwater and an offshore tanker berth close N of the entrance. It is reported that vessels up to 25,000 dwt have been accommodated within the port.

Port of Salaverry Home Page
http://www.enapu.com.pe

Winds—Weather.—The prevailing winds are SW. Mists and showers occur from April to November, and there are light seasonal rains from December to March. Heavy swells, which may occur from May to October, can interrupt cargo operations for vessels anchored outside the breakwater. These swells may be accompanied by high seas which usually continue for 3 days, on an average of about 3 days a month, and operations are difficult for another 6 days. May and June are reported to be the worst months for swells. During January through March, a thick fog often occurs in the early morning, but usually it clears by noon. However, the fog may last for several days.

Tides—Currents.—Tides at Salaverry are semi-diurnal, with a mean spring range of 0.8m and a mean neap range of 0.5m. Currents set NE but within the harbor currents tend to set to the S with appreciable value, causing problems for vessels at anchor, or alongside the piers.

Depths—Limitations.—A breakwater, which forms and shelters the harbor, extends about 0.7 mile NW, where an elbow leads SW for 128m. A light is shown at the elbow. In spite of the breakwater, the harbor is exposed to sea and swell, even alongside the piers, and silting throughout the harbor is a constant problem that requires periodic dredging to maintain depths. A bank of shingle fringes the breakwater, extending 0.2 mile N of its head. Shoaling was reported along the inner side of the seaward end of the breakwater. Three breakwaters, extending SW from the E shore, offer some protection from the N and are designed to reduce siltation in the harbor basin. Another breakwater extends SW from the seaward face of the main breakwater near its root.

Salaverry—Berth Information			
Berth	**Length**	**Depth**	**Maximum Vessel Size**
Salaverry Port Terminal			
No. 1A	225m	9.7m	25,000 dwt
No. 1B	225m	9.7m	25,000 dwt
No. 2A	230m	9.7m	25,000 dwt
No. 2B	230m	9.4m	25,000 dwt
Salaverry Multipurpose Port Terminal			
CBM	—	9.75m	20,000 dwt
Anchorage Area	—	9.1m	LPG

Depths in the approach channel, which is buoyed and marked by leading lights, and the roadstead are reportedly maintained at a depth of 9m, but siltation is rapid and heavy. An alignment of 101° indicates the access channel to the port and the access to Pier No. 1 and Pier No. 2. Vessels are advised to consult the local authorities for the latest information on depths in the harbor and at berth before attempting to berth here.

It was reported that a heavy swell frequently enters the harbor, forcing vessels working cargo to anchor outside. Breakers are charted off the harbor's NE, E, and SW sides, but the position of the surf line depends on the weather. With much swell, it extends a little beyond the 5.5m edge of the coastal bank.

There are two piers; No. 1 is 225m long and 25m wide, while No. 2 is 230m long and 30m wide. Four berths are available. Berth 1A and Berth 1B have a depth of 8.8m; Berth 2A and Berth 2B a depth of 8.5m. There is a pipeline alongside both sides of Pier 1 to allow tankers to load molasses.

An offshore tanker berth, consisting of four mooring buoys, is situated in depths of about 8.5m, sand, 0.5 mile N of the main breakwater head. Tankers with maximum length of 182m and a draft of 7.6m can be accommodated. A submarine pipeline extends NE from the berth to the shore and handles inward oil products.

An IMO-adopted Traffic Separation Scheme lies in the approach to Salaverry and can best be seen on the chart.

Aspect.—Morro Carretas rises abruptly from the sea on the S side of the port and is an excellent landmark. The hill stands out well and appears higher than its actual elevation, especially when the mountains inland are obscured by mist. Cerro Chiputur (Garita), standing about 4 miles NE of Morro Carretas, is prominent. A light is shown from the summit of Morro Carretas.

By day, the buildings and church towers of Trujillo, 8 miles

Salaverry—Morro Carretas Light

NNW, are prominent.

Range lights mark the approach to the port.

Pilotage.—Pilotage is compulsory and is available anytime day or night. Pilots will board in position 8°13'10"S, 79°00'08"W.

Regulations.—The vessel's initial ETA message should be sent 7 days prior arrival, including last port of call and any dangerous cargo being carried. ETA confirmation should be sent 72 hours prior to arrival and should also include notification of any dangerous cargo on board. In addition to the information required above, all ETA messages should also include the expected vessel draft on arrival, number of crew, and confirmation of any passengers on board, if any.

Contact Information.—The pilots and port can be contacted 24 hours, as listed in the table titled **Salaverry—Contact Information**.

Salaverry—Contact Information	
Pilots (Tramarsa)	
VHF	VHF channel 67
Telephone	51-44-437390
Facsimile	51-44-437387
Web site	http://www.tramarsa.com.pe
Pilots (Trimser)	
VHF	VHF channel 67
Telephone	51-1-4296801

Salaverry—Contact Information	
Web site	http://www.trimser.com.pe
Harbormaster	
VHF	VHF channel 16
Telephone	51-44-437339
Facsimile	51-44-437359
E-mail	tpsalaverry@enapu.com.pe

Anchorage.—The anchorages listed in the table titled **Salaverry—Anchorages** are subject to heavy rollers, especially during May and June.

Salaverry—Anchorages		
Anchor-age	**Distance and Bearing from Breakwater Head**	**Vessel Type**
No. 1	1.25 miles N	Tankers
No. 2	0.9 mile W	General cargo
No. 3	1 mile WSW	Dangerous cargo
No. 4	0.4 mile W	Dredges, military and scientific research
No. 5	0.5 mile E	Fishing
No. 6	0.5 mile ENE	Small craft
No. 7	0.8 mile WNW	Pilot waiting area

3.21 Islas de Guanape (8°33'S., 78°57'W.) consists of two small islands about 1.3 miles apart, with adjacent islets and rocks lying about 6 miles SW of Morro Guanape. Isla del Sur (Isla Guanape Sur), the S and highest island, exhibits a light. Isla del Norte (Isla Guanape Norte) is larger but lower and more level. Los Leones Marinos, above and below-water rocks, lie up to 0.8 mile NW of Isla del Norte. Two islets and an above-water rock lie 0.2 and 0.5 mile S and SW, respectively, of Isla del Norte. Islas de Guanape appear whitish in color, and during the season of fog (June-November), allowance must be made for the offshore current. The channel between Islas de Guanape and the mainland is deep and free of dangers in mid-channel.

Anchorage can be taken, in 21.9 to 36.6m, close off the N side of Isla del Sur. The best anchorage off Isla del Norte is about 0.3 mile NE of the NE extremity, in about 20.1m, sand and mud. Anchorage can also be taken close off the E side of that island, in 14.6 to 21.9m.

Punta Chao (8°46'S., 78°44'W.) lies about 21.5 miles SE of Morro Guanape. The coast between recedes slightly, is low and sandy, but rises to high ground inland. Cerro Chao, 491m high, is a prominent high hill standing 12.5 miles N of Punta Chao and about 2.5 miles inland. Morro Chao, 348m high, rises about 1.5 miles E of Punta Chao and is conspicuous.

Isla Chao, about 2 miles WSW of Punta Chao, is the largest and S of a group of guano-covered islets and rocks. A group of rocks, on which the sea always breaks, lies 1.5 miles NW of the N islet of the Chao group. The channel between these dangers and the mainland is deep and clear, but not recommended.

Caution.—A dangerous wreck, best seen on chart, lies 6 miles N of Punta Chao close to shore.

A depth of 3.2m was reported (1993) about 2 miles S of Isla Chao. Depths ranging from 8.2 to 25m have been reported throughout the bay N of the Chao group.

3.22 Punta Santa (9°00'S., 78°40'W.) lies about 15 miles SSE of Punta Chao. The coast between is low and sandy, backed by high hills inland.

Several dangers lie up to 5 miles offshore. Roca Rompiente, a dangerous rock over which the sea breaks, lies about 5 miles SSE of Punta Chao and 1.7 miles offshore. Isla de la Viuda, guano-covered and rugged, is located about 3 miles SE of Roca Rompiente.

Islas el Corcovado, with prominent cliffs on the W side and gentle slopes on the E, is white with guano and lies about 4 miles NW of Punta Santa. The sea breaks heavily on a dangerous rock on its N side. Rocks are reported 0.5 mile N of Islas el Corcovado. A dangerous wreck lies 5 miles W of Punta Santa.

The Rio Santa is one of the largest and most rapid rivers on the coast of Peru. It flows through a broad valley bounded on each side by peaked hills and empties into the sea about 1.5 miles NNE of Punta Santa. The river delta is low and shallow.

Punta Santa is a small rocky peninsula rising to about 141m. A rock, 18m high, lies close off it. The peninsula appears detached from offshore and resembles an island due to the low valley behind it.

Bahia Santa, on the NE side of the peninsula, is protected from the S and affords anchorage, in a depth of 9.1m, sand, about 0.5 mile NNE of the NW end of Punta Santa. There is a landing pier on the NE side of Punta Santa.

Isla del Santa (9°01.8'S., 78°40.5'W.) lies centered about 2.3 miles SSW of Punta Santa. The three steep and cliffy islets, lying close together, are separated by a cut 18m wide. A group of high steep-to rocks lies 0.5 to 0.7 mile W of the S end of the S islet. Anchorage can be taken, in a depth of 14.6m, mud, 0.5 mile E of Isla del Santa.

Caution.—A wreck, not dangerous to surface navigation, is located SW of Isla del Santa in position 9°02'39"S, 78°40'42"W.

Islas Mesias, located approximately 0.6 mile WSW of the southernmost islet of Isla del Santa, is comprised of two more steep and cliffy islets.

3.23 Caleta Coishco (9°01'S., 78°38'W.) extends 2.5 miles SE from Punta Santa. Isla Monaque, high and rocky, lies off the NE shore of the bay about 1 mile SE of Punta Santa. The channel between Isla Monaque and the mainland is used only by fishing craft. The channel between Isla Monaque and Isla del Santa is 1.5 miles wide and 13 to 16m deep and is frequently used by vessels headed to the port of Chimbote.

There is a fishing village at the head of the bay protected by a small breakwater. There are four fish flour canning plants in this bay, one of which is found on a rocky outcropping at the W point. It has an old, small, unused pier that is 35m long and 17m wide and another pier that is 96m long and 6.7m wide,

and can supply water and fuel to smaller vessels.

There are seven submarine pipelines in the beach area of Coishco Bay with barges at their terminals. Three of the pipelines extend 300 to 400m from the beach in an E-SW direction and the other four extend 400 to 600m from the beach in an E-W direction.

Anchorage can be taken in the SE part of the bay and 0.2 mile NW of a bluff where the cliffs end. Depths are about 10m and there is very little swell, but a pinnacle rock, which dries, lies close SW of the anchorage.

There is a wreck 60m from the tip of the pier belonging to the Hayduk, SA Corporation, with visible and dangerous pilings.

Punta Chimbote lies 5.5 miles SSE of Punta Santa. A light is shown from the point. The coast, extending from Caleta Coishco to the point, is backed by Cerros de Chimbote, a range of mountains of which dark and conical Cerro Chimbote, 591m high, near the S end, is the highest.

Caution.—Several reported shoal depths, which are shown on the chart, lie about 74 miles W of Punta Chimbote; the least depth reported was 25.5m.

A submarine exercise area lies about 100 miles WSW of Punta Chimbote.

Puerto de Chimbote (9°05'S., 78°37'W.)

World Port Index No. 15030

3.24 The port and town of Puerto de Chimbote occupies the N part of Bahia de Chimbote (Bahia Ferrol) which recedes about 3 miles E between Punta Chimbote, the NW entrance point of the bay, and a point about 5.5 miles SSE. Several islands lying in the bay entrance shelter the port, which has alongside berths and anchorages with lightering facilities. Chimbote is the most active fishing port on the Peruvian coast. The sea in this area of the coast is very rich in fish, and as a result, many fishing companies have established export facilities in the port.

Puerto de Chimbote Home Page
http://www.enapu.com.pe

Winds—Weather.—Bahia de Chimbote is well-protected from ocean swell, but the N portion of the bay is subject to a daily cycle which continues year-round, almost without interruption. Heavy winds sweep off the surrounding hills generating a sea which may force a vessel to leave its berth. Generally, this occurs after mid-day, and lasts until sunset when the wind decreases or drops. By contrast, the S portion of the bay offers more shelter from S winds, and the sea generated by it.

Tides—Currents.—Tides here are semi-diurnal, with a mean spring range of 0.8m and a mean neap range of 0.3m.

Currents within the bay are of little significance, but between Paso del Norte and the piers, the current reaches rates of 0.6 to 1.2 knots at the turn of the tide.

Depths—Limitations.—The harbor is entered via three channels. Paso del Norte, the N channel, is about 100m wide, with a least depth of 17.5m; it is used by ships with drafts up to 9.1m. An unlit range marks the channel.There is a slight N set across the entrance channel, with a considerable swell at times, which makes steering difficult. It may be necessary, with heavy swells, to enter via the main channel and proceed to an anchorage. Depths decrease within the N entrance to about 8.5m off Pier 1.

Paso del Medio, the middle channel and main entrance, has depths over 18.5m, shoaling gradually approaching the shores of the bay. East of Isla Blanca there are depths of 6 to 9m in the approaches to the piers. Vessels, with a maximum draft of 7.6m at low water, transit Paso del Medio bound for the piers or an anchorage within the bay. Vessels loading from lighters normally use this entrance.

Puerto de Chimbote—Berth Information

Berth	Length	Depth	Maximum Vessel LOA	Remarks
Port of Chimbote ENAPU Terminal				
No. 3	265m	9.7m	230m	General cargo.
No. 1A	185m	8.5m	185m	General cargo.
No. 1B	185m	8.5m	185m	General cargo.
No. 2A	54m	5.4m	—	Fishing vessels and tugs.
No. 2B	54m	5.4m	—	Fishing vessels and tugs.
BPO Tanks Terminal				
MBM BPO	—	9.8m	210m	Fish and vegetable oil.
Colpex Chimbote Terminal				
MBM Colpex	—	10.2m	—	Fish and vegetable oil.
Petroperu Chimbote Terminal				
Tanker	—	8.0m	183m	Chemicals and LPG.

Channels between Islas de Ferrol are recommended for the use of vessels with local knowledge and small craft.

There are three concrete piers available where vessels have the option to either berth alongside or to anchor, in depths of 9.4 to 12.8m, and be unloaded by lighters. The port handles general cargo, fish meal, iron ore, and coke/coal. The port also has 14 piers dedicated exclusively to the extensive local fishing industry.

General Cargo Pier No. 1 is 185m long and 16m wide, with a depth of 8.5m at the end. the pier has two berths, Berth 1A and Berth 1B which have depths of 8.5m to 9.4m at HW and can accommodate vessels as large as 20,000 dwt and 185m in length.

Pier No. 2, a small appendage off Pier No. 1, is 54m long and 18m wide. The pier has depths of 5.4m alongside and is used by fishing vessels and lighters and tugs.

Pier No. 3, also called the mineral pier, is 265m long. The pier has one berth available on the W side; it is 265m long with depths of 8.8m to 9.7m at HW and can accommodate vessels as large as 230m in length with a maximum draft of 9.6m. The pier is owned by the steel mill but when not being used by the mill it can be used for loading fishmeal but this will have to be arranged through the agents so that the pier can be cleaned prior to loading the fishmeal.

Several wrecks lie in the vicinity of the cargo piers and are shown on the chart.

A tanker berth, consisting of mooring buoys, is situated off the E side of the bay. Submarine pipelines connect the berth, which is in depths of 8m, to the shore. Tankers up to 25,000 dwt and 183m in length can be handled. Numerous other submerged pipelines lie S of the town and can be best seen on the chart. These pipelines vary in length from 270 to 1,400m, some with mooring buoys at their terminal and others with barges.

Three other submerged pipelines, from 300 to 380m long and best seen on the chart, lie in the N half of Bahia De Chimbote and have one barge at each terminal.

The port has a new floating drydock, length 195m, and can accommodate vessels up to 40,000 dwt.

The shores of Bahia de Chimbote are fronted by shoals with depths of less than 6m, which extend up to 0.4 mile offshore for about 1 mile E of the mineral pier.

Chimbote from shore

Aspect.—Isla Blanca, with a high, steep ridge extending the length of the island, lies with its N end about 0.3 mile S of Punta Chimbote; the W side of the island is colored white.

Puerto de Chimbote Berths

Arrecife Blanco, lying up to 0.5 mile W of Isla Blanca, consists of a mass of visible shoals over which the sea breaks; the area has a least charted depth of 5.2m. Two dangerous wrecks are located on the N and W sides of the shoal.

Islote Roca Blanca, the N and higher of two steep, white rocks, lies on the S side of the N entrance channel between Punta Chimbote and Isla Blanca, and is marked by a light on the N side. Roca Negra, above-water, lies 183m ENE of Punta Chimbote and N of the entrance channel; a rock, with a depth of 3m, lies close SE of Roca Negra. Islote Azimut, high and rocky, lies off the NE end of Isla Blanca.

Islas de Ferrol (9°09'S., 78°37'W.) are steep-sided, appear white, and form a chain of islets and rocks lying up to 1.8 miles NNW of the S entrance point of the bay. Isla Ferrol del Norte, the outermost islet, lies about 1.5 miles S of Isla Blanca, on the S side of the main entrance channel. The islands of the group are quite high; whereas, the shores of the bay they front are backed by a low, bare, sandy plain with mountains farther inland. The Cerro Peninsula, about 1.3 miles SE of the SE entrance point, is the highest summit of the hilly peninsula that separates Bahia de Chimbote and Bahia de Samanco.

A wreck, with a depth of 9.2m, lies in the center of the main entrance channel, about 0.9 mile SE of the S extremity of Isla Blanca.

Dangerous wrecks are charted about 1.3 miles ESE and 1 mile SE of the drydock.

Several tanks, hotels, and radio and television masts, which stand on the shores of the bay, are conspicuous. A light is shown on the N side of Islote Roca Blanca. A light is shown from a tower, 7m high, standing near the S end of Isla Blanca. A light is shown from the N extremity of Isla Ferrol del Norte.

Paso del Norte is marked by an unlit range

Pilotage.—Pilotage is compulsory for vessels over 500 gt. Pilots should be ordered at least 4 hours prior to arrival. The pi-

Isla Ferrol del Norte—N. Ferrol Island Light

lot boards in position 9°07'42"S, 78°36'48"W.

Regulations.—In the approach to Bahia de Chimbote in the passage through Paso del Medio, an IMO-approved traffic separation scheme is established; Rule 10 of COLREGS 72 applies.

Vessels should radio their ETA to the Captain of the Port and their agents 24 hours in advance of arrival. The ETA message must contain the following information:

1. Date of arrival.
2. Last port of call.
3. Flag (nationality) of vessel.
4. Gross registered tons and nrt.
5. Length overall and beam.
6. Operational details.

Contact Information.—The pilots and port can be contacted as listed in the table titled **Puerto deChimbote—Contact Information**.

Puerto de Chimbote—Contact Information	
Pilots (Tramarsa)	
VHF	VHF channels 12 and 16 (24 hours)
Telephone	51-43-328035
Facsimile	51-43-325920
E-mail	operacioneschimbote@tramarsa.com.pe
Web site	http://www.tramarsa.com.pe
Harbormaster	
VHF	VHF channel 16
Telephone	51-43-324427
	51-43-323831
	51-43-324239
Facsimile	51-43-321199
Port Authorities (ENAPU)	
VHF	VHF channel 16
Telephone	51-1-465-4280
Facsimile	51-1-429-1870
E-mail	tppaita@enapu.com.pe

Anchorage.—Fourteen designated anchorages, best seen on the chart, are located in the vicinity of Puerto de Chimbote and Bahia Ferrol. Their designated uses are, as follows:

1. Anchorage Area No.1—Small Craft/Fishing vessels. A wreck with its hull exposed lies to the E of the anchorage area.
2. Anchorage Area No. 2—Pleasure craft.
3. Anchorage Area No. 3—Fishing vessels. Three dangerous wrecks lie within 0.2 mile to the W and NE of the anchorage area.
4. Anchorage Area No. 4—Fishing vessels. A dangerous wreck lies NE of the anchorage area.
5. Anchorage Area No. 5—Fishing vessels. Several barges lie N and NE; several submarine pipelines lie NE of the anchorage area.
6. Anchorage Area No. 6—Fishing vessels. Numerous submarine pipelines and mooring buoys surround the anchorage area.
7. Anchorage Area No. 7—Commercial vessels.
8. Anchorage Area No. 8—Vessels with hazardous cargo.
9. Anchorage Area No. 9—Vessels under repair.
10. Anchorage Area No. 10—Quarantined vessels.
11. Anchorage Area No. 11—Lightening operations vessels.
12. Anchorage Area No. 12—Immobilized and unidentified vessels.
13. Anchorage Area No. 13—Inoperative vessels.
14. Anchorage Area No. 14—Peruvian Navy.

There is good holding ground anywhere in the bay, but it may be said that the nearer the vessel can be to Isla Blanca, the better; here the bottom is softer, and there is more shelter in the event of a S swell.

Directions.—Ocean-going vessels should plan to utilize Paso del Medio, the central and main channel, which provides the primary access from sea to the port of Chimbote.

A Traffic Separation Scheme (TSS), which can best be seen on the chart, is established in the approaches to Bahia Ferrol. From a position WSW of Punta Chimbote (9°04.8'S., 78°37.9'W.), the track leads through the eastbound traffic lane of the TSS, passing S of a lighted super buoy (9°07.5'S., 78°39.5'W.) and N of Ferrol del Norte Light (9°08.4'S., 78°37.5'W.). The track continues NE for approximately 0.7 miles to the pilot boarding position.

Caution.—A dangerous wreck lies in position 9°05.6'S, 78°36.4'W. Another, with a depth of 9.2 meters, lies 0.3 mile E of the pilot boarding station in position 9°07.6'S, 78°36.5'W.

3.25 Bahia de Samanco (9°14'S., 78°32'W.) is separated from Bahia de Chimbote by a T-shaped peninsula that projects from the coast. The outer part of the peninsular is steep, hilly, and rock-fringed; but the inner part is a low sandy isthmus. The highest summit is the Cerro Peninsula, previously described in paragraph 3.24. Isla Lobo (Isla Redonda), lies close off the S end of the peninsular and forms the N entrance point of the bay. Punta Filomena, about 2.3 miles SE of Isla Lobo, is the S

entrance point. It is a steep rock-fringed bluff with above and below-water rocks lying up to 0.2 mile NW of it. The bay recedes about 5 miles NNE from the entrance. Within the bay the depths gradually decrease to 10m and less about 1 mile offshore. The only known dangers in the bay are in the vicinity of Isla el Grillo (Isla Pajaros), lying 0.8 mile off the NE bluff of the bay, and off which are sunken rocks extending about 0.2 mile, on which the sea breaks; another submerged rock lies 1.2 miles S of the island. A dangerous submerged rock lies 1.3 miles NE of Isla Lobo. Landmarks in identifying the bay from the offing include Monte Campana, a bell-shaped mountain rising 1.3 miles ENE of Punta Samanco. Cerro Samanco, conical and high, is conspicuous about 2.5 miles NE of Monte Campana.

Caution.—Two marine farms are established in Bahia de Samanco. The largest one is located in the NW part of the bay within an area bounded by lines joining the following positions:

a. 9°11'34"S, 78°33'56"W. (coast)
b. 9°11'52"S, 78°31'58"W.
c. 9°12'22"S, 78°31'06"W.
d. 9°13'43"S, 78°31'06"W.
e. 9°13'43"S, 78°33'12"W. (coast)

The other marine farm, located close off Punta Filomena, is bounded by lines joining the following positions:

a. 9°16'01"S, 78°31'31"W.
b. 9°16'01"S, 78°31'06"W.
c. 9°15'28"S, 78°30'38"W.
d. 9°15'12"S, 78°30'38"W.
e. 9°15'12"S, 78°31'31"W.

3.26 Nuevo Samanco (9°14'S., 78°30'W.) is on the E shore of the bay, about 4 miles NE of Punta Filomena. Formerly a lighterage port for sugar, and one of the best open ports on the coast despite a constant swell, it now lies idle, but there is the intention of re-opening it as an industrial fishing port to ease the situation at Chimbote, where growth of the fishing business has been erratic and uncontrolled.

The old pier, 369m long, ends in a depth of 8.5m, though it is subject to silting.

There is a prominent chimney near the root of the pier. At Samanco, situated 1.8 miles ENE of Punta Samanco, a pier extends 350m offshore with depths of about 3 to 4m at its head. There are several mooring buoys near the pier. At Samanco, there are fish processing plants, oil tanks, a water tower, and a prominent chimney.

Anchorage can be taken, in a depth of 13m, sand, about 0.5 mile W of the pier head at Nuevo Samanco. There is an anchorage 0.5 mile off Caleta Guambacho, on the SE side of the bay, in depths of 7.3 to 11m, mud.

The coast between Punta Samanco and Bahia de Casma, about 12 miles SSE, is bold and rocky. Bahia de los Chinos (9°21'S., 78°26'W.), midway between, is unexamined. Isla Los Chimu (Isla Viuda) lies off the N entrance point and Isla Tortuga, shaped like a turtle, lies off the S one. Cerro Tortuga, close E of the S entrance point, rises to an elevation of 410m and is prominent. A rock, with a depth of 7.5m, lies midway between Isla Los Chimus and Isla Tortuga. Caleta Los Chimus, with a sandy beach on which the sea always breaks, is entered close S of Punta Samanco.

Bahia de Casma (9°27'S., 78°23'W.) is entered between Cachola Sur and Cachola Norte, about 1.8 miles NW. The bay is identified by a sandy beach at the head of the bay, and backed by sand hills which contrast with the dark rocks forming the headlands at the bay entrance. Above and below-water rocks lie off the entrance points of the bay. The former small port within the bay is closed. A light is shown close S of the S entrance point.

Anchorage, in depths of 7 to 10m, sand, may be taken about 0.1 mile off the SE shore of the bay, but it is advisable to moor as close as possible in the lee of the high land, due to squalls which blow from midday to sunset.

Caleta Colina Redonda (9°38'S., 78°22'W.) lies about 11 miles SSE of Bahia de Casma. The coast between is rocky and is backed by a range of steep hills that run parallel to it.

Cerro Mongon, a high sharp peak, rises to an elevation of 1,121m about 4 miles E of Punta Colina Redonda; from the S, this prominent feature appears as a long hill with a peak at each end. Morro Calvario is a steep bluff at the N end of the above range and forms the S headland of Bahia de Casma. Several dangerous rocks and islets lie off the coast between Bahia de Casma and Caleta Colina Redonda and may be seen on the chart.

Punta Cabeza de Lagarto (10°07'S., 78°11'W.) lies about 31 miles SSE of Punta Colina Redonda. Groups of small islets and above-water rocks are located at several places along the coast and extend up to 1 mile seaward from the shore. The point ends in a steep cliff, 88m high. A light is shown from a tower, 18m high with a wind generator on top, standing on the point. A conspicuous radio mast stands along the coast in position 10°06'14"S, 78°10'47"W.

Caution.—A dangerous wreck lies WSW of the point.

3.27 Punta Lobitos (Bahia de Huarmey) (10°06'S., 78°10'W.) (World Port Index No. 15000) is a small lighterage port used for the export of copper and zinc concentrates. The port is located in Bahia de Huarmey. This very small bay is entered between Punta Lobitos, 0.5 mile NNE of Punta Cabeza de Lagarto, and Punta Boqueron, about 2 miles NNE. Punta Boqueron is sharp-peaked with a white patch on it. The S shore of the bay is fronted by rocks. The E and SE shores are fronted by a 5.5m shorebank up to 0.2 mile off. Islote Corcovado, rocky, high, and sheer, lies in the middle of the bay and is radar-prominent. Islote Manache, a low white islet located close

Punta Lobitos—Huarmey Pier

off the NW side of Punta Boqueron, is also radar-prominent.

Punta Lobitos Home Page
http://www.antamina.com

Tides—Currents.—Tidal range is 0.3m during neaps and 0.7m during springs.

Depths—Limitations.—Vessels moor to buoys close to the pier head of Antamina Pier, a T-shaped jetty, and load from a conveyor system that uses a fixed arm, which means the vessel has to shift position for each hold being loaded. Antamina Pier is 75m in length (200.0m LOA), with depths of 20m alongside, beam of 32.2m and 60,000 dwt. There is another pier, called Huarmey Pier that is damaged and not in use.

A small pier, at which lighters are loaded with bagged fishmeal, is situated about 0.8 mile ENE of Punta Lobitos. A brightly-lighted fishmeal factory is situated close to the pier and a prominent church is situated in the town.

Pilotage.—Pilots are not available for Bahia de Huarmey but are compulsory for Punta Lobitos. Pilots will board 1 mile N of Antamina Pier.

Regulations.—The vessel's initial ETA message should be sent 7 days prior arrival, including last port of call and any dangerous cargo being carried. The ETA should be reconfirmed 72 hours and 24 hours prior to arrival and should also include notification of any dangerous cargo on board. In addition to the information required above, all ETA messages should also include the expected vessel draft on arrival, number of crew, and confirmation of any passengers on board, if any.

Punta Lobitos—Huarmey Pier

Contact Information.—See table titled **Punta Lobitos—Contact Information**:

Punta Lobitos—Anchorages		
Anchorage	**Center Position**	**Vessel Type**
No. 1	10°05'12"S, 78°10'48"W	Merchant vessels
No. 2	10°05'42"S, 78°11'24"W	Pilot waiting area
No. 3	10°04'24"S, 78°10'48"W	Quarantine
No. 4	10°05'24"S, 78°10'30"W	Fishing vessels
No. 5	10°05'48"S, 78°10'54"W	Tugs

Punta Lobitos—Contact Information	
Pilots (Tramarsa)	
VHF	VHF channel 16

Punta Lobitos—Contact Information	
Telephone	51-43-400636
	51-43-400473
Facsimile	51-43-400636
	51-43-400473
E-mail	ascorp@antamina.com

Anchorage.—Five designated anchorages are detailed in the table titled **Punta Lobitos—Anchorages**.

3.28 The coast between Punta Cabeza de Lagarto and Promontorio Salinas, about 75 miles SSE, is fairly regular, with many small coves and fringing rocks and islets lying within 1 mile of the shore. Punta Las Zorras (10°17'S., 78°05'W.), steep and dark with white patches, is radar-prominent.

Punta Colorado Grande (10°30'S., 77°57'W.) is a high, salient feature fringed with above-water rocks. Cerro Baco, 1477m high, stands about 8 miles NE of the point and is prominent.

Bahia Bermejo (10°33'S., 77°55'W.), protected on the S by Punta Bermejo, a peninsula connected to the mainland by a low isthmus, is formed by Cerro Mansueto at its N entrance. In the middle of the S shore there are red cliffs divided by a conspicuous white mound. There are depths of less than 9.1m in the bay. Anchorage, exposed to the W swell, can be taken in 10.1m, sand, with Punta Bermejo bearing 190°, 0.5 mile distant, and the white mound bearing 129°.

Paramonga (10°40'S., 77°50'W.), a small oil port, is situated about 2.5 miles S of Cerro Horca, a guano-covered, isolated hill. Paramonga can be identified by the two prominent chimneys of a power station. A submarine oil pipeline, about 1,219m long, is marked at its seaward end by three mooring buoys lying 0.8 mile offshore. Vessels moor at the buoys, with both anchors down and lines to buoys on each quarter and on the port bow. Depths of 8m exist at the berth and vessels of up to 23,000 dwt, with lengths of 198m, can be handled. Vessels must first proceed to Puerto Supe in order to obtain clearance. It is reported that a mooring pilot boards, but local knowledge is required. Paramonga may be contacted on VHF channel 16. The depth at the anchorage is 7.9m.

Directions.—The alignment (085°) of the power station chimneys and the oil storage tanks leads to a position where an alteration of course to 125° brings the vessel into the berth, with the head buoy on the port bow.

The **Rio Barranca**, about 5 miles SE of Paramonga, is the source of a spit which extends several miles offshore and should be given a wide berth. Punta Barranca (10°48'S., 77°45'W.) is formed of high cliffs, rock-fringed, and has off-lying rocks marked by breakers lying at least 0.4 mile offshore and 0.8 mile N of the point. The town of Barranca is situated on the cliffs inshore of the rocks. It is reported that a conspicuous, lighted radio mast stands near the town. The coast in the vicinity of Punta Barranca is pounded by heavy surf.

Punta Thomas (10°48'S., 77°45'W.), about 2 miles SSE of Punta Barranca, is a large headland and an excellent landmark. A light is shown from the point. Bahia de Supe is entered between the two points.

3.29 **Puerto Supe** (10°48'S., 77°45'W.) (World Port Index No. 14990) is a former sugar port that now handles the import of fertilizers, chemicals, and fishmeal. The port is located in the SE part of Bahia Supe and is unprotected, thus making it subject to heavy W swells, mainly between June and August.

Puerto Supe Home Page
http://www.enapu.com.pe

Tides—Currents.—The tidal range is 0.8m. Currents are normally insignificant except during rough seas.

Depths—Limitations.—There is one pier, with an alongside depth of 6.8m, divided into three sections with lengths of 145m, 110m, and 71m. Several underwater oil pipelines extend offshore from a position onshore about 0.2 mile NE of the pier. An offshore tanker terminal with CBM mooring located close N of the pier can accommodate vessels with drafts of up to14.6m.

Aspect.—A prominent radio mast stands about 1.5 miles N of the pier.

Pilotage.—Pilotage is compulsory. The pilot boarding area is approximately 1 mile W of the port in position 10°47'48"S, 77°45'42"W.

Regulations.—The vessel's initial ETA message should be sent 7 days prior arrival, including last port of call and any dangerous cargo being carried. The ETA should be reconfirmed 72 hours and 24 hours prior to arrival and should also include notification of any dangerous cargo on board. In addition to the information required above, all ETA messages should also include the expected vessel draft on arrival, number of crew, and confirmation of any passengers on board, if any.

Contact Information.—The pilots and port can be contacted as listed in the table titled **Puerto Suape—Contact Information.**

Puerto Supe—Contact Information	
Pilots (Tramarsa)	
Telephone	51-1-2365470
Facsimile	51-1-2365371
Web site	http://www.tramarsa.com.pe
E-mail	operaciones@tramarsa.com.pe
Port Operations	
VHF	VHF channels 12, 13, and 16
Telephone	51-1-2364003
Facsimile	51-1-2364120
E-mail	supe@petroperu.com.pe

Anchorage.—Four specially designated anchorages lie W of Bahia Supe between Punta San Pedro and Punta Thomas, as best seen on the chart. These anchorage areas are numbered 1 through 4, with vessels assigned by type of cargo carried or condition, as follows:

1. General cargo and fishing vessels.
2. Dangerous cargo.

3. Explosives.
4. Quarantine.

All vessels anchored in these designated areas will be exposed to a heavy swell.

Caution.—Depths alongside the pier are only approximate and the local port authority should be consulted for confirmation of actual depth for time of arrival.

3.30 The coast between Punta Thomas and Bahia de Huacho trends SSE past Punta Atahuaca (10°54'S., 77°42'W.), which has two mounds that resemble forts and are white in color on their S sides. The coast itself is sandy and fairly high.

Punta Vegueta (11°01'S., 77°40'W.) lies about 13 miles SSE of Punta Thomas. Isla San Martin (Isla Don Martin), located 0.8 mile WSW of the point, is 80m high, white with guano and prominent from seaward.

There is a fishing village at the head of a cove N of, and within, Punta Vegueta. Small craft in the cove can anchor, in depths of 14.6m.

Puerto de Huacho from shore

Punta Carquin lies about 5 miles SSE of Punta Vegueta. The bay close N of the point is not used by shipping due to constant surf. Islote Carquin, a steep flat-topped islet, lies about 1 mile offshore and opposite a sheer hill that rises close to the coast about 1.5 miles N of the point.

Punta Huacho (11°07'S., 77°37'W.) is a reddish rocky headland, 60m high, lying 7 miles SSE of Punta Vegueta. A light is shown from the point.

Bahia Huacho is entered between Punta Huacho and Punta Carquin. A reef, with rocks above-water, extends 183m N from Punta Huacho. Depths of 16.5m in the bay entrance decrease gradually within the bay. The E shore of the bay is fronted by a narrow, sandy beach backed by cliffs.

3.31 Puerto de Huacho (11°07'S., 77°37'W.) (World Port Index No. 14980) is a lighterage port situated in the SE corner of the bay. The town of Huacho is situated on level terrain atop the cliffs, about 0.8 mile NE of Punta Huacho. Huacho handles general cargo, fish products, copper and minerals.

Puerto de Huacho Home Page
http://www.enapu.com.pe

Depths—Limitations.—The open roadstead is subject to heavy swells, especially during the winter months when sea and swell may close the port temporarily.

Huacho—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
No. 1	122m	4.3m	Animal feeds/ Fish meal
No. 2	70m	10.0m	Animal feeds/ Fish meal
No. 3	60m	—	Animal feeds/ Fish meal
No. 4	60m	—	Animal feeds/ Fish meal

Muelle Southern Peru Copper Corporation (SPCC) is the first pier E of Punta Huacho and has berthing on either side, with depths ranging from 10m to 16m. Close E of Muelle SPCC is a jetty-type pier owned by ENAPU (Empresa Nacional de Puertos del Peru). The ENAPU quay is a concrete platform on steel reinforced piles making up a jetty 360m in length, comprised of three sections, with berths on either side, and depths of 7 to 10m alongside.

There are two offshore CBM-type tanker berths, for 35,000 dwt tankers, with depths of 19.81m and 15.24m.

Aspect.—Lights in town, including brightly lighted fishmeal and fish processing plants, are visible from offshore, as is a radio tower topped by red lights.

Pilotage.—Pilots are not available. An ETA should be sent at least 24 hours in advance.

Contact Information.—See table titled **Puerto de Huacho—Contact Information.**

Puerto de Huacho—Contact Information	
Port Operations	
VHF	VHF channel 16
Telephone	51-232-2091(Administration)
	51-239-5460 (Operations)
E-mail	tphuacho@enapu.com.pe

Anchorage for general cargo vessels can be taken, in depths of 11 to 12.8m, sand, with the pier head bearing 145°. The holding ground is good, but a W and SW swell is troublesome. Quarantine anchorage is located at 1 mile NW and larger vessel anchorage is 0.5 mile NNW of Punta Huacha. These anchorage areas are shown on the chart.

Caution.—A dangerous wreck is situated about 4 miles W of Punta Huacho. Another wreck lies just N of the same point. Both are best seen on the chart.

3.32 Bahia Salinas (11°12'S., 77°36'W.) is entered between Punta Huacho and Punta Bajas (11°14'S., 77°38'W.),

about 6 miles SSW. The shores of the bay consist of sandy beaches, backed by hills. There are two coves on the S shore of the bay. Bahia Grande, the W cove, affords anchorage, in depths of 11 to 12.8m, sand and mud, about 0.2 mile offshore. The best anchorage, sheltered from the swell, is in Bahia Chica, the E cove, in depths of 5.5 to 7.3m, sand, about 0.3 mile from the W entrance point and 2.5 miles ENE of Punta Bajas. Local knowledge is required to use these anchorages.

Promontorio Salinas (11°16'S., 77°37'W.) is about 5 miles wide between Punta Bayas, the NW extremity, and Punta Lachay, the SW extremity of the promontory. Punta Salinas is 1 mile N of Punta Lachay and has a flat-topped islet lying off it. Punta Bayas, from which a light is shown, is low, dark, and has above-water rocks extending 0.5 mile NW. There are submerged rocks lying at least 0.3 mile off Punta Lackay. Cerro Salinas, pyramid-shaped and conspicuous, rises from a sandy plain about 2 miles SE of Punta Bayas. There are two coves between Punta Salinas and Punta Bayas. The S of the two coves affords anchorage for small vessels, in a depth of 14.6m, mud, about 0.3 mile offshore, exposed to surf and swell.

A measured distance of 2 nautical miles has been established on the W coast of Promontorio Salinas. The ends and middle of the distance are each marked by a pair of beacons situated close W and 2 miles S of Punta Bayas light structure. The front beacon of each pair has a white diamond topmark and the rear beacon a white rectangle. The running course is 000°-180°. The run area is surrounded with a restricted area designation.

Roca Misteriosa, with a depth of 5.5m and on which the sea breaks at times, lies about 1 mile offshore and almost midway between Punta Salinas and Punta Bayas.

An aeronautical radiobeacon is situated on Promontorio Salinas, about 4 miles ENE of Punta Lachay.

Caution.—A restricted area, best seen on the chart, is situated off the W shore of Promontorio Salinas. Between Punta Lachay and Punta Bajas, vessels should pass at least 9 miles W of the shore.

3.33 Grupo de Huaura (11°24'S., 77°45'W.), a chain of islets, extends about 14 miles SW from Punta Lachay. Islote Pelado (11°27'S., 77°50'W.), the outermost islet, is rounded, precipitous, and free of guano. A light is shown from the islet. Isla Mazorca, which also shows a light and has a radiobeacon situated at the light tower, lies about 6.5 miles NE of Islote Pelado. The passage between the two islets is free of dangers. Islote Tambillo, the innermost islet, lies about 2.5 miles SW of Punta Lachay. Several islets and rocks above-water lie between this islet and Isla Mazorca. The passage between Islote Tambillo and Punta Lachay is navigable.

3.34 The coast, known as Playa Grande, between Punta Lachay and Punta Chancay, about 27 miles SE, is cliffy, backed by high sand hills, and fronted by a narrow shingle beach. Heavy surf prevents a landing. Cerro Pelado (Monte Mollersh), about 17 miles E of Punta Lachay, is conspicuous from offshore.

Bahia de Chancay (11°35'S., 77°17'W.) is entered between Punta Chancay and Punta Caulan, 1.3 miles NE. Punta Chancay, a bluff with three hills on it, protects the S side of Bahia de Chancay. A prominent fishmeal factory is situated about 1 mile NE of Punta Chancay. Conspicuous crosses stand on a hill and near shore. A church is prominent. A light is shown from Punta Chancay and prominent radio masts stand 1.3 miles NNE and 0.9 mile ENE of the light tower. Stranded fishing boats and wrecks lie E and NE of Punta Chancay. The bay recedes about 0.3 mile and has depths of 9.1 to 14.6m in the outer part. Swell in the bay is very uncomfortable in April and May, also in September and October.

3.35 Chancay (Puerto de Chancay) (11°35'S., 77°17'W.) (World Port Index No. 14970), primarily a fishing port situated on the S side of Bahia de Chancay, consists of two small coves separated by a dark-colored point. Port is currently under construction (2021). Above and below-water rocks front the coves. The town of Chancay stands on a plateau about 2 miles NNE of Punta Chancay.

Chancay from shore

The principal pier, from which a light is shown, is used for the unloading of fish, and for also the transfer of general cargo and fish meal by lighters to ships at anchor. The pier is about 210m long, with a depth of about 5 to 6m alongside its head and berths, which are used by small vessels up to 500 tons.

Pilotage is compulsory and requested through the vessel's agents. ETA should be sent 7 days prior to arrival to shippers and consignees. Then 3 days prior to arrival to the harbor master and port authorities. Pilot boards 0.5 mile NW of the port in the area bounded by the following positions:

a. 11°34.41'S, 77°17.03'W.
b. 11°34.42'S, 77°16.89'W.
c. 11°34.50'S, 77°16.90'W.
d. 11°34.51'S, 77°17.02'W.

Anchorage can be taken, in depths of between 9m to 14.6m, sand, in the center of the bay and 0.5 mile N of Punta Chancay. Vessels are unloaded by lighters.

Caution.—Numerous unlighted buoys and moored lighters may be found within 0.5 mile NW of the piers. A wreck, marked by a barrel buoy, lies about 0.5 mile WNW of Punta Caulan.

A prohibited area with a radius of 200m is centered on position 11°34.51'S, 77°17.17'W.

3.36 Punta Mulatas (11°46'S., 77°12'W.) lies 12 miles SSE of Chancay. The coast between is fringed with rocks and reefs in places, but there are depths over 20m about 1 mile off-

shore. Much of the coast is composed of very high sand dunes rising almost vertically from the sea and leaving no beach. Monte Stokes, about 11.5 miles E of Punta Chancay, is prominent. Two prominent television masts and a light stand on a hill about 0.5 mile SE of Punta Mulatas.

Punta Salitral (11°47'S., 77°12'W.) lies about 1 mile S of Punta Mulatas. Isla Referendo and Isla Huaquillo, from which a light is shown, lie in the entrance to a bay close N of the point.

Grupo de Pescadores (11°48'S., 77°16'W.), a group of guano-covered islands, islets, and rocks, extends about 4.3 miles W of Punta Mulatas (11°46'S., 77°12'W.) and lies in the S approach to Bahia de Ancon. Isla Grande (11°36'S., 77°16'W.), the W and largest island of the group, lies about 3.8 miles W of Punta Mulatas and is radar-prominent. Two small islets, Isla Gallinazos and Isla Torbao, lie off the NE side of the island. A light is shown from the island, and a radio mast stands about 0.2 mile NNE of the light. Islote La Viuda lies 0.5 mile W of Punta Salitral. Passage between the island and the point requires local knowledge. The island is conspicuous and a good mark approaching Bahia de Ancon from the S. Islas Hormigas de Tierra (11°45'S., 77°17'W.) are two steep-to above-water rocks lying about 1 mile NNW of the N end of Isla Grande. Isla El Solitario and four other islets within 0.8 mile, lie about 1 mile SW of Punta Salitral. Isla Huacas, with nearby rocks, lies 1.5 miles SE of Isla Grande. Isla San Pedro lies about 0.5 mile offshore, 1.5 miles SSE of Punta Salitral. Passages between the groups of islets are deep, but above and below-water rocks fringe the islets and local knowledge is necessary.

Hormigas de Afuera (11°58'S., 77°45'W.) comprise a group of steep-to guano-covered rocks and reefs that lie about 34 miles WSW of Punta Mulatas. A light is shown from a tower, with a radar reflector, situated on the S rock of the group. The light tower is reported radar conspicuous at 15 miles. Depths of 14.5 and 16.5m (soundings doubtful) are charted 14.8 and 13.3 miles SSE, respectively, of the islets. The N rock, awash, lies 1 mile NNW of the S rock. Reefs extend N from the N rock and breakers extend SE from the S rock. The current sets NW, with a velocity of about 1 knot, in the vicinity of the rocks. Farther offshore, the Peru Current may attain a velocity of 2 knots.

Caution.—Caution is advised when transiting through the restricted areas, the limits of which are shown on the chart, situated NW and SE of Hormigas de Afuera. Mariners are advised to pass at least 2 miles from Hormigas de Afuera when approaching Port of Callao from the NW, or leaving to the W.

3.37 Bahia de Ancon (11°45'S., 77°11'W.) (World Port Index No. 14960), about 17 miles N of Callao, is entered between Punta Mulatas and a high, multi-colored point about 4.3 miles N. Punta Mulatas is fringed by pinnacle rocks marked by breakers. The bay is mainly used as an explosives anchorage. This lighterage port is the obligatory discharge point for IMO-class dangerous cargo destined for Callao. The former regulations on other dangerous cargo in transit have been revoked, and no vessel now has need to return from Callao to reload.

A pier about 107m long extends from shore about 2.3 miles NE of Punta Mulatas. Explosives from vessels at anchor are unloaded from lighters at the pier. The town, which has several small jetties, stands at the S end of the bay and is a fishing port and resort.

Anchorage can be taken, in depths of 9.1 to 12.8m, about 0.3 to 0.5 mile NW of the pierhead. This anchorage is open to NW winds and “bravezas” (June to September). Vessels may also anchor, in 9.1m, off the pier head. The Explosives Anchorage lies 0.8 mile W of the explosives pier.

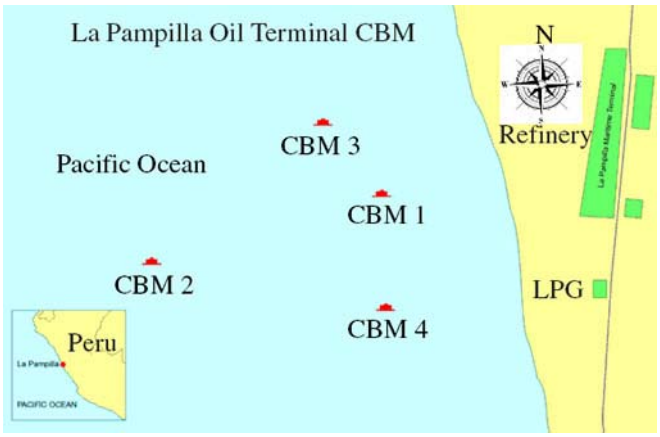
Caution.—A destroyed jetty (11°44.2'S., 77°10.2'W.) showing iron pilings which are awash at low water exists in the central part of the bay. A prohibited area is located near the naval zone N of the port.

3.38 The coast between Punta Mulatas and Puerto del Callao, about 15 miles S, consists of hills and cliffs along the N part and lower, sandy terrain along the S part. Several islets and rocks, colored white, lie close to the coast between Punta Mulatas and Punta Pancha (11°51'S., 77°11'W.). Monton de Trigo, a peaked hill, is conspicuous SE of Punta Pancha.

La Pampilla Oil Terminal (11°56'S., 77°10'W.) (World Port Index No. 14955). about 7 miles N of Callao, is an offshore loading facility, with the refinery situated about 6 miles S of Punta Pancha. The lights of the refinery are conspicuous from seaward. It is protected by Isla San Lorenzo, but swells exist from the W and break on the exposed beaches.

La Pampilla Oil Terminal—Berth Information

Berth	Depth	Maximum Vessel			Remarks
		LOA	Draft	Size	
LPG Terminal					
CBM 04	—	—	—	—	Used by gas carriers. LPG handled. Unrestricted beam:.
Maritime Terminal					
CBM 01	13.4m	245m	11.6m	80,000 dwt	Aviation fuel,bio-fuels, crude, CPP, and DPP. Unrestricted beam:.
CBM 02	18.8m	283m	16.1m	250,000 dwt	Crude. Unrestricted beam:.
CBM 03	15.3m	245m	13.0m	80,000 dwt	Aviation fuel, bio-fuels, crude, CPP, and DPP. Unrestricted beam:.



La Pampilla Oil Terminal

A discharge berth consisting of mooring buoys lies in depths of 18.2m; a submarine pipeline 4,500m long extends from the berth to the shore. The berth can handle vessels up to 50,000 dwt and 335m in length, with drafts up to 15.2m.

A loading berth, consisting of mooring buoys, lies in depths of 12.2m; a submarine pipeline, 1,500m long, extends from the berth to the shore. The berth can handle vessels up to 213m in length, with drafts up to 10.9m.

These mooring berths belong to PETROPERU, one consisting of four buoys and the other five buoys. These berths are positioned so the vessels will be secured on an approximate true bearing of 180°, which makes for the best conditions in order to receive the wind and sea.

A third underwater pipeline belongs to the ENERGAS Company; it is 1,850m long and pushes into the sea on a bearing of 260° until it reaches the 13m isobath; its terminal has 4 mooring buoys and one line buoy.

Pilotage for this terminal is compulsory, and may be had off the berths by prior arrangement, or in Bahia de Callao. Pilots are available 24 hours. The terminal can be contacted by VHF on numerous channels.

There are three wharves between the mouths of the Rio Chilln and the Rio Rimac. From N to S they are the Mucensa Wharf, Fertiza Wharf, and the IMSA Wharf.

The Mucensa Wharf, managed by PESCAPERU (Peruvian Fishing Corporation) is made up of iron pilings and a reinforced concrete platform, 407m long and 10.8m wide, with a height of 4m above mean sea level. It is situated on Fertiza beach and has been in operation since 1963. It is used for unloading anchovy and is equipped with water and oil pipelines. There is a fixed light at its head.

The Fertiza Wharf, managed by Compainia de Fertilizantes Sinteticos SA, is made of iron pilings and a wooden platform, 209m long and 4.3m wide; it stands on Fertiza beach and is not in operation (2001).

The IMSA Wharf, managed by PESCAPERU, is made of reinforced concrete with lightweight iron, 260m long and 3.6m wide. It stands on Acapulco Beach. It is not in operation.

Caution.—Navigating and anchoring are prohibited within 0.5 mile of the berths and pipelines. The area is best seen on the chart.

Puerto del Callao (12°03'S., 77°09'W.)

World Port Index No. 14950

3.39 Puerto del Callao, formed and sheltered by N and S breakwaters, is the principal harbor of Peru and the port of entry for Lima, the capital. The harbor is entered through Bahia del Callao (12°02'S., 77°10'W.), bound N by Punta Bernal (11°55'S., 77°09'W.) and S by El Cabezo (12°04'S., 77°16'W.), the high, NW extremity of Isla San Lorenzo. Punta Bernal is low and sandy. The coast between this point and Callao N breakwater is a sandy beach, fronted for about 1.5 miles N of the breakwater by a shoal with depths of less than 5.5m, which extends at least 1 mile offshore. Bahia del Callao is partially sheltered by Isla San Lorenzo, the adjacent islets, the promontory of which Punta Punta (12°04'S., 77°10'W.) is the SW end, and the spit extending SW of Punta Punta.

The port is undergoing significant development, with various projects expected to continue through 2022. Vessels are advised to consult the local authorities and pilot for the most current information.

Callao from NE

Callao Container Terminal

Isla San Lorenzo (12°05'S., 77°13'W.), forming the SW part of Bahia del Callao, is high, sandy-colored, and cliffy in places.

Gran Alminante Grau—El Cabezo Light

Banco El Camotal Buoy

El Cabezo (Cabo San Lorenzo), the NW end of the island, is radar prominent. A light is shown from the point. Several steep-to islets lie close off the W and S sides of the island. A wreck is reported to lie about 3.3 miles W of Cabo San Lorenzo and a dangerous wreck lies 14 miles W of the island. A foul area, marked by breakers and heavy surf, extends about 1 mile off the SE end of Isla San Lorenzo. Isla Callao (Isla Fronton) is located close SE of the SE end of Isla San Lorenzo; it is marked by breakers SE and is the outermost danger within the foul area. It is reported (1983) that an isolated danger lies 28 miles WSW of Isla San Lorenzo, existence doubtful.

Islas Palominos is a cluster of steep-to rocks lying about 2.3 miles SW of the S end of Isla San Lorenzo. A light is shown from the rocks and they are radar prominent. Roca Iquitos, with a depth of 4.6m, lies a little more than 0.5 mile NE of Islas Palominos; several rocks and islets lie between it and the S end of Isla San Lorenzo. A shoal depth of 9.6m lies about 0.8 mile WSW of the light tower on Islas Palominos.

The NE side of Isla San Lorenzo is fringed in places by rocks and reefs. Two rocks, awash, lie about 0.2 mile offshore, midway between El Cabezo and Punta Galera, 1.5 miles ESE, the latter is a good radar target. A visible wreck lies 0.4 mile E of Punta Galera; another visible wreck lies the same distance NW of the point. A dangerous wreck lies 4 miles NE of El Cabezo as best seen on the chart. Caleta Sanitaria, the site of a Quarantine Station and a small pier, is situated 0.3 mile SE of Punta Galera. A naval training station and small pier lie close SE of Punta Gruta, located 1 mile SE of Punta Galera. Foul ground, with a depth of 9.1m, lies in the approach to the pier. An above-water wreck is charted 0.3 mile SSE of the head of the pier; a dangerous wreck lies about 0.9 mile NE of Punta Gruta.

Banco El Camotal extends SW from Punta Punta. A light is

Lomo de Ballena, the drying part of the bank and from which a light is shown, lies about 0.8 mile W of Punta Punta.

Numerous wrecks and obstructions lie within 1 mile of the N breakwater and adjacent coast and may best be seen on the chart.

Pasaje El Boqueron (12°06'S., 77°11'W.) leads N around the E side of Isla Fronton and then NW into Bahia del Callao, between the shorebank that extends off the SE end of Isla San Lorenzo and Banco El Camotal. This bank is separated from Isla San Lorenzo by a fairway about 0.4 mile wide and 6.4 to 18.3m deep. The SW end of the bank is steep-to, unmarked, and subject to frequent change. Strong N currents occur during heavy SW swells. Local knowledge is necessary to transit the passage. A marine cultivation area lies off the SE end of Isla San Lorenzo.

Port of Callao Home Page
http://www.enapu.com.pe

Winds—Weather.—The prevailing S winds are usually light and the sea smooth. Isla San Lorenzo reduces the swell in the harbor, but a constant W swell causes a surf to break on the beaches. The swell does not usually prevent lighters from working alongside ships at the anchorage.Surf and wind alongside exposed piers and wharves may prevent the discharge of cargo from lighters and interrupt communications between ship and shore. Fog is frequent from December to April. The rainy season occurs between July and September.

Tides—Currents.—Tides at Callao are semidiurnal, with a mean spring range of 0.7m and a mean neap range of 0.3m.

The currents off the port set N, but the velocities within the bay are negligible, except with SW swells when the currents

set strongly N through Pasaje El Boqueron. Tidal currents in the vicinity of the terminal reach rates of 0.8 to 1.3 knots, with the set depending on the tide; a strong surge may be felt within the breakwaters forming the harbor. When there is a freshet in the Rio Rimac (12°02'S., 77°08'W.), the current is strong across Bahia del Callao and tends to silt up the harbor.

Depths—Limitations.—The entrance channel is marked by four pairs of channel buoys leading to the breakwaters. The entrance channel is 150m wide, with depths of 10.6m; regular dredging could deepen this to 11.2m. Although the distance between the N and S breakwater heads is more than 300m, the actual distance that is safe for navigation between the breakwaters is only 150m wide. A single red buoy, close NW of the S breakwater, marks the limit of the channel. There is a wide area within the harbor available for turning, with depths greater than 10m.

Once inside the breakwaters, most of the commercial berths (Piers 1-5) are situated along the E side of the harbor. A large container facility, constructed in 2010, is located at the base of the S breakwater. This new facility has replaced Piers 9A through 9E and 10A through 10C plus 11A and will be able to accommodate specialized container vessels. Specific pier designations for the newly-constructed pier area have not yet been made.

Pier No. 7, the petroleum pier, is situated 0.3 mile close NNE of the N breakwater head. A new mineral pier has been added inside the N breakwater, E of the petroleum pier. Designations for berths at the new pier have not yet been made.

East of the petroleum pier and N of Piers 1-5 is an area containing the naval base. The naval base area has fishing facilities, and several berths on the N side of Pier No. 5 which is reached via a channel showing a charted depth of 9.1m. A drydock is charted 0.4 mile NNE of the Petroleum Pier. Several small piers lying between the naval piers and Pier No. 5, have depths of 3.7 to 4.5m, but caution is recommended here as depths of 3m are charted close by.

Callao

See the table titled **Puerto de Callao—Berth Information** for detailed information about the piers that have been specifically designated by the port authorities.

Puerto de Callao—Berth Information

Berth	Length	Depth	Maximum Vessel				Remarks
			LOA	Draft	Beam	Size	
DP World Container Terminal							
Muelle Sur 1	325m	16.0m	347m	13.8m	48.0m	134,869 dwt	Containers. Continuous berthing length of 650m.
Muelle Sur 2	325m	16.0m	333m	13.6m	48.0m	124,426 dwt	
Impala Minerals Terminal							
Minerals Pier	200m	—	200m	12.7m	32.0m	64,000 dwt	Mineral ore, zinc, and lead. Airtight, overhead ship-loader conveyor 3.75m long.
APM Terminals							
No. 1A	183m	10.0m	200m	8.0m	32.0m	63,558 dwt	Cruise vessels, PCC, breakbulk, bunkers, and reefer.
No. 1B	183m	10.0m	190m	15.2m	32.0m	50,757 dwt	Cruise vessels, PCC, breakbulk, bunkers, and reefer.
No. 02A	183m	10.0m	225m	14.0m	32.0m	72,863 dwt	PCC, breakbulk, bunkers, and reefer.
No. 02B	183m	10.0m	210m	14.0m	36.0m	72,924 dwt	PCC, breakbulk, bunkers, and reefer.
No. 03A	183m	10.0m	210m	9.9m	32.0m	72,914 dwt	PCC, containers, breakbulk, bunkers, and reefer.
No. 03B	183m	10.0m	225m	9.6m	32.0m	69,990 dwt	PCC, containers, breakbulk, bunkers, and multipurpose.
No. 04A	182m	10.0m	232m	—	—	58,632 dwt	CPP, containers, breakbulk, bunkers, and reefer.
No. 04B	183m	10.0m	200m	10m	32.0m	63,475 dwt	CPP, vegetable oils, containers, breakbulk, multipurpose, and reefer.
No. 05A	390m	12.5m	330m	11.7m	48.0m	134,000 dwt	Containers and breakbulk.
No. 05B	182m	11.0m	184m	16.7m	—	49,990 dwt	Chemicals, CPP, and breakbulk
No. 05D	560m	15.5m	366m	14.5m	48.0m	154,538 dwt	Containers.
No. 11A	139m	15.5m	294m	12.0m	36.0m	72,914 dwt	Cruise vessels, PCC, and breakbulk Continuous berthing length of 278m.
No. 11B	139m	15.5m	294m	12.0m	36.0m	72,914 dwt	
Vopak Terminal							
No. 7A	62m	10.5m	183m	10.5m	32.0m	51,603 dwt	CPP, DPP, LPG, and bunkers. Berthing length of 262m (including dolphins).
No. 7B	62m	9.5m	183m	9.5m	32.0m	44,577 dwt	DPP and LPG. Berthing length of 262m (including dolphins).
Quimpac Terminal - Oquendo							
CMB	—	11.2m	205m	10.5m	30.0m	40,000 dwt	Chemicals.
Sudamericana de Fibras Terminal							
CMB	—	—	170m	9.5m	26.0m	33,591 dwt	Chemicals
TRALSA Terminal							
CBM1	—	—	149m	—	24.0m	22,421dwt	Chemicals.

Puerto de Callao—Berth Information							
Berth	Length	Depth	Maximum Vessel				Remarks
			LOA	Draft	Beam	Size	
Valero Terminal							
CBM	—	—	195m	11.5m	32m	53,554 dwt	Bio-fuels and CPP.
Zeta Gas Terminal							
CBM	—	—	230m	—	36.0m	58,811 dwt	LPG.

Aspect.—The Naval School, situated on Punta Punta, is a prominent yellow square building with regular rows of large square windows, surmounted by two radio masts. A light is shown from atop a building close by. A white stone water tower, standing about 0.5 mile NE of the school, is conspicuous.The towers of Fortaleza del Real Felipe (also known as Castillo Real Felipe), close S of the root of the South Quay Container Terminal are prominent, as is a grain silo standing close E of the same point. Several conspicuous water towers, church spires, and chimneys are situated about the area. Cierro La Reglu, a conspicuous isolated hill, 105m high, lies about 6 miles NNE of La Punta.

A prominent aeronautical light is shown from the airport, about 3.3 miles NE of the harbor entrance.

Lights stand at the ends of the N and S breakwaters. Muelle de Guerra is located at SE end of the South Quay Container Terminal where it meets the shore of the peninsula leading SW towards the Naval School. A clock tower with a flashing green light is mounted on a black and white striped round metal tower at the end of this pier.

In addition to the lights in the harbor shown on the chart, a light stands on Pier 11, as well as on the heads of all the naval base piers, the end of the new mineral pier, and the SW corner of Muelle Marginal.

Pilotage.—Pilotage is compulsory. Pilots board in the area bounded by lines joining the following positions:

a. 12°01.84’S, 77°11.67’W.
b. 12°01.89’S, 77°11.40’W.
c. 12°02.15’S, 77°11.44’W.
d. 12°02.11’S, 77°11.71’W.

The pilot vessel has a red hull with white superstructure.

Regulations.—The use of two tugs is compulsory for all vessels whenever entering, departing, or moving within the port.

Callao—Contact Information	
Port Authority	
VHF	VHF channel 16
Telephone	51-1-4299210
	51-1-4299310
Facsimile	51-1-4656621
Web site	http://www.enapu.com.pe
Petroperu Terminal	
VHF	VHF channel 16

Callao—Contact Information	
Telephone	51-1-4658844
Facsimile	51-1-4659145
E-mail	callao@petroperu.com.pe
Pilots (Tramarsa)	
Telephone	51-1-4130400
Facsimile	51-1-4297516
E-mail	tramp@tramarsa.com.pe
Web site	http://www.tramarsa.com.pe

Vessels with draft of 9.8m or less may enter the harbor at any time while vessels with draft greater than 9.8m must wait until HW.

Clock Tower with light at head of Muelle de Guerra

The vessel’s ETA should be sent to the Port Captain and ship’s agent 24 hours in advance. If there is a change in ETA then a 1 hour notice should be given.

The Port Captain may also be contacted through coastal radio stations OBY2 (Paita), OBC3 (Callao), and OBF4 (Mollendo). Communication is also possible though INMARSAT.

An IMO-adopted Traffic Separation Scheme (TRAMAR), best seen on the chart, has been established in the approaches to Callao. All vessels must report to TRAMAR on VHF channel 16 (then switch to channel 13 for working) when 20 miles from Isla San Lorenzo. Additional reports will be made to TRAMAR when 10 and 4 miles from Isla San Lorenzo, and when passing Outer Fairway Lighted Buoy.

The approach to the port is made through Bahia Del Callao after passing around the precautionary zone counterclockwise within the traffic circle, 1 mile in diameter centered in position 12°01.8'S, 77°14.8'W, thereafter following the lead into the harbor on lights in range bearing 099°. It is reported (2002) that the harbor entrance range is difficult to distinguish and often obscured by large cargo vessels. Fog makes the use of the range problematic.

Vessels are not permitted to enter the harbor until the Port Captain's staff and the health officials are on board, and there is a berth waiting. The port officials will usually board day or night if the vessel is expected.

It is prohibited to deballast oil and dump bilges into the bay; the same applies to refuse and waste in general.

Several prohibited zones have been established. Additional or later date information should be obtained from the port office. The current restrictions are, as follows:

1. Keep 1 mile off the military bases on the E coast of Isla San Lorenzo and 300m off the rest of the island.
2. Keep 600m off Isla Callao.
3. Keep 300m off the buoys marking the aquaculture area in El Boqueron.
4. Keep 300m off Naval School harbor. Keep 150m off the Callao Naval Base and official jetties.
5. Keep 300m off all the warships in the reserved zones.

Contact Information.—The pilots and port can be contacted as listed in the table titled **Callao—Contact Information.**

Anchorage.—The following designated anchorages listed in the table titled listed in the table titled **Callao—Designated Anchorages**, of which are best seen on chart, are located NW of the harbor entrance, in 9 to 37m of water, sand and mud bottom.

Anchorage Area No. 13—An additional Anchorage Area, is designated for vessels in emergency situations. This area is located about 0.5 mile W of Anchorage Area No. 11 about 5.75 miles NW of the harbor entrance. Note there is a wreck, not dangerous to surface navigation, submerged close to the center of the area.

Anchorage Areas A-C, best seen on the chart, for small craft and local authority vessels, are located about 1 mile S of the harbor entrance. Note there are four dangerous wrecks in these areas.

Anchorage Areas D-F, lying directly W of the South Breakwater and the South Quay Container Terminal, are used by tugs, freight vessels, and passenger vessels.

A restricted area close S of the entrance channel offers anchorage to Peruvian naval and merchant vessels, in depths of 7.6 to 19.5m. Another reserved anchorage is reported to lie just S of the restricted area's SW border.

Callao—Designated Anchorages

Number	Position	Designation	Remarks
No. 1	12°01.53'S, 77°11.51'W	Merchant vessels and general cargo.	—
No. 2	12°01.51'S, 77°10.09'W	Fishing, mining, factory vessel.	A wreck lies in S part.
No. 3	12°02.33'S, 77°09.49'W	Fishing vessels	Three dangerous wrecks lie in the area
No. 4	12°01.76'S, 77°09.42'W	Harbor vessels	—
No. 5	12°00.74'S, 77°09.98'W	Lay-up vessels	—
No. 6A	11°59.49'S, 77°08.67'W	Fishing vessels	A stranded wreck lies on the NW limit. A submarine pipeline is laid on the S border.
No. 6B	12°00.18'S, 77°09.12'W	Fishing vessels	—
No. 7	11°59.48'S, 77°10.60'W	Nuclear powered vessels and any vessel carrying or holding radioactive material.	—
No. 8	12°00.57'S, 77°11.32'W	Tankers oil and gas	A stranded wreck, surrounded by a restricted area radius 165m marked by an isolated danger buoy and a dangerous wreck lie in the E part.
No. 9	12°02.10'S, 77°10.90'W	Pilot waiting area	—
No. 10	12°01.00'S, 77°08.90'W	Vessels awaiting disposal	—
No. 11	11°59.48'S, 77°12.07'W	Security, provisioning, and quarantine	—
No. 12	12°01.24'S, 77°12.92'W	Fuel loading/unloading	A wreck reported (2019), lies close off the N limit

Callao Harbor Entrance Buoy (south)

Callao Channel Buoy No. 2

Callao Channel Buoy No.1

Callao Traffic Separation Scheme—Channel Sea Buoy

Caution.—A dangerous wreck lies in position 12°00.6'S, 77°10.7'W; a restricted area, with a radius of 165m, is centered on the wreck. There is also a standard wreck in position 11°59.4'S, 77°08.8'W.

A wreck is located in a depth of 8.4m in the harbor E of Pier 5 in position 12°02'39.1"S, 77°08'34.25"W.

Outside of the harbor N of the channel are several dangerous wrecks, some marked with isolated danger buoys, best seen on

Callao Harbor Entrance Buoy (north)

the chart. South of the channel, a dangerous wreck is located about 1km W of the S breakwater light.

Also outside of the harbor SSW of the S breakwater there is another dangerous wreck, depth unknown, located at 12°03'43"S, 77°09'30"W. A dangerous wreck lies in position 12°03'24"S, 77°09'21"W.

The dangerous wreck previously reported (1986) is now confirmed (2013) to be located in position 12°03'38"S, 77°09'29"W, depth unknown.

Piracy is a menace and boarding attempts are made while vessels are underway, at anchor, or at a berth.

An extensive area containing submarine cables extends across the S approaches to the port.

A number of areas utilized for the testing of explosives exist around Isla San Lorenzo.

The periodic discoloration of the sea, known as "Callao Painter," is frequently experienced outside of the port. The hulls of ships may become discolored by a thick and dark slime which is caused by gases rising from the bottom of the bay; a nauseous smell is also emitted.

Large jellyfish can be a problem to vessel intakes during April and July. They are found in highest concentrations outside the breakwaters extending to the area just inside the breakwaters. The jellyfish are not found in the inner harbor.

It was reported that vessels may occasionally be underway without lights within the restricted area.

Callao to Matarani

3.40 Along the coast from Callao to Matarani, S to SW winds, known as "paracas," occur from noon to evening; these winds may hinder cargo operations at the coastal ports from August to September.

The currents offshore set N. In the vicinity of Isla Sangayan (13°50'S., 76°27'W.), a set toward that island has been experienced. The currents generally follow the coastal trend and set N into the bays.

Punta Chorrillos (12°10'S., 77°02'W.) is located about 9.5 miles SE of Punta Punta. The coast between recedes SE forming Bahia de Miraflores, which is open to the weather. The land S of Punta Punta is low-lying and fronted by a pebble beach. Rocky T-headed breakwaters have been built at regular intervals here to protect the coast from flooding during stormy weather, which is most intense in the winter months. This low coast continues for 1.5 miles, then changes to cliffs of average height.

Cerro Morro Solar, about 1 mile SE of Punta Chorrillos, rises to an elevation of 279m and is one of the better defined natural features of this coast. The hill is oriented in a N-S direction, emerging abruptly from the sea, and is surmounted by a lighted cross. Punta Chorrillos is formed by an extension of the hills descending from the western side of Morro Solar, terminating sharply at the water's edge. Rocks lie up to 0.3 mile W of the point.

A light is shown from a tower, 22m high, standing on the coast about 2.8 miles N of the point, and an aeronautical light is shown from an airfield about 2 miles E of the point.

Anchorage.—Anchorage is available N of the point, in a depth of about 12m. Vessels should anchor at least 1 mile from the shore on the alignment of three beacons which are, from N to S, a statue, a planetarium, and a monument. Moderate-sized vessels may use this anchorage, but caution is advised as the bight has a tendency to silt and submarine cables extend seaward from the vicinity of the point. A naval anchorage lies at 12°08.83'S 77°02.56'W. Other designated anchorages exist as follows:

Chorrillos—Designated Anchorages		
Number	**Position**	**Designation**
No 1	12°09.86'S, 77°01.76'W	Work boats
No 2	12°09.81'S, 77°01.78'W	Recreational vessels
No 3	12°09.76'S, 77°01.87'W	Freight vessels
No 4	12°09.70'S, 77°01.91'W	Small craft

3.41 Islotes Horadada, with two pinnacles and above and below-water rocks surrounding it, lies 5.8 miles WNW of Punta Chorrillos. Roca del Diabolo, on which the sea breaks heavily during bad weather, lies 0.3 mile N of the islet and has a depth of 2.1m. Shoal depths extend NE from the rock towards the coast.

Punta La Chira, rocky, sloping, and leaden-colored, is located about 2.3 miles S of Punta Chorrillos. Islote Pan de Azucar is an islet lying on a reef about 0.5 mile WSW of the point. Several small islets and rocks lie between the islet and the point.

Anchorage.—Two coves indent the coast S of Punta Chorrillos. The N of the coves, entered S of the point, affords sheltered anchorage to small vessels, in depths of 9.1 to 16.5m. The S cove, entered close N of Punta La Chira, affords sheltered anchorage, in 14.6m, between the entrance points.

The **Rio Lurin** (12°17'S., 76°54'W.) is located about 9 miles ESE of Punta La Chira. The coast between is formed by Playa de Conchan, a sandy beach backed by fairly high land. Anchor-

age can be taken, in 9.1m, about 1 mile off the head of a cove close S of the river mouth.

Isla Pachacamac (12°18'S., 76°54'W.), 108m high and the N of a chain of islets and rocks, is colored white and lies 1.5 miles off the Rio Lurin. Islote San Francisco, with a rounded summit, is the S and prominent of the group. El Corcovado, a reef about 1 mile long, lies with its N end 1 mile SE of Islote San Francisco. Rocas de la Vinda are two submerged rocks lying about 0.5 mile off the N islet. Sea and swell break heavily on these dangers and the shoals inshore of the group.

3.42 Conchan (12°16'S., 76°56'W.) is an open roadstead port comprised of one pier for the discharge of bulk cargo and loading of bulk cement and an offshore tanker berth connected to two submarine pipelines.

Depths—Limitations.—The bulk cargo pier is a jetty, 630m long, and shows a red light on the pier head and is capable of handling vessels up to 38,000 dwt, 185m in length with a beam of 30m and a maximum draft of 11m. A cement factory is situated about 0.5 mile NNE of the pier head. Berthing is restricted to daylight hours between 0600 and 1730 but sailing is permitted at anytime.

Conchan Oil Terminal is situated about 670m offshore, 1.5 miles NW of the mouth of the Rio Lurin and has two submarine pipelines. Vessels moor to three buoys in 18.5m of water. The terminal can handle tankers up to 75,000 dwt, 228.6m in length, a beam of 32.21m, and a maximum draft of 13.72m.

Aspect.—A red light stands at the head of the bulk cargo pier.

Pilotage.—Pilotage is compulsory for both berthing and unberthing. Pilots board off Callao or 2 miles N of the Conchan Oil Terminal.

Regulations.—Tankers should contact the terminal (call sign: Conchan Pier) 4 hours prior arrival on VHF channel 72.

Vessels should send ETA to the operators 5 days, 3 days, 2 days, and 1 day prior arrival.

Vessels calling at Conchan must first enter Callao for clearance.

Contact Information.—See table titled **Conchan—Contact Information.**

Conchan—Contact Information	
Port Operations	
Telephone	511-2170200 (for Administration)
Facsimile	511-2957003 (for ETA messages)
	511-2171492 (for Administration)
E-mail	info@cementoslima.com.pe

Anchorage.—Vessels inbound to Conchan shall anchor off Callao for clearance but if clearance not required they may anchor off Conchan.

3.43 Punta Chilca (12°31'S., 76°48'W.), about 15 miles SE of the Rio Lurin, is prominent with a steep cliffy face, 90m high, on its seaward side. The coast between is indented. With local knowledge, several coves affording anchorage can be entered along this stretch of coast. Rocks and reefs lie off the coves entrance points. Depths of at least 9.1m exist within the coves, where landing is possible.

Caleta Pucusana (Puerto Chilca) (12°29'S., 76°48'W.) is a cove about 3 miles N of Puerto Chilca. Isla Chilca, from which a light is shown, protects the W side of the cove which is entered from N between the islet and coast. Rocks, fringing the islet and adjacent coast, restrict the cove entrance to a width of 0.3 mile. An islet lies about 91m off the SE side of Isla Chilca. Anchorage for small vessels can be taken in the middle of the cove, in depths of 9.1 to 12.8m, sand. A wharf, with two small landing stages, lies on the cove's W side

3.44 Punta del Fraile (13°02'S., 76°31'W.) lies about 37 miles SE of Punta Chilca. The point is the W side of a hilly promontory that has cliffy NW and SW sides. Cerro Sentinella rises above the point; the prominent bluish-colored Cerro Azul rises close within the S limit of the cliffs. The coast between Punta Chilca and Punta Fraile is indented by a few coves. Dangers lie up to 2 miles offshore in places. The N part of this coast, as far as Cerro Calavera, is low, flat, and backed by hills inland. Cerro Calavera (Morro Calavera) (12°33'S., 76°46'W.) is a prominent, detached hill of black rocks with patches of sand and guano. The hill has a sharp peak and a sheer face to seaward. Between Cerro Calavera and the Rio Mala (12°41'S., 76°40'W.), the coast consists of low cliffs fronted by a sandy beach. Islets and rocks above-water lie up to 1 mile offshore. The mouth of the Rio Mala is marked by heavy breakers and a conspicuous hill rises 2 miles N.

Caleta Mala (12°43'S., 76°39'W.) is entered between Punta Chocaya (12°45'S., 76°39'W.) and a point about 3 miles NNW. Cerro Salazar is prominent close within the latter point. Punta Chocaya is low and fronted by rocks and foul ground. Small vessels can anchor on good holding ground of sand, sheltered from SE winds, in Caleta Mala, where the depth is 11m, about 0.3 mile offshore. The anchorage is subject to a heavy sea and swell during the winter months.

Isla de Asia, 123m high, lies 1 mile offshore, about 16 miles NW of Punta Fraile and is radar conspicuous. It is one of the most easily-identified objects on this part of the coast. There are several above and below-water rocks around the islet and between it and the coast N. A radiobeacon is located on the mainland 2 miles NE of the island.

3.45 Puerto de Cerro Azul (13°03'S., 76°31'W.) is situated in a cove within the N side of the promontory containing Punta del Fraile. The port, from which cotton is exported, is shallow and available only to coastal vessels. Local knowledge is required. Cargo is worked by lighter from a pier at the head of which a light is shown. Weather may prevent lighter operations between May and September. The terminal here was reported to be out of commission, and the wharf was in a poor state of repair. Pilotage is not compulsory.

The coast between Punta Fraile and the Peninsula Paracas, about 45 miles S, recedes to form a bight which is sheltered by the peninsula at its S part. The shore as far as the Rio Canete (13°09'S., 76°25'W.) is low and backed by a fertile valley. A sugar mill, standing N of the river mouth, is conspicuous. From the Rio Canete to the Rio Jaguay (13°23'S., 76°13'W.), the coast consists of high, clay cliffs backed inland by very high hills. On approaching Bahia Pisco, the coast is low and sandy.

Puerto Tambo de Mora (13°28'S., 76°12'W.) a roadstead off the town of Tambo de Mora, is closed as a general cargo port. There are depths of 7.3 to 9.1m at 1 mile offshore of the lighter pier which had a depth of 1.8m at its head. Landmarks in town include a large white building on the beach, the church, and a large and a small cross together on a hill behind town. The chimneys and tanks of the fishmeal factories situated behind the wharf are visible from seaward. A radio mast is located on the coast N of Tambo de Moro.

Anchorage can be taken, in a depth of 10.4m, mud, about 1 mile offshore, with the white building and the crosses aligned 082°. This anchorage is generally secure except for S winds (paracas), which blow from noon to evening and raise a sea.

3.46 Islands and dangers off the Peninsula Paracas.—Islas Chincha (13°38'S., 76°24'W.), a group of three small islands with several islets and rocks, lies 10 miles N of Punta Paracas, the NW end of the Peninsula Paracas. The islands are radar prominent. A light is shown from a tower on the summit of Isla Centro, the central and largest island of the group. The outermost danger of the group is a steep-to rock, with less than 1.8m over it, lying 1 mile W of the W end of Isla Centro. A 24m shoal lies about 3 miles ESE of the light tower on Isla Centro. All the islands and islets of the group are fringed by rocks.

Isla Norte, lying at the N end of Islas Chincha, is marked by a high islet lying about 0.2 mile NW, and a rocky spit extending the same distance NE. A landing pier, situated at the NE side of Isla Norte, is approached on a SW heading between buoys which mark the outer end of dangers. Local knowledge is necessary. The preferred anchorage in the vicinity of Islas Chincha is taken at the E and W entrance of the channel between Isla Norte and Isla Centro. There are least depths of 32.9m and 42.1m in the W and E entrances, respectively.

Isla Sur, lying at the S end of the group, is bound by rocks and reefs, some awash, extending up to 0.3 mile E and 0.5 mile W of the E and S sides of the island, respectively. A reef lies in the W entrance of the passage between Isla Sur and Isla Centro.

Isla Goleta, the highest of a group of three islets, is white in color and lies about 0.9 mile SW of Isla Sur. Rocks and shoals encircle the islets. Roca Chata, with a rock awash close NW of it, lies about 0.5 mile S of Isla Goleta.

Islas Ballestas, about 4.5 miles NNW of Punta Paracas, are three guano-covered islets and several adjacent above-water rocks. Islas Tres Marias, 1.8 miles S of Islas Ballestas, are three pointed rocks, of which the middle rock is the lowest. Less water was reported about 0.4 mile WSW of the S rock. Roca Saludo, steep-to, with a depth of 0.9m, lies 0.4 mile NE of Islas Tres Marias. The channel between Roca Saludo and Isla Piedra Redonda is not recommended.

Caution.—Islas Chincha and Islas Ballestas are each surrounded by a large Nature Reserve area, best seen on the chart.

Isla Blanca is located about 5.5 miles NE of Punta Paracas. A light, equipped with a racon, is shown from the island. A dangerous rock lies close N of the NE end of the island.

Isla Sangayan (13°50'S., 76°27'W.), about 3 miles W of the peninsula, is high, light-colored, cliffy, and usually shrouded in mist. From SW the island appears saddle-shaped. The N of a group of rocks that lie up to 0.5 mile N of Isla Sangayan is high and shaped like a bowling pin. The island gives a good radar return at 24 miles. A light is shown from the SW point of the island. The island is covered with guano. Generally, it is enveloped in a layer of fog; this is cleared by sea breezes, leaving only a plume of mist over the summit. Foul ground extends at least 0.3 mile off the S and W sides of Isla Sangayan.

Caution.—To avoid the risk of pollution and damage to the environment in the Paracas National Reserve, an Area to be Avoided, bounded by the coast and positions shown on the chart, has been established. All vessels greater than 200 gt carrying hydrocarbons or hazardous liquids in bulk should avoid the area.

Pasaje El Boqueron (13°50'S., 76°25'W.), the passage between the Peninsula Paracas(13°52'S., 76°20'W.) and Isla Sangayan, is about 2.8 miles wide and reported clear of dangers except for Roca Pineiro, a steep-to pinnacle barely awash and always marked by breakers, lying about 1.5 miles S of the S extremity of Isla Sangayan. When a strong wind opposes the tidal current, a confused sea is generated in the area, rendering the rock difficult to make out. During such times the mainland side of the pass should be favored until the rock is passed.

3.47 Bahia Pisco (13°44'S., 76°16'W.) is entered between Punta Paracas (13°48'S., 76°22'W.) and a sandy point about 13.3 miles NE. The bay is bound W by Islas Ballestas and Islas Chincha. The E shore of the bay is sandy, with the Rio Pisco emptying into the bay near its NE extremity. On approaching Isla Sangayan from the N, a set toward land is experienced, probably caused by the current following the coastline into Bahia Pisco.

Puerto Pisco (13°43'S., 76°15'W.) is the old lighterage port of Pisco and is closed except for fishing vessels and tankers. Shipping functions have been taken over by Puerto General San Martin, situated about 4 miles SW, across the bay. However, all official and shipping offices are still situated at Pisco.

Depths—Limitations.—Fiscal Pier, 667m in length, with a depth of 3m at the head, fronts the city. This jetty is damaged and has not been in use for a few years now.

A spit extending 1.5 miles from the coast has a depth of 4.6m at its outer end, 2 miles NW of the pier at Pisco. A 4.5m shoal, a wreck, and a 1.8m shoal lie 0.4 mile WNW, NW, and WSW, respectively, of the pier.

The Camisea Offshore Platform, a berth for tankers, consisting of mooring buoys, lies in depths of 15m about 1 mile offshore, 2.5 miles SSW of the pier at Pisco. A submarine pipeline extends from the berth to the shore. Tankers as large as 56,800 dwt and 230m in length, with a maximum draft of 12.5m, can be handled at this platform.

Another tanker berth, connected to a submarine pipeline, lies about 1.8 miles offshore, 4.4 miles SSW of the pier at Pisco. Other numerous submarine pipelines extend offshore for distances from 0.4 to 0.6 mile along the coast of Pampa Santo Domingo S of Loberia with barges being used for loading and discharge.

Aspect.—Landmarks in Pisco include a radio mast and tower, the church with its square tower and spire, and a prominent, white hotel. Conspicuous tanks stand near the shore, about 2 miles SSE of Pisco. An airdome lighthouse, 14m in height, has been installed with a range of 14 miles.

Pilotage.—Pilotage is compulsory for tankers proceeding to

the offshore gas platform and can be requested upon arrival by VHF. Call sign is Costera Pisco with VHF channel 16. Pilots are available from General San Martin and board 0.6 mile NE of the lighted buoy moored off Punta Pejerrey, also identified as the NW corner of Anchorage Area No. 1, off General San Martin. See paragraph 3.48 for contact details for the pilots.

Regulations.—An IMO-approved Traffic Separation Scheme, the limits of which are shown on the chart, is established in the approaches to Puerto Pisco. A lighted buoy, moored in the center of the precautionary area, is surrounded by a 400m in diameter Area to be Avoided.

Anchorage.—Anchorage Area No. 10, listed in paragraph 3.48, is used for tankers awaiting berthing at these terminals. The bottom is mud, good holding ground.

Caution.—A dangerous rock, depth unknown, is located in position 13°44'03.6"S, 76°18'40.8"W.

Bahia de Paracas (13°49'S., 76°16'W.) a southerly extension of Bahia de Pisco, is entered between Punta Pejerrey, the NE extremity of the Peninsula Paracas, and the coast about 2.5 miles ESE. The shore bank extends up to 0.8 mile off the shores of the bay. Hotel Paracas is a prominent feature at the SE side of this bay, which is formed S and W by the Peninsula Paracas. Paracas is a resort and has several small piers for small craft. There are several facilities for fishing vessels along the E shore of the bay, including a designated anchorage area which may be seen on the chart.

Caution.—Several dangerous wrecks are located within 0.6 mile of the E side of the bay between 13°49'S and 13°50'S.

A restricted area, established in the S portion of the bay for the Paracas Nature Reserve, can best be seen on the chart.

3.48 Puerto General San Martin (13°48'S., 76°18'W.) (World Port Index No. 14910) has replaced Puerto Pisco as the principal shipping port for the area. Situated close S of Punta Pejerrey, a sandy spit, the port consists of a marginal wharf on the NE side of the peninsula.

Winds—Weather.—Winds from the S, in the vicinity of the Peninsula Paracas, are called “paracas.” They blow from noon to evening and are sometimes so strong that working cargo is very difficult, especially during August and September. Severe sandstorms occur in August, reducing visibility and stopping all cargo operations.

Depths—Limitations.—The continuous wharf is 700m in length and consists of four berths, all accommodating vessels up to 30,000 dwt. The port is undergoing construction and half of the port is now complete and has accommodated vessels of 25,000 dwt with 10m draft. Other details of these berths are shown below in the table titled P**uerto General San Martin—Berth Information**.

Aspect.—Lights are shown at each end of the wharf. A light is shown from Punta Colorado, 1.8 miles W of Punta Pejerrey, but is obscured within the bay.

Puerto Pisco—(General San Martin)

Pilotage.—Pilotage is compulsory and can be requested upon arrival by VHF. Vessels should send ETA at least 24 hours in advance to the agents and to the Port Captain. The alignment (234.9°) of front and rear range lights leads from the pilot boarding position towards the berths. Pilots board 0.6 mile NE of the lighted buoy moored off Punta Pejerrey by the NW corner of Anchorage Area No. 1 in the area bounded by the following positions:

1. 13°47.50’S, 76°16.80’W
2. 13°47.50’S, 76°16.33’W
3. 13°47.90’S, 76°16.33’W
4. 13°47.90’S, 76°16.80’W

Regulations.—A Traffic Separation Scheme, approved by the IMO, the limits of which are shown on the chart, is established in the approaches to Puerto Pisco. A lighted buoy, moored in the center of the precautionary area, is surrounded by a 400m in diameter Area to be Avoided.

Puerto General San Martin—Berth Information

Berth	Length	Depth	Remarks
No. 1-A	185m	10.06m	Bulk minerals, iron ore, grain, and sulphuric acid.
No. 1-B	175m	10.06m	Bulk salt, grain, scrap iron, fertilizer, and fish oil.
No. 1-C	175m	10.06m	Bulk and bagged fishmeal and bulk fertilizer.
No. 1-D	165m	9.14m	Bagged fishmeal, bulk fertilizers, and general cargo.

Contact Information.—The pilots and port can be contacted as listed in the table titled **Puerto General San Martin—Contact Information.**

Puerto General San Martin—Contact Information	
Pilots (Tramarsa)	
VHF	VHF channels 13 and 16 (24 hours)
Telephone	51-56-532834
Facsimile	51-56-532929
Web site	http://www.tramarsa.com.pe
Harbormaster	
VHF	VHF channel 16
Telephone	51-56-532913
E-mail	tpgsmartin@enapu.com.pe

Anchorage.—Designated anchorages are located N and E of Peninsula Paracas and W of the coast of Pampa Santo Domingo. Vessels using Anchorage No 9 must keep clear of the submarine pipelines near the E of the anchorage. The designated uses and locations are, as follows:

Puerto General San Martin—Designated Anchorages		
Anchorage	**Position**	**Remarks**
No 1	13°48.26'S, 76°16.66'W	Naval vessels
No 2	13°47.70'S, 76°16.57'W	Waiting
No 3	13°47.20'S, 76°17.45'W	Ferries
No 4	13°46.56'S, 76°17.82'W	Merchant vessels
No 5	13°46.56'S, 76°18.63'W	Dangerous cargo vessels
No 6	13°45.75'S, 76°19.27'W	Quarantine
No 7	13°45.75'S, 76°18.82'W	Laid-up vessels
No 8	13°45.75'S, 76°18.27'W	Oil transfer
No 9	13°45.33'S, 76°16.20'W	Oil tankers
No 12	13°47.04'S, 76°15.94'W	Fishing vessels
No 13	13°47.14'S, 76°15.68'W	Fishing vessels
No 14	13°47.50'S, 76°15.48'W	Fishing vessels

Caution.—A restricted area has been established for the Paracas Nature Reserve, located adjacent to the shoreline along the N side of Peninsula Paracas and extending well to the W of Isla Sangayan and then S. The boundaries are best seen on the chart. Submarine cables are located close E of Anchorage Area No. 9.

3.49 The **Peninsula Paracas** (13°52'S., 76°20'W.) is a bold promontory, highest at its SW end. It is connected to the mainland by a low, sandy plain. An area reserved for the Ministry of Fishing lies between Punta Paracas and Punta Colorado, and can best be seen on the chart. Candelabro de Tres Brazos, a figure resembling a candelabra, consisting of deep trenches in the hillside, is a prominent landmark situated 0.8 mile ESE of Punta Colorado. Punta Huacas (13°54'S., 76°24'W.), the SW point of the peninsula, is high, dark, and steep, with a white rock lying 0.3 mile S of it. Cerro Lechuza, about 1.5 miles NNE of Punta Huacas, rises to an elevation of 501m, with a sharp-pointed peak which is conspicuous in the approaches from S and W. Ensenada Lagunillas, entered 5 miles E of Punta Huacas, is a bay used by fishing craft.

The coast between Punta Huacas and Punta Carretas, about 18 miles SSE, recedes NE to form a bight. Salt is shipped in lighters from Caleta Salinillo (14°00'S., 76°17'W.), within the bight. The holding ground here is bad. Isla Zarate, lying between 0.5 and 0.8 mile W of the inlet entrance, has vertical cliffs and a flat top. There are several above-water rocks near the islet. Roca Valdivia, submerged, and on which the sea breaks, lies about 1 mile WSW of the islet.

Punta Carretas (14°12'S., 76°17'W.), from which a light is shown, is the S extremity of a bold peninsula which extends 5 miles S from the mainland. Rocks fringe the point. Cerro Cerretas, the very high summit of the peninsula, rises about 2 miles N of the point.

Bahia de la Independencia (14°14'S., 76°10'W.) is entered between Punta Carretas and Punta Quemado, 11 miles SE. It recedes about 3.5 miles NE from Punta Carretas. Isla Independencia (Isla Viejas) and Islas Santa Rosa lie in the SE half of the entrance. Morro Quemado, a high hill, is a landmark rising about 1.5 miles SE of Punta Quemado. This hill, 605m high, slopes as a ridge to the point, is lighter in color than other peaks in the area, and has a thick cap of reddish earth.

The bay can be entered, but local knowledge is required, through N and S entrance channels, the former being wider, deep, and clear of dangers; the S channel, about 0.8 mile wide between Punta Quemado and the SE of the Islas Santa Rosa, has a least depth of 12.8m. Soundings within the bay give a least depth of 5.5m where examined. Tidal currents set N into the bay and are strong following fresh S winds. Isla Independencia is cliffy and has a remarkable hill at its SE end, which is joined to the island by a low, narrow isthmus. Islas Santa Rosa, two white-colored, level islets connected by a suspension bridge, lie near the end of a reef which extends 1.8 miles SE of the SE end of Isla Independencia. Numerous rocks and breakers lie off the SW sides of the islets. A shoal, with depths of 7.9 to 8.5m, extends 2.5 miles N from the N end of Isla Independencia. There are fishing villages on the shores of the bay.

Anchorage can be taken throughout the bay. A vessel anchored in 32.9m, mud, good holding ground, with the highest hill on Isla Independencia bearing 232°, distant 1 mile.

Caution.—The Paracus National Reserve encloses the bay. The limits are best seen on the chart.

3.50 **Punta Dona Maria** (14°40'S., 75°55'W.) lies about 25 miles SSE of Punta Quemado. The coast between is both rocky and sandy, and backed by hills. The few dangers along the coast lie close offshore. Punta Dona Maria, from which a light is shown, is low, rugged, and dark with patches of guano. Punta Azua, 10.5 miles NNW of Punta Dona Maria, is a high bluff, with a low, rocky point extending off it.

Cerro La Mesa de Dona Maria Francisca (14°41'S.,

75°50'W.) rises to 597m and is a prominent, truncated, conical mountain which is visible in good weather from far offshore.

Islotes Infiernillos, a group of islets and above and below-water rocks, extend up to 1 mile WNW of Punta Dona Maria. A disused light structure stands on the largest islet. Roca Mairo, a dangerous detached rock with a depth of less than 1.8m, lies 1.5 miles WNW of the largest islet.

Punta Olleros lies about 13 miles SE of Punta Dona Maria. Anchorage, with no shelter, can be taken in Caleta Olleros, situated close N of the point which is fronted close SW by an islet and pinnacle rock. There is a depth of 12.8m, 0.3 mile offshore, in the anchorage. There is a landing pier at Caleta Lomitos, about 4 miles NW of Punta Olleros.

Cabo Nazca, about 18 miles SE of Punta Olleros, is a high, dark bluff with two sharp hummocks at its base. The cape gives a good radar return at 20 miles. Caleta Nazca, about 2 miles N of Cabo Nazca, is backed by white sandhills. Landing is possible during early morning hours, but only in an emergency, as strong S winds prevail later in the day. There is a 14.6m shoal 5.5 miles SSW of the cape, and a 20.1m shoal was reported to lie about 5.5 miles SW of the cape.

Punta Santa Ana (15°09'S., 75°23'W.), about 14 miles SE of Cabo Nazca, is rock-fringed, cliffy, dark, and radar prominent. Cerro Huricangane (Criterion) rises to 1,781m, 12 miles NE of the point and is a prominent landmark. A rock, with a depth less than 1.8m, was reported to lie 6 miles W of Punta Santa Ana.

Punta San Nicolas is located about 9 miles SE of Punta Santa Ana. The point is the W extremity of a peninsula 2.3 miles long, which constricts to a width of 91m about 1 mile ESE of the point. Guano covers the point and outer peninsula. A light, with a racon, is shown from a tower about 0.5 mile SE of Punta San Nicolas. The point is fringed on all sides by above and below-water rocks for at least 0.3 mile offshore; an islet lies 0.2 mile W of the light tower. A 5.5m patch lies 1.3 miles SSE of the point and shoals of similar depth lie 4 miles NNW of the point.

Caution.—A wreck lies approximately 1.5 miles NNE of Punta San Nicholas.

3.51 Bahia San Nicolas is entered between Punta San Nicolas and Punta San Fernando, lying 1.3 miles ESE of Punta Santa Ana. The NE shore of the bay is backed by very high tableland which extends SE.

Puerto San Nicolas (15°15'S., 75°14'W.) (World Port Index No. 14895) is situated on the S shore of Bahia San Nicolas, about 1.3 miles ESE of Punta San Nicolas and is used primarily for the export of iron ore.

Depths—Limitations.—The pier, on the S side of the bay, lies in a N/S; it is 305m long and 15m wide. The deck is 4m above MLW. There is a dolphin at the N end, with a diameter of 15m, and with a connecting bridge 45m long. This dolphin is used for the stern line of vessels over 274m in length. It is fitted with an electric winch and three large bollards. Vessels berth with bows to the S.

Fendering on both sides of the pier is made of laminated lumber and rubber, keeping vessels 1.5m off the concrete pier.

On the W side the depth is 19m, and up to 91m westwards, except on the anchor pocket, which is 21m deep, 76m long, and 91m wide. When docking, two anchors are let go in the pocket to prevent any collision of the ship with its own anchors. The bottom is mud and sand.

On the E side, the original depth remains at 12.8m at the shore end and 18m at the seaward end. Vessels use their own mooring lines, while on the W, heavy surge lines are compulsory, and may be hired.

The ore ship loader has a straddle clearance height of 4.26m and a width of 3.65m.

The ore loader operates on the W side only, but iron ore slurry can be loaded on either side.

Vessels, with general cargo to discharge, use the E side. Discharge of bulk petroleum can be made at either E or W berths.

While alongside, engines must always be ready for immediate use, and sufficient crew on deck to tend mooring lines and heave in the slack as loading progresses. If this is not done, loading will be stopped and vessels taken out of berth.

Pilotage.—Pilotage is compulsory, using company pilots, who will remain on board during periods of swell; accommodation should be made available. Pilots board ships about 1 mile N of the pier head. An ETA should be sent to the agent and mining company 5 days, 2 days, and 1 day in advance. Vessels should contact the port 4 hours prior to arrival on VHF channel 13 or 16. It was reported that pilots for Puerto San Juan are also available here.

Regulations.—An IMO-adopted Traffic Separation Scheme lies in the approaches to Puerto San Nicolas and can best be seen on the chart.

Anchorage.—Eight anchorage areas are available, as shown on the chart.

Puerto San Nicolas—Berth Information

Berth	Length	Depth	Maximum Vessel		Remarks
			LOA	Size	
Marcona Mining					
Herro East	280m	12.8m	274m	240,000 dwt	CPP, coal, and iron ore. Berthing length of 325m (including dolphins).
Herro West	320m	18.9m	320m	240,000 dwt	CPP, coal, and iron ore. Berthing length of 365m (including dolphins).

Puerto San Nicolas—Designated Anchorages		
Anchorage	**Position**	**Remarks**
No. 1	15°11.88'S, 75°15.69'W	General cargo
No. 2	15°12.21'S, 75°15.35'W	General cargo
No. 3	15°12.21'S, 75°16.36'W	Dangerous cargo
No. 4	15°12.21'S, 75°16.03'W	Dangerous cargo
No. 5	15°12.21'S, 75°15.69'W	Quarantine
No. 6	15°11.88'S, 75°16.03'W	Quarantine
No. 7	15°11.88'S, 75°16.37'W	Vessel repair
No. 8	15°14.50'S, 75°13.80'W	Naval vessels

With a strong offshore breeze there is little swell. Only when the wind drops are vessels liable to swing broadside on to the swell. The holding ground is good, sand shells and mud.

Caution.—Another part of the Paracas National Reserve, an Area to be Avoided, has been established close inside the entrance to Bahia San Nicolas. The actual limits are bounded by the coast from position 15°09.23'S., 75°18.75'W to 75°22.89'W; then S to position 15°14.35'S., 75°22.89'W; and then N to the coast.

3.52 Punta San Juan is located about 8 miles SE of Punta San Nicolas. Bahia San Juan is entered N of the point. The S side of the bay is cliffy, whereas, the E side and head is sandy. A light is shown from a tower, 13m high, standing 0.5 mile SE of the point.

Punta Parada (15°22'S., 75°12'W.), the outer end of a peninsula extending 0.8 mile SSW of Punta San Juan, is radar prominent. Cerro Acari (El Huevo), isolated and very high, rises steeply above cliffs and is a conspicuous landmark 5 miles NNE of the point. Roca Negra, about 1.8m high, lies between 0.5 and 0.8 mile WSW of Punta Parada; a 6.4m patch lies about 0.8 mile SW, and a reef, awash, extends 0.4 mile NW and 0.3 mile SSE of Roca Negra.

Caution.—Local magnetic anomalies have been reported off Bahia San Juan.

3.53 Puerto San Juan (15°20'S., 75°10'W.) is situated at the head of Bahia San Juan, about 1.5 miles E of Punta San Juan. The port was important for its iron ore shipments from mines nearby, but this function is now carried out by San Nicolas. The Peruvian Navy controls operations of the port, which functions for area cargo discharge. There are three outer anchorages located in the NW of the bay, best seen on the chart.

It was reported that the piers within the port were destroyed and the port was closed to commercial shipping.

Anchorage, sheltered from swell, can be taken in the SE part of the bay, in depths of 27.4 to 36.6m, good holding ground. It is recommended that both anchors should be used due to occasional strong and shifting winds.

Punta Lomas (15°33'S., 74°51'W.) lies 23 miles SE of Punta Parada. Several dangers front the coast between the points and may be seen on the chart. Islote Lobo, above-water, lies about 1.5 miles SE of Punta Parada. Rocas Tres Marias are three above-water rocks which lie on a reef that extends about 0.5 mile off an unnamed point located 4.5 miles SE of Punta Parada.

Punta Lomas, marked by a light, is the extremity of a prominent rocky peninsula, projecting about 1 mile SW from the mainland, to which it is joined by a sandy isthmus. The peninsula consists of a series of very black rocks, higher toward the point; from the offing it appears as an island. Above and below-water rocks fringe the point. A detached rock, with less than 1.8m, lies about 0.4 mile W of the point, and a 14.6m shoal lies 1.5 miles WNW of the light structure.

Anchorage can be taken, in depths of 9.1 to 27.4m, good holding ground of sand, in Rada de Lomas, just W and N of Punta Lomas peninsula. The anchorage is exposed to sea and swell which causes ships to roll heavily if not kept head to the sea. A stranded wreck is ashore about 1 mile N of Punta Lomas. The roadstead is the port for Acari, which is situated up the Rio Lomas about 14 miles. Cargo is lightered from a pier at the head of the roads.

3.54 Puerto de Chala (15°52'S., 74°14'W.) lies about 40 miles SE of Punta Lomas. The coast between is low, sandy, and on which the surf breaks heavily. Rivers emptying into the sea between steep hills flow through green valleys that are visible from offshore. Punta Chavina, about 11 miles SE of Punta Lomas, appears as a rock from the offing; it serves as a good radar target. A white islet and rocks lie on a reef extending 0.5 mile off the point. A patch, with a depth of 11m, was reported to lie 6.5 miles SW of Punta Chavina. Punta Chala, about 18 miles SE of Punta Chavina, is radar-prominent, being high and rocky. Monte Chala is a prominent mountain range with several peaks which terminate in Punta Chala.

Puerto de Chala is a small, coastal port from which cattle and minerals are shipped. The settlement, built on high ground, has a church with towers which is conspicuous from offshore. A light is shown from a tower standing on high ground in port.

Anchorage can be taken, in a depth of 27.4m, rock, with the church bearing 081°. The anchorage is open to S winds, so that vessels may roll heavily. Vessels should not proceed within the rocks which lie up to 0.5 mile off the E and SE shores of the roadstead. The outer rocks are steep-to and usually marked by breakers.

3.55 Punta Atico (16°14'S., 73°43'W.) is located 38 miles SE of Puerto de Chala. The coast between is backed by barren hills, intersected by rivers emptying into the sea. Punta Atico, colored white, is the S end of an irregular rock-fringed peninsula, about 1 mile long, which is joined to the coast by a low, sandy isthmus. The point is radar prominent. A light is shown from a tower, 18m high, standing on the point, and a prominent television mast stands about 0.4 mile NNE of the light tower. A radar conspicuous beacon, consisting of a mast with two parallel reflectors, stands near the head of East Cove, on the E side of the isthmus. Landing can be made in West Cove, on the W side of the isthmus. There is a rock, awash, in the cove entrance and another rock, with a depth less than 1.8m, lying near the head of the cove.

A depth of 11.9m was reported to lie 8 miles offshore, 24 miles WNW of the light tower. A depth of 14.6m was reported

to lie about 12 miles W of the light tower. A depth of 11m lies about 9 miles W of the light tower.

Atico, a small town, is situated 2 miles up the Rio Atico, which flows into the sea 4.5 miles E of Punta Atico.

Atico is a lighterage port equipped with eight lighters, capacity 500 tons. Lighters are loaded over a chute.

Pilotage.—Pilotage is compulsory. VHF channel 16 is used. The working hours at the port are 0800-1200 and 1300-1700.

Anchorage.—There is an anchorage area in both the E and W coves offshore; it is exposed to S winds.

Anchorage can be taken by ships loading fishmeal from barges in a position about 1.8 miles ENE of Punta Atico, where depths are ample. Anchorage can also be taken, in depths of 34.7 to 36.6m, about 0.3 mile off the W side of the peninsula in Rada de Atico (16°13'S., 73°43'W.). Small vessels anchor off the head of West Cove, in 12.8 to 16.5m. The preferred anchorage in East Cove, open SE, is in 18.3m about 0.5 mile offshore.

3.56 Punta Pescadores (16°24'S., 73°17'W.), a low projecting bluff, lies about 26 miles SE of Punta Atico. It is identified from the S by four, high, dark cliffs, of which the W cliff is the highest. La Planchada Light stands about 4 miles E of Punta Pescadores. Roca Flara (Flora), which dries, lies 1 mile S of the point. A depth of 33m was reported to lie about 7 miles SW of the Roca Flara. Caleta Planchada, entered 5 miles ESE of Punta Pescadores, affords sheltered anchorage to fishing vessels. Caution should be exercised when entering the bay as it has not been surveyed recently. A fishmeal factory, with submarine pipelines extending up to 0.2 mile off it, lies within the bay.

The Rio Ocona flows through a valley in an area where cotton is grown and empties into the sea about 10.5 miles SE of Punta Pescadores. Caleta la Chira, about 4.5 miles SE of the river mouth, is an open cove with Isolote Foca, high and rock-fringed, near its head. The shores of the cove and adjacent coast consist of high, sheer cliffs which are radar prominent. The S entrance point of the cove is identified by a cove-shaped hill that rises just E of the point and above the cliffs. Anchorage can be taken, in 14.6m, 0.5 mile WNW of the S entrance point.

3.57 Punta Camana (16°53'S., 72°48'W.), about 17 miles SE of Caleta la Chira, is sandy and projects S from the middle of a valley which is 2 to 3 miles wide near the coast. The valley, with its rich colors, contrasts with the barren land on each side of it. The Rio Camana flows into the sea about 1 mile SE of the point. Monte Fuerte, a prominent hill resembling a fort, rises close E of the river mouth.

A depth of 27m lies about 9 miles WSW of the river mouth.

Morro Siguas, a conspicuous peak, rises from the plain about 22 miles ENE of Monte Fuerte. Camana Light is shown from a tower on Punta Pano, about 11 miles ESE of Punta Camana.

Caleta Quilca (16°43'S., 72°26'W.) is located about 17 miles ESE of Monte Fuerte. The cove, about 0.2 mile wide at its entrance, decreasing to 0.1 mile within, has depths of 25.6 to 5.5m from entrance to head. A light is shown from Morro El Castillo, the dark red cliff forming the W entrance point. Punta Quilca, off which lies Roca Foca, an above-water rock, is located about 1 mile SE of Morro El Castillo. The point is radar prominent. The cove is suitable for small craft only and local knowledge is required. A valley descends steeply to the coast close NW of Punta Quilca and the Rio Quilca enters the sea nearby.

Anchorage.—Several mooring buoys for lighters lie between the anchorage and Morro El Castillo. Vessels can anchor about 64m off the lighter buoys, in depths of 34.7 to 36.6m, with the church bearing 027° and Roca Foca bearing 140°. Small craft can anchor off a landing pier.

Matarani—Berth F

3.58 Punta Hornillos (Cornejo) lies 12 miles SE of Caleta Quilca. The coast between is regular in outline with very small coves backed by hills and low black cliffs. Rocks fringe the shores in many places. The point, a high, reddish colored projection, resembles a two-tiered fort. Three rocks, on which the sea always breaks, lie close off the point. A rock, with a depth of less than 1.8m, lies about 1.3 miles SSW of the point. It was reported that a shoal of 19.5m lies about 3.5 miles SW of Punta Hornillos.

Punta Islay (17°01'S., 72°07'W.) is located about 13 miles SE of Punta Hornillo (Cornejo),1 mile S of Matarani Port. It is the center of three points and may be easily identified by its dark color which contrasts with the whitish type of lava that is seen along the coast. The point projects slightly SW under some white patches of the hillside. A light is shown from a tower, 13m high, standing on the point. Several rocks and islets lie off the point up to 0.8 mile seaward. Bahia de Matarani is entered about 1 mile NNW of Punta Islay.

Matarani (17°00'S., 72°07'W.)

World Port Index No. 14860

3.59 Matarani lies NW of Ilo at the head of Bahia de Matarani, can accommodate large ocean-going ships alongside the principal wharf. It is the transshipment port for the nation of Bolivia. The harbor affords Bolivia with a free port for incoming general cargo and the shipment of Bolivian ore. Matarani is the main port for the S part of Peru. There are no dwellings or commercial offices in port; all installations are controlled by the government. Stevedores are transported to and from Mollendo, about 9 miles distant. The port is subject to congestion, especially when large bulk grain ships are discharging, as they take up more than one berth, thus reducing port capacity.

Winds—Weather.—The prevailing winds are S to SW. The strong winds that occur often necessitate the use of two tugs to

Chimbote

turn the ship around at the harbor entrance. A heavy swell and surge is common to the area; in winter the swell may prevent entry and departure.

Tides—Currents.—The tidal range is about 0.6 to 0.8m. Currents in the bay and harbor are negligible.

Depths—Limitations.—The entrance fairway, leading SE between breakwater heads, has a depth of 13.1m. Pilots will not take a ship over the 11.9m rocky patch in the entrance unless it is high tide and there is no swell. A 3.3m patch lies close inside W breakwater head and is marked by a buoy.

A ro-ro terminal at the SW end of the basin has a 90.5m berthing face. The principal wharf is situated along the SE shore of the harbor. It is 540m long and has depths alongside between 9.6 and 13m. It is a concrete marginal wharf with a 20m wide apron and provides four mooring berths where three ships of more than 170m can make fast. A small wharf for fishing vessels lies in the NE part of the harbor.

A newly-constructed (2017) pier lies in the S part of Caleta Islay, S of Matarani harbor. The pier has four mooring buoys lying close NE and NW. An offshore oil berth, in a depth of 20m, lies 5 miles SE of the harbor and serves a tank farm close S of Mollendo City. Tankers drawing up to 16m can be accommodated.

Aspect.—Islotes Alvizuri consists of several islets lying in the S part of Bahia de Matarani. The islets are high and steep-to, but vessels should not attempt to pass between them without local knowledge. Pasaje de Islay, about 0.1 mile wide, with a least depth of 15m, leads NNE through the islets. A wreck, marked by a buoy, lies close NE of the islets.

The harbor is enclosed by two breakwaters with an entrance 120m wide, the W breakwater of which extends NNE for about 0.3 mile, then forms an elbow extending E for about 46m. The W breakwater elbow is marked by a light, while the area close off from the breakwater head that extends E is marked by another light in the water. Vessels need to remain E of this light in order to avoid shoal areas between the breakwater head and the light. A rock, with a depth of 3.3m, is located 40m SE of the breakwater head and is marked N by a buoy. The E breakwater extends about 137m W from the NE shore of the harbor. An 11.3m patch lies about 145m NNW of the W breakwater elbow. The harbor entrance is about 119m wide between an obstruction off the E breakwater head and a 3.3m rocky patch marked by a lighted buoy, lying close off the W breakwater head. Vessels can enter or leave at any time, weather permitting, but entering is usually not worthwhile between 2200-0500.

Matarani—Terminal Internacional del Sure Roca Blanca Light

Cerro Islay, dark, high, and with a bell-shaped peak, lies about 5 miles NNE of Punta Islay. This peak is a good mark on a S approach to port when the area is fogbound. A statue and a water tank situated in the vicinity of the range markers are visible on nearing the harbor, as is a large grain elevator on the wharf.

A lighted range leads to the harbor entrance. A light is shown from an islet lying close off the shore about 0.2 mile N of the W breakwater head.

Pilotage.—Pilotage is compulsory. Pilots will board vessels in position 16°59'29"S, 72°07'22'W.

Regulations.—Vessels should send an initial ETA 7 days in advance of expected arrival and include the last port of call and any dangerous cargo on board. Additional ETA messages should be sent to the harbormaster and port authorities 72 hours and 24 hours prior arrival; these messages should also include information regarding any dangerous cargo on board. All ETA messages should include the following information in addition to what has already been mentioned:

1. Date and hour of arrival.
2. Expected draft upon arrival.
3. Number of crew and if there are any passengers on board.

Contact Information.—The pilots and port can be contacted 24 hours as listed in the table titled **Matarani—Contact Information.**

Matarani—Contact Information	
Pilots (Tramarsa)	
Telephone	51-54-557082
	51-54-557101
Facsimile	51-54-557084
Harbormaster	
Call sign	Costera Mollendo
VHF	VHF channels 13, 14, and 16
Facsimile	51-54-892599
Port Authority	
Telephone	51-54-557044
Facsimile	51-54-557197
Web site	http://www.tisur.com.pe

Matarani—Docks A, B, and C

Anchorages.—Four designated anchorage areas are located in the port, as follows:

1. Vessels with dangerous cargo—an area bounded by lines joining the following positions:
   a. 17°00'07"S, 72°07'21"W.
   b. 17°00'12"S, 72°06'58"W.
   c. 17°00'25"S, 72°07'01"W.
   d. 17°00'19"S, 72°07'24"W.
2. Fishing vessels—an area bounded by lines joining the following position:
   a. 16°59'45"S, 72°06'39"W.
   b. 16°59'47"S, 72°06'33"W.
   c. 17°00'06"S, 72°06'38"W.
   d. 17°00'04"S, 72°06'44"W.
3. Quarantined vessels—an area bounded by lines joining the following position:
   a. 16°58'33"S, 72°07'50"W.
   b. 16°58'28"S, 72°07'39"W.
   c. 16°58'52"S, 72°07'28"W.
   d. 16°58'56"S, 72°07'39"W.
4. All other vessels—an area bounded by lines joining the following position:
   a. 16°59'38"S, 72°07'13"W.
   b. 16°59'45"S, 72°06'43"W.
   c. 17°00'13"S, 72°06'51"W.
   d. 17°00'07"S, 72°07'21"W.

When the port is closed due to swells, anchorage may be obtained in Caleta de Islay, in depths of 18 to 26m. Mooring buoys are available.

Matarani—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
Terminal Internacional del Sur (TISUR)						
Dock A	—	10.0m	245m	9.7m	240,000 dwt	Chemicals, vegetable oils, containers, breakbulk multipurpose, bunkers, reefer, PCC, and climker. Unrestricted beam. Continuous berthing length of 583m.
Dock B	—	10.0m	245m	9.7m	240,000 dwt	
Dock C	—	10.0m	245m	9.7m	240,000 dwt	

Matarani—Berth Information						
Berth	Length	Depth	Maximum Vessel			Remarks
			LOA	Draft	Size	
Dock F	202m	18.0m	—	—	60,000 dwt	Copper concentrate. Dock consists of a mixed mooring system comprising four buoys (two forward and two aft).
Mollendo Terminal						
CMB	—	20.0m	—	—	52,000 dwt	Aviation fuel, CPP, and DPP.

Caution.—Numerous fishing vessels may be encountered in the vicinity of the port and moored near the breakwaters. Roca Plana, with a 6.6m shoal extending to the NW, lies S of the pier in Caleta Islay.

Matarani to Arica

3.60 A church, with two conspicuous spires, stands in the town. Volcan Misti, about 60 miles NE of Puerto Mollendo, is a conical mountain covered with snow, and is reported visible in clear weather from 100 miles offshore.

Punta Bombon, close to the mouth of the Rio Tambo, is located about 13 miles SE of Mollendo. The point, low and brush-covered, is the outer end of the alluvial plain at the entrance to Valle de Tambo. The point should be given a wide berth. Valle de Tambo is fertile, contrasting sharply with the steep, barren cliffs that extend along the coast on either side. A high peak is prominent about 9 miles NNW of Punta Bombon.

Cabo Peje Perro, a 579m promontory, rises about 10 miles SE of Punta Bombon. Caleta Cocotea, 3 miles SE of the cape, affords anchorage, in a least depth of 14.6m, but there is usually a rough sea in the cove. Two high islets lie close off the coast, about 1 mile SE of the cove.

Punta Coles (17°42'S., 71°23'W.) is located about 54 miles SE of Puerto Molendo. The coast between is regular in outline and backed generally by hills intersected in places by valleys.

Punta Coles is a low, sandy spit extending from the base of a high tableland. Above-water rocks lie on detached foul ground lying 0.5 mile SW of the point. From the offing the point appears as an island. A light is shown from a tower, 15m high, standing on the point. The coast N of the point is fronted by several above and below-water rocks.

Punta Sopladera is located 11 miles N of Punta Coles. Four conspicuous chimneys, which emit smoke, stand close N of the point at the South Peru Copper Company installation; they serve as an excellent landmark.

An offshore tanker berth, consisting of four mooring buoys, lies about 0.3 mile offshore close N of Punta Sopladera. A submarine pipeline connects the berth to the shore. Vessels approach the berth heading SE on the alignment of two beacons standing about 0.3 mile ENE of the point. Vessels are secured at the berth heading SW. Pilotage is compulsory; vessels are required to call at Puerto Ilo for clearance and to embark the pilot. It is reported that the berth lies in depths of 24m, and that tankers of up to 45,000 dwt, with drafts of 15.2m, can be accommodated.

3.61 Puerto Ilo (17°38'S., 71°22'W.) (World Port Index No. 14840), the S port of Peru, is situated about 4.3 miles NNE of Punta Coles between Mallando and Arica. The port is used mainly for export of fishmeal and minerals.

It was reported (1999) that, under an agreement with Bolivia, Ilo is being developed into the main general cargo port for the region.

Winds—Weather.—Southwest winds prevail and at times cause a surge and swell that make alongside conditions difficult, especially between June and September. There may be some days when ships are unable to berth because of sea conditions.

Depths—Limitations.—The port consists of a roadstead off the town and two principal piers named Muelle Nuevo ENAPU and Muelle SPCC. Muelle Fiscal, a small pier in a cove off the N end of the town, is used by lighters.

Puerto Ilo—Berth Information					
Berth	Length	Depth	Maximum Vessel		Remarks
			LOA	Size	
ENAPU Quay					
1A	151m	10.0m	220m	35,000 dwt	Fish meal, general cargo, wheat/maize, iron ore, and ammonium nitrate. Bunkering unavailable, Fresh water available. Continuous berthing length of 302m.
1B	151m	10.0m	220m	35,000 dwt	
1C	151m	4.5m	—	5,000 dwt	Mooring small boats and fishing vessels, Fresh water available. Continuous berthing length of 302m.
1D	151m	8.2m	—	20,000 dwt	
Landing Ramp	60m	3.6m	—	—	Ro-ro. Ramp width 20m.

Puerto Ilo—Berth Information					
Berth	Length	Depth	Maximum Vessel		Remarks
			LOA	Size	
SPCC Quay					
1A	160m	9.7-10.3m	210m	35,000 dwt	Containers, general cargo, and sulphuric acid in bulk, No beam restrictions.
1B	160m	9.7-10.3m	210m	35,000 dwt	Containers, general cargo, and sulphuric acid in bulk, No beam restrictions.
EnerSur Terminal					
EnerSur Pier	80m	19.8m	—	—	Discharging coal in bulk, Waterline to masthead height 30m, Fresh water, if requested in advance, No beam restrictions.
Ilo Smelting Terminal					
MBM	—	19.8m	244m	35,000 dwt	Crude oil. Discharging diesel. Maximum draft of 13m.
Marine Trestle Pier	30m	—	180m	35,000 dwt	Loading sulphuric acid. Berthing/unberthing available 24 hours.
PETROPERU Terminal Ilo					
MBM	—	15.2m	259m	35,000 dwt	Discharging diesel. Maximum draft of 12m. Berthing/unberthing available 24 hrs.
Tramarsa Liquids Storage and Shipping Terminal (TLT)					
MBM	—	12.2m	190m	35,000 dwt	Crude oil, soybean oil, sunflower oil, fish oils, and alcohol. Unloading hydrocarbons. Berthing/unberting available 24 hours.

Muelle Nuevo ENAPU extends WSW from a position 0.2 mile W of Muelle Fiscal. The pier offers four berths with alongside depths of 5.5 to 18.3m. It handles general cargo and has berths on both sides. Depths on the N side range from 7.3m at the inner end to 18.3m at the outer end, and on the S side from 5.5m at the inner end to 16.4m at the outer end. Leading lights, in line bearing 076°, may be of assistance approaching this pier.

A rock, with a least depth of about 10m, has been reported to lie between 20 and 30m off the S berth and about 120m from the seaward end.

Muelle SPCC, 183m long, extends WNW from a rock breakwater. There are depths of 10 to 16m alongside the pier, which is used exclusively for the export of copper from the refinery.

PetroPeru Oil Terminal lies 0.6 miles NNE of Muelle SPCC. There are two berths with mooring buoys that can accommodate vessels up to 170m long, with a draft of 12m.

Aspect.—A conspicuous group of oil tanks stands in the N part of the port. Range lights, which may best be seen on the chart, lead to the berths on the two main piers.

Pilotage.—Pilotage is compulsory. The pilot boarding area is in position 17°38'42"S, 71°22'06"W.

Regulations.—An IMO-adopted Traffic Separation Scheme lies in the approach to Puerto Ilo and can best be seen on the chart.

The vessel's initial ETA message should be sent 72 hours prior to expected arrival, then reconfirmed 48 hours and 24 hours before arrival, with a final confirmation sent via VHF at 20 minutes before arrival.

Puerto Ilo

Contact Information.—The pilots and port can be contacted 24 hours as listed in the table titled **Puerto Ilo—Contact Information.**

Anchorage.—Designated anchorage areas for various types of vessels lie offshore and may best be seen on the chart. Tankers should anchor 1.8 miles NW of Muelle Nuevo ENAPU, cargo vessels should anchor 1.3 miles WNW of Muelle Nuevo ENAPU, dangerous cargo vessels should anchor 2.3 miles W of the piers, and quarantine vessels should anchor 2 miles

WSW of the piers.

Puerto Ilo—Contact Information	
Pilots (Practimar)	
VHF	VHF channels 16 and 68
Telephone	51-53-481187
Facsimile	51-53-481187
E-mail	practim@terra.com.pe
Pilots (Tramarsa)	
Telephone	51-53-481682
Facsimile	51-53-482295
Web site	http://www.tramarsa.com.pe
Port	
VHF	VHF channels 12, 13, and 16
Telephone	51-53-482233
	51-53-483449
	51-53-481215
	51-1-465-4280
Facsimile	51-53-481520
	51-1-429-1870
E-mail	tpilo@enapu.com.pe
	oper_tpilo@enapu.com.pe
Web site	http://www.enapu.com.pe

Caution.—A 3.6m patch, marked by a lighted buoy, lies 183m SSW of the head of Muelle SPCC.

Groups of rocks, marked by a lighted buoy, extend up to 0.4 mile seaward from a point on the shore about 0.5 mile S of the root of Muelle SPCC.

Lighters moored inshore of the offshore tanker berth are used by fishing craft which frequent the area.

Shoaler depths than charted may be encountered up to 0.5 mile from shore from Pena Blanca SW to near Punta Coles.

3.62 Rada de Arica (18°29'S., 70°20'W.) lies about 75 miles SE of Punta Coles. The coast between is fairly regular with fringing dangers lying within 0.5 mile offshore. From Punta Coles to Punta Sama, about 33 miles SE, the coast is composed alternately of sandy beaches and low cliffs, backed by tableland.

Caleta Ite (17°54'S., 70°57'W.), a cove about 1 mile wide, affords a landing place except during autumn and winter, when rough seas prevail. The Rio Locumba flows into the sea through a fertile valley and empties through a beach at the NW side of the cove. A reef extends from the N shore of Caleta Ite. An anchorage for vessels carrying dangerous cargo is found off Playa del Palo.

Punta Sama (18°00'S., 70°53'W.) is the extension of a spur leading W from Morro de Sama, a bold rock-fringed dark promontory that is the most conspicuous headland along this coast. A reef, on which the sea breaks at times, lies off Punta Sama. A light is shown from a tower on Punta Sama.

Anchorage.—Anchorage may be taken NW of the reef extending from the N shore of Caleta Ite, in a depth of 18.3m, sand, with Punta Sama bearing 145° and a road that is cut through the dark hills behind the cove bearing 015°.

Small vessels may anchor in Caleta Sama, just N of the point, in depths of 16.5 to 21.9m.

3.63 Punta de la Quiaca (18°05'S., 70°46'W.), a low sandy tongue, with cliffs close N of it, is fronted by an above-water rock lying close SE of it. The coast between the Rio Juan Diaz (18°10'S., 70°40'W.) and Arica consists of a sandy beach. It is backed at its NW end by the heights of Cerros de Juan Diaz and Cerro Negro, rising 5.5 miles E of the Rio Juan Diaz. Los Palos Light is shown at the mouth of the Rio Molles (18°18'S., 70°26'W.).

La Concordia Light (Peru) (18°21'S., 70°23'W.) is shown at the coastal frontier between Peru and Chile. La Concordia Light (Chile) is shown about 1.3 miles E of its namesake.

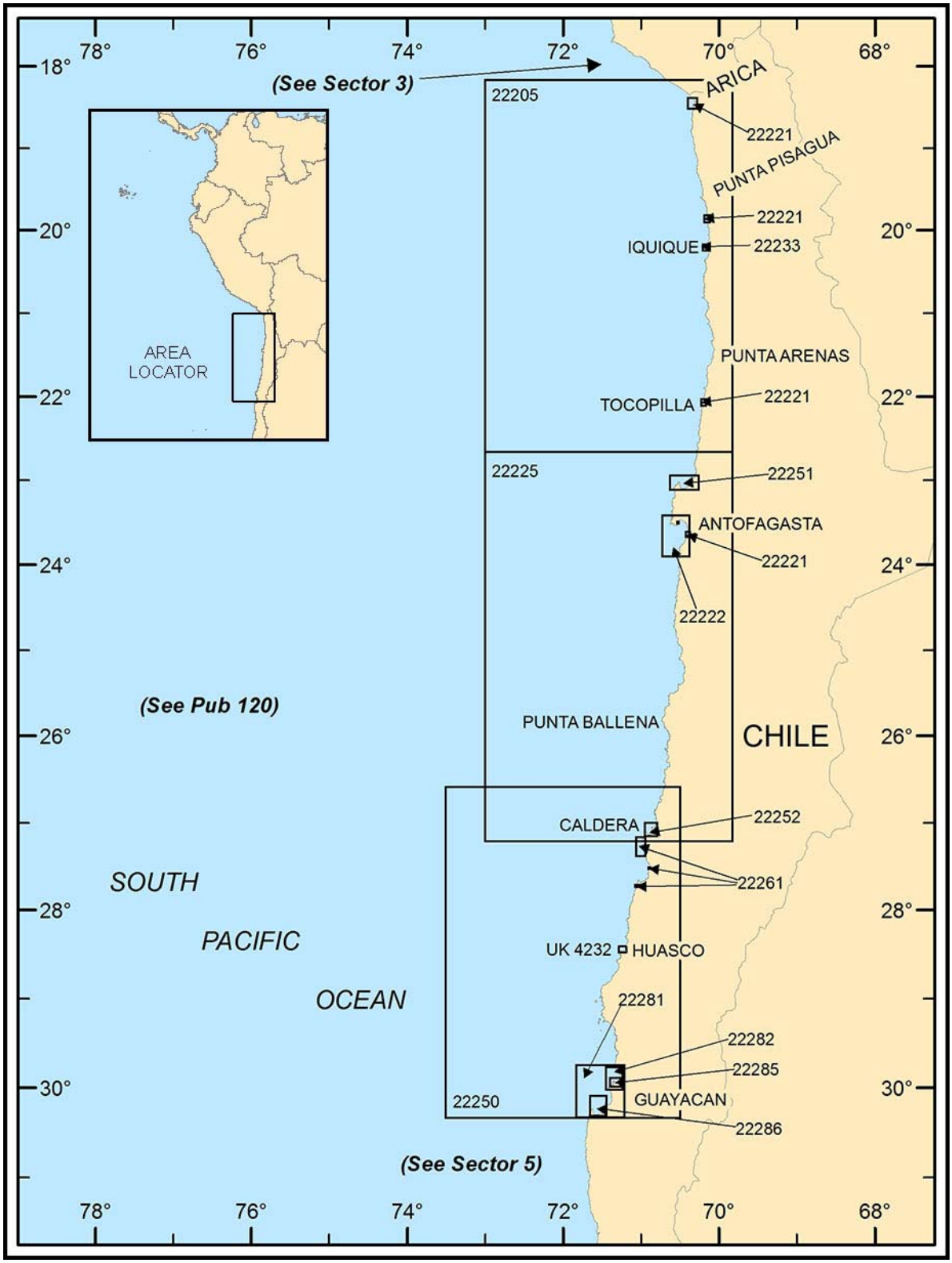
An aeronautical radiobeacon is situated about 2 miles E of La Concordia Light (Chile).

The port of Arica is situated about 8 miles SSW of the coastal frontier and is described in paragraph 4.2.

3.64 Puerto Mollendo (17°01'S., 72°02'W.) (World Port Index No. 14850), the lighterage port of Mollendo, about 6 miles ESE of Punta Islay, no longer engages in shipping operations except for the discharge from tankers of clean petroleum products at the offshore moorings. The breakwater (mole) and landing wharf in Puerto Mollendo have been destroyed. All cargo operations are now carried out at Matarani.

An oil terminal, with prominent tanks, is situated close E of the town. An offshore tanker berth, consisting of four mooring buoys, lies about 0.3 mile S of the terminal and is connected to it by a submarine pipeline. Pilotage is compulsory and pilots board about 1 mile from the berth. Pilots are available from Matarani. The vessel's ETA must be sent through Callao at least 24 hours in advance.

It is reported that vessels with drafts up to 12.2m can be handled. At times, the berth is closed due to heavy swells.



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

SECTOR **4** — CHART INFORMATION

SECTOR 4

CHILE—ARICA TO PUNTA LENGUA DE VACA

Plan.—This sector describes the coast of Chile from Arica to Punta Lengua de Vaca (30°14'S., 71°38'W.). The sequence of the description is from N to S.

General Remarks

4.1 Several of the larger bights and bays along this coast are suitable for large vessels. In addition, there are numerous small bays and bights which may be used by small vessels with local knowledge.

There are a number of prominent points and headlands. Numerous islets and rocks lie close off the coast.

From Arica S to the S limit of this sector, almost the entire length of the coast consists of desert. Vegetation is sparse except in some of the oases and cultivated areas. The coastal cordillera follows close to the sea, leaving a coast that is high, level, and steep. There are few natural harbors along the coast. The Andes Mountains back the entire coast about 30 to 60 miles inland and rise to general heights of 1,524 to 3,048m. Many of the summits attain a height much greater than 3,048m.

The rivers along this coast consist of mountain torrents that are fed by the melting snows of the Andean cordillera and disappear into the desert. The waters of these rivers are used for irrigation, domestic, and industrial purposes. The Rio Loa, N of Punta Chileno, is the only river that crosses the desert and reaches the sea during all seasons.

In general, the sea fronting this coast is deep. Above and below-water dangers fringe many parts of the coast. Shore banks extend 2 miles offshore in a number of places. Caution must be exercised due of the lack of soundings. Uncharted dangers may exist. In addition, the charts have been reported not to conform with the actual coastal configuration in a number of places.

The geographic positions given in this sector have been obtained from the latest available Chilean charts and may differ as much as 1.2 miles S, 3.5 miles N, or 2 miles E from their charted positions.

Antofagasta is the largest port in northern Chile. The ports of Arica, Iquique, Tocopilla, Taltal, Chanaral, Caldera, Huasco, and Coquimbo are important. In addition, there are a number of smaller roadsteads and ore-loading ports that are visited by coastal vessels or large vessels.

The principal points, islands, and harbors are lighted. Fog occurs along this coast at infrequent intervals, the average being less than one or two days a month. The high peaks of the Andes Mountains are often hidden by clouds.

Tides—Currents.—The currents off the coast of Chile are influenced by the Peru Current. In general, the current sets N parallel to the coast at a velocity of 0.5 knot. It sets slightly stronger from May to October than from November to April. The current is generally stronger near the land than at sea.

A current setting S at a velocity equal to or greater than the N current may occur occasionally and suddenly at any time of year. The periods during which this phenomenon occurs cannot be predicted as it appears to be influenced neither by the seasons, phases of the moon, nor a change of wind to a N direction. It has been reported that along the N coast of Chile, the Peru Current moves in certain circular directions, which are of particular importance to the local fishermen. The expressions “when the current approaches” and “when the current departs” are commonly used in this area; there is an abundance of fish in the former case, while in the latter the fish are less numerous.

Chile Pacific Coast—Major Ports

At any position along the Chilean coast N of 50°S, after N or NE winds have been blowing, a coastal current setting S or SE may be expected. Currents of a local nature are described in the various parts of this sector with the features off which they occur.

The tidal wave is generally propagated along the Chilean coast from N to S. Tidal currents of a local nature are described with the features off which they occur.

Note.—See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for details on regulations pertaining to vessels entering Chilean waters.

The Chilean Ship Reporting System (CHILREP) is a voluntary reporting system operated by a directorate of the Chilean Navy. Details of the system are found in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

CHILREP can be contacted, as follows:

1. Telephone:56-32-220-8637
56-32-220-8638
56-32-220-8639
2. Facsimile:56-32-220-8662
3. E-mail:mrccchile@directemar.cl

Caution.—Submarine exercise areas extending up to 30 miles offshore, lie in the waters within this sector, and are shown on the chart.

Arica (18°28'S., 70°20'W.)

World Port Index No. 14800

4.2 Arica lies at the SE end of Rada de Arica. The port is more important for the transshipment of goods to and from Bolivia than for local imports and exports. Bolivia maintains a customhouse in the port.

Arica Home Page
http://www.puertoarica.cl

Winds—Weather.—Southwest winds prevail nearly the entire year. These winds may be considered a sea breeze. A steady wind may be expected from noon until dusk, when it abates. On rare occasions a land breeze may blow from the E; such a wind is always very light and generally dies out by dawn.

Fogs, called "calimas" or "camanchacas," occur most frequently from May to September. During and after October these fogs are generally partial and occur only in the morning.

Normally, the sea from the SW is calm in the morning, but increases somewhat in the port in the afternoon and evening. Heavy storms from the S, caused by S winds, may be experienced and last for several days. The sea becomes continually rougher until the second or third day following the onset of the storm, when it reaches its maximum. Such storms usually occur in the winter months of June, July, and August and last 3 or 4 days. Harbor work and traffic in the port may be interrupted for 5 or 6 days. Northeasterly storms, caused by land breeze, may enter the port, but are not as severe as those from the south.

Tides—Currents.—The mean tidal range is 1.4m. A current setting NE enters the roadstead. This current is caused by the prevailing SW winds and its rate is proportional to that of the wind that has blown on the preceding days, but the range of current strength is 1 to 2 knots. During calm weather, a weak current setting S is experienced.

Depths—Limitations.—The harbor consists of two breakwaters, one on the N side extending WNW for about 450m in length from the shore and the other larger breakwater on the W side of the harbor. The larger breakwater is called Muelle de Abrigo and is an L-shaped breakwater jetty extending WNW from the shore N of Morro de Arica, and then in a NNE direction. The entire length of this breakwater is 1,233m.

Three berths (No. 3, No. 4, and No. 5) are assigned to Muelle de Abrigo and one (No. 7), operated by ENAPU (Empresa Nacional de Puertos) assigned to the N (smaller) breakwater. Berth No. 7 is for the exclusive use of cargo coming from or going to Peru. These berths are all located inside the breakwaters.

A new pier was built close E of Muelle de Abrigo in 2009 with a short causeway extending N from the shore connected to a concrete pier on pilings extending NE and is the home to Berth 2B. Berthing at this pier is carried out only on the E side.

Muelle Fiscal is located close E of Pier 2B but extending W from the shoreline and is 177m in length, 16.8m in width, and has an alongside depth of 3m at the pier head. Muelle Fiscal is used by fishing boats, lighters, and net replacement, among other tasks. There is a small-scale fishing terminal between Muelle Fiscal and the N breakwater. See the table titled **Arica—Berth Information** for the berth number designations, along with their assigned lengths and maximum allowable drafts permitted alongside.

A yacht harbor, S of the main harbor, lies close E of Isla Alacran and is protected by a breakwater.

Arica—berth Information

Berth	Length	Width	Maximum Vessel		Remarks
			Draft	Size	
Arica—Muelle Fiscal					
No. 1	114m	—	2.8m	—	Tugs only.
No. 2A	200m	—	3.7m	—	Mooring tugs.
No. 2B	220m	38m	12.5m	—	General cargo, cruise vessels, and containers.
No. 3	190m	23m	9.7m	—	General cargo, cruise vessels, and containers.
No. 4	250m	50m	10.0m	—	General cargo, bulk, cruise vessels, and containers.
No. 5	250m	50m	10.0m	—	General cargo, bulk, cruise vessels, and containers.
No. 7	185m	24m	10.0m	—	General cargo, bulk, minerals, and containers.
Arica—Tanker Terminals					
Sica-Sica	180m	—	11.43m	50,000 dwt	Crude oil.
Quaine	185m	—	13.0m	45,000 dwt	Clean or dirty products.

Continuing S of Isla Alacran in the vicinity of position 18°30'36"S, 70°19'06"W are two CBM-type oil export berths. The CBM is comprised of three mooring buoys. Tankers must moor with two anchors forward and fiber-only lines to each of the three aft mooring buoys. Only one tanker can be berthed at a time but, depending on the discharge connection, there can be two types of tanker terminals. Details of each terminal are in the table titled **Arica—Tanker Terminals**.

A crude oil export berth is available about 0.6 mile NE of the breakwater head, which is able to accommodate vessels up to 60,000 dwt, with a maximum draft of 13.1m. A second berth, for clean oil products, lies about 0.5 mile NE of the breakwater head and is capable of handling vessels up to 45,000 dwt, with drafts of 9.8m.

Tankers are berthed during daylight hours only and preferably in the morning to minimize exposure to SW gales strength winds that are frequent during the afternoon and early evening hours. Departure after 2100 is prohibited until the next day.

On closer approach, the coast behind the roadstead appears low. It trends S and SW, terminating in the heights of Morro de Arica. Isla Alacran, close W of Morro de Arica, is joined to the mainland by a breakwater. A cross stands on Cerro La Cruz, a hill SE of the town. Two prominent water towers stand on the NE slope of the hill, close to the cross.

Conspicuous tanks stand about 1.5 miles ESE and a little over 2 miles SSE of Isla Alacran.

Numerous prominent radio masts and a conspicuous television mast, showing red obstruction lights, lie SE of the port.

Lights are shown from Isla Alacran and the head of Muelle de Abrigo. The lights on the breakwater are reported to be visible at greater distances than the lighted aids to navigation and are fitted with AIS. Four floodlight towers at a stadium situated about 2 miles E of Isla Alacran are prominent and marked by fixed red obstruction lights. An airport, from which numerous prominent lights are shown, is situated about 8 miles N of the port.

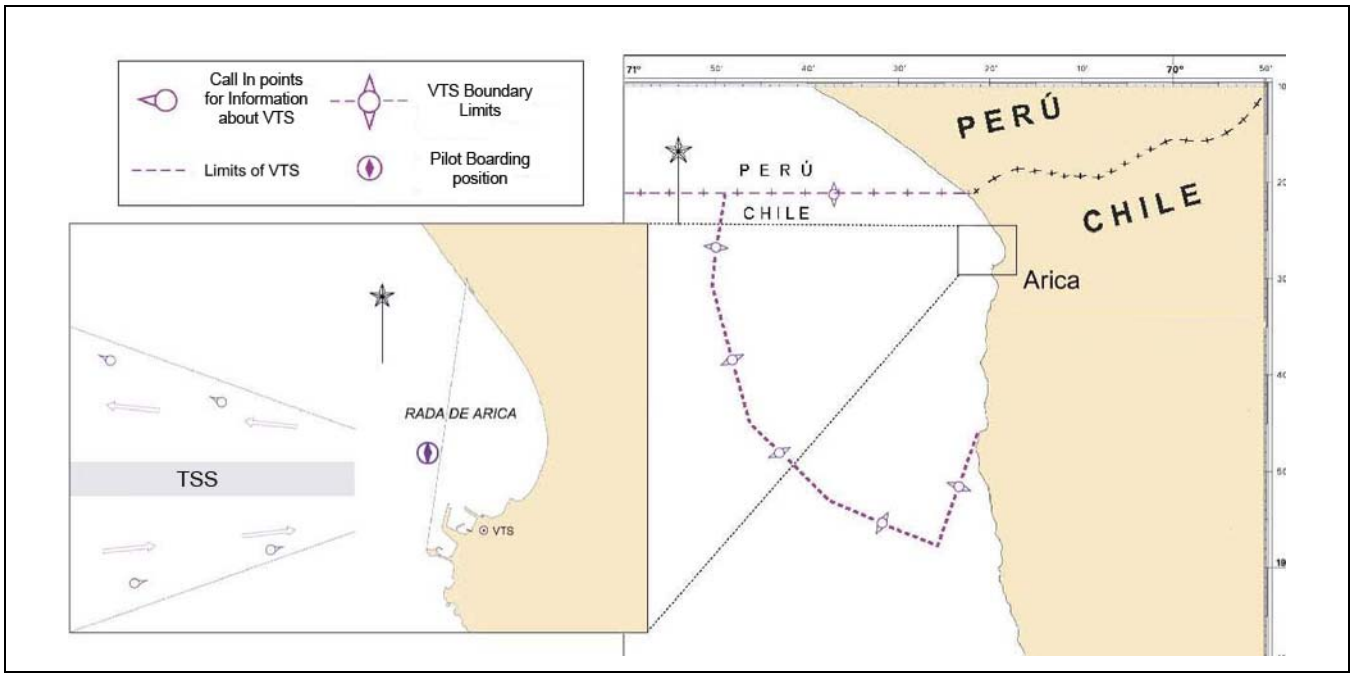
Morro de Arica is a granite bluff which rises steeply from the sea. A flagstaff, lighted at night, stands on the summit of Morro de Arica. Morro Gordo is a semi-conical hill about 0.5 mile S of Morro de Arica. At a distance of 25 to 30 miles, Morro de Arica has the appearance of a whitish cliff, the S slopes of which unite with Morro Gordo a short distance from the sea.

The size of cargo in transit to Bolivia through the port is limited by the tunnels and the length of railroad cars; it is reported that the length of a railroad car is about 10m, the height of the tunnels is 3.2m, and the width of the tunnels about 2.7m.

Aspect.—From a distance of 25 to 30 miles, Morro de Arica, close S of the port, and Morro Gordo, about 0.5 mile further S, form a good landmark. On a clear day Ciudad de Tacna, 29 miles N of Arica, and a valley rising gradually to meet it, are visible from seaward. To the E rise some of the highest peaks of the Andes. Volcan Misti lies about 140 miles NNW of Arica and is often visible. It is conical and snow covered.

Isla Alacran, a low island of whitish appearance, lies with its W extremity nearly 0.5 mile W of Morro de Arica. A small flat-topped hill, 15.8m high, stands near the center of the island, which is connected to the shore by a causeway. A short breakwater extends from its shore.

Pilotage.—Pilotage is compulsory. Two pilot boarding grounds are located about 0.8 mile NNW of the head of Muelle de Abrigo and are best seen on the chart. Pilotage is available from "Armada Nacional." Vessels over 220m in length will require two pilots. Pilots can be contacted on VHF channel 8.



VTS Arica

Regulations.—The port is the N quarantine station for Chile and is a first port of entry. Vessels bound for "non-port-of-entry"

ports must call at Arica first, unless specifically exempted.

An IMO-adopted Traffic Separation Scheme lies in the approaches to the port and may best be seen on the chart. The inbound traffic lane is situated on the S side of the separation zone.

The initial ETA should be sent 5 days in advance of expected arrival and then once every day at 0800 until arrival. The ETA message should include the following information:

1. Confirmation that all cargo gear is in working order.
2. If any cargo shifting is expected.
3. If there is any dangerous cargo on board (scheduled for discharge or just in transit.
4. Expected arrival draft.

The use of tugs are required for all maneuvers associated with berthing and unberthing.

Vessel Traffic Service.—A Vessel Traffic Management System (VTM-STM) operates 24 hours in the port limits of Arica and outward to the boundary described in the diagram titled **VTS Arica**. The VTS center is located in the city of Arica.

Participation in VTS Arica is mandatory for all vessels operating in the port limits of Arica and at anchor. Participation is voluntary for vessels passing through the VTS limits without stopping. Vessels entering the VTS Arica operational limits should advise their name, call sign, and ETA at the VTS limits one hour in advance through both VHF channel 16 and Arica Radio (CBA2). Additional communication with VTS Arica is to be carried out in accordance with the information in the table titled **VTS Arica—Contact Information**.

The vessel's Automatic Identification System (AIS) equipment must be working and turned on while vessel is within the bay and harbor as well as for any other vessels transiting through the VTS operational area.

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

Arica—Contact Information	
Port Operations	
VTS Arica Radio	Call sign: Arica Radio CBA2
VHF	VHF channels 14 and 16
Telephone	56-58-220-6400
	56-58-220-6437
	56-58-220-6470
Facsimile	56-58-220-6496
E-mail	sctmarica@directemar.cl
MMSI	007250010
Harbor Master	
Telephone	56-58-220-6404
Facsimile	56-58-220-6496
E-mail	cparica@directemar.cl
Port Authority	
Telephone	56-58-259-3400
E-mail	puertoarica@puertoarica.cl
Web site	http://www.puertoarica.cl

Arica—Contact Information	
Terminal Puerto Arica (TPA)	
Telephone	56-58-220-2000
Facsimile	56-58-220-2005
E-mail	tpa@tpa.cl
Web site	http://www.tpa.cl

Anchorage.—Six designated anchorage areas are located outside the breakwaters with their center positions, as follows:

1. Area A—18°28'24"S, 70°20'36"W.
2. Area B—18°28'57"S, 70°20'54"W.
3. Area C—18°29'30"S, 70°21'09"W.
4. Area D—18°29'00"S, 70°21'30"W.
5. Area E—18°27'01"S, 70°20'21"W.
6. Area F—18°26'46"S, 70°20'58"W.

Vessels working explosives anchor at the quarantine anchorage which is situated 1 mile, bearing 345° from the head of Muelle de Abrigo. Vessels arriving overnight may anchor at the pilot boarding ground.

VTS Arica will assign anchorage areas in response to application from the vessel.

Caution.—A dangerous wreck lies in position 18°23'0.2"S, 70°22'05"W. Several dangerous wrecks and obstructions lie within the vicinity of the port and may best be seen on the chart.

A sewer pipeline extends about 1.3 miles WNW from a point on the shore 1.5 miles NE of the harbor entrance. An area in which anchoring and fishing are prohibited lies adjacent to the pipeline and can be seen on the chart.

Additional submarine cables, best seen on the chart, extend seaward from a point on the coast N of the oil berth anchoring and fishing prohibited area.

4.3 Punta Paloma (18°33'S., 70°20'W.), about 4 miles S of Isla Alacran, projects a short distance seaward from the coastal cliffs. A prominent white rock lies on the beach on the N side of the point. Meseta Condor, a precipitous hill about 2 miles NE of Punta Paloma, rises to a height of 128m. A fish processing factory and an oil installation on the shore below the hill are lighted and prominent.

Bajo Paloma, a stony patch with depths of 3 to 3.9m, lies about 0.5 mile offshore and the same distance N of Punta Paloma. Rocas Pajaros consist of three rocks, awash, which lie close offshore about 1 mile SSW of Punta Paloma. About 1 mile S of Punta Paloma, a large white stripe on the coastal cliff is a good landmark and can be seen for 15 miles in clear weather.

Punta Blanca lies about 3 miles SSW of Punta Paloma. The base of the point is almost completely white and is visible a considerable distance. A small rock, awash, lies off the point.

Cerro Solitario lies about 2 miles SSE of Punta Blanca and is conspicuous because of its conical shape. A wooden pyramidal beacon stands on the summit of the hill. Cerro Solitario is the NW termination of Sierra de Camaraca, a mountain about 2 miles SW which rises to a height of nearly 949m.

Punta Baquedano (18°39'S., 70°21'W.), about 4 miles S of Punta Blanca, is very prominent. At its outer end, the point consists of a low stony hummock. It is backed by high cliffs which rise rapidly inland to a height of 883m. A little farther S,

the elevation increases to 927m. Punta Baquedano is the most conspicuous point between Morro de Arica and Punta Argolla. Roca Vitor lies awash about 0.5 mile off this point and is always visible because of the breakers over it.

Punta Pinto is about 4 miles S of Punta Baquedano and Cabo Condell lies about 3.5 miles farther SSW. The former point is high and cliffy; it has no beach and rocks, awash, lie close off it. The latter point has a 664m hill about 1 mile E of it.

Caleta Vitor (18°46'S., 70°21'W.), about 2.5 miles S of Punta Pinto, is a cove which is entered between Cabo Condell and Punta Thomson, about 1 mile NE. It is completely open W and exposed to the SW wind and sea which prevail for nearly the whole year. The cove indents the coast about 0.5 mile E of a line connecting these two points. The S shore of Caleta Vitor is low, rocky, and is backed by high cliffs. Cerro Orella, the highest summit, rises to a height of 682m about 0.5 mile SE of the SE shore. The entrance to a large cave on the S side of the cove is visible at a considerable distance from the N. Islote Morrito, a white, conical islet 47m high, lies close offshore W of the cave. A coast guard post, in a prominent white house with brick walls, is situated on the E side of Caleta Vitor.

Quebrada Vitor is a ravine which extends E from the E shore of Caleta Vitor. It is about 0.5 mile wide and passes between hills nearly 610m high. The ravine is generally dry but may have considerable water in it during the melting of the snows in the Andes. The beach off Quebrada Vitor is sandy.

All of the dangers in Caleta Vitor lie near the shore, and depths of 10.1m and over are found within 0.1 mile of the beach.

Caution.—Navigation, anchoring, and fishing are prohibited in Caleta Vitor between Punta Thomson and the coast close S of Isolote Morrito.

4.4 Cabo Lobos (18°48'S., 70°22'W.), about 5 miles S of Punta Pinto, is dark-colored and steep, rising to an elevation of about 745m. A spur, terminating in a hillock, projects from the S side of the cape. Several white patches of guano lie on the S side of the cape.

Punta Argolla, about 2 miles S of Cabo Lobos, is a rugged promontory which rises steeply from the sea to a height of 802m. The summit has a small peak which is very conspicuous because of its marked seaward inclination. The point is dark and has several white patches along its lower parts.

Punta Madrid is a small tongue of land projecting a short distance seaward, about 12 miles S of Punta Argolla. A small conical rock rises from the sea a short distance N of the point.

Punta Camarones (19°13'S., 70°18'W.), about 12 miles S of Punta Madrid, is conspicuous from the S because of some white patches on it and the islets which lie close offshore. Caleta Camarones indents the coast between Punta Camarones and Punta Norte, about 2 miles NNE. Quebrada Camarones, a ravine with high land on either side, opens S of Punta Norte and trends ENE. The beach fronting the ravine is sandy. The Rio Camarones flows down the center of the ravine but does not reach the sea.

The depths in Caleta Camarones are moderate. A depth of 10.1m lies about 1 mile NW of Punta Camarones. Landing can be made, during calm weather, close E of an islet which lies near the coast about 1.3 miles S of Punta Norte. The islet is about 7m high and can be identified by its white summit. On the coast close S of the islet, a white point is frequently visible at a considerable distance.

Anchorage.—Anchorage may be taken, in 31m, sand, about 0.6 mile N of Punta Camarones. Local knowledge is required. Small vessels can anchor, in 16.5 to 20.1m, closer inshore.

4.5 Punta Gorda (19°19'S., 70°19'W.), about 5.3 miles S of Punta Camarores, is a wide massive promontory. Eastward of the point the land rises to a height of about 986m. Above-water rocks extend 0.1 mile off the point.

Between Punta Gorda and Punta Pichalo, about 17 miles S, the coast consists of low broken cliffs with a few scattered rocks off it. Eastward of the coast are the high hills of the coastal range.

Caleta Chica is a small cove about 1.5 miles SE of Punta Gorda. The cove, about 0.8 mile wide at its entrance and extending about 0.5 mile inland, is well-sheltered and has excellent landing. Caleta Chica is difficult to identify from the S, however, a hill, 19.8 to 30m high, S of the cove, and Punta Gorda make good landmarks. The land at the head of the cove can be identified by its reddish color.

The depths off the center of the entrance of Caleta Chica vary between 25.6 and 29m and decrease gradually toward the head of the cove where there is 5m about 0.3 mile off. Rocks, over which the sea breaks, extend over 0.3 mile from the N entrance point of the cove. Submerged rocks lie up to 183m from the S entrance point and also border the shore of the cove. Small vessels can anchor, in depths of 9.1 to 11m, in the cove. There is a landing place E of the S entrance point and there are emergency aircraft landing strips N and S of the cove.

Punta Pisagua, about 16 miles SSE of Punta Gorda, is rocky and rises very steeply inland.

Caleta Pisagua Viejo is a small cove entered close N of Punta Pisagua which is exposed to SW winds. Quebrada de Pisagua, a ravine at the head of the cove, forms a conspicuous landmark. The beach fronting the ravine is sand. The ruins of a fishing village stand on the shores of the cove S of the beach. A rock, awash, lies near the W extremity of the shore bank which extends nearly 0.5 mile W from the N entrance point of the cove. Anchorage may be taken close offshore, in 11 to 18.3m, off the ruins of the village.

4.6 Punta Pichalo (19°36'S., 70°15'W.), about 2.8 miles SSW of Punta Pisagua, is a ridge which extends about 2 miles W from the general trend of the coast. There are a number of hummocks on the ridge. A conspicuous antenna stands on the ridge about 0.5 mile E of the point. A light is shown from a tower, 4m high, standing on Punta Pichalo.

Bahia de Pisagua indents the coast between Punta Pichalo and Punta Pisagua, about 2.8 miles NE. The bay is extensive and recedes about 1.3 miles E of a line joining these two points. The shore bank, with several islets on it, follows close along the shores of the bay. Roca Cooke, Roca Carbonera, Banco Nuevo, and Roca Osorio are dangers lying close off the shore bank and not more than 0.2 mile offshore.

Depths of 44 to 104m in the entrance of the bay decrease gradually to 14.6 to 46m within 0.3 mile of the shore. Wrecks lie about 1.3 miles E by N, and 2 miles NE of Punta Pichalo.

The town of Pisagua is situated on a hillside on the SE shore of Bahia de Pisagua. A small pier, in poor condition, with a depth of 2.7m alongside, is situated on the S shore of the bay.

A light is shown from the head of the pier. A pier, 70m long with a depth of 9m at its head, is situated at the head of the bay. A yellow tank and two aluminum tanks stand on the pier. It was reported that both piers were in ruins.

A monument, consisting of a tall, square, white and blue tower containing a clock, stands on a small hill behind the town and is conspicuous. A cemetery is situated about 0.5 mile ESE of Punta Pisagua. There are several tanks N of the town.

Anchorage.—Anchorage is available, in a depth of 18m, with the pier on the S shore of the bay bearing 167°, distant 0.2 mile. Vessels may also anchor, in a depth of 66m, mud, with the same pier bearing 159°, distant 0.5 mile. Caution should be exercised when anchoring as the bay is exposed to frequent heavy gusts of wind from SE through S to SW. The shore bank is steep-to and precautions should be taken to prevent dragging off it.

A SW heading should be maintained by means of a stern anchor. From April to August, both inclusive, two bow anchors and a stern anchor should be used.

Caleta Junin (19°38'S., 70°11'W.) is a cove entered between a point about 4.3 miles SE of Punta Pichalo and Punta Junin, about 1.5 miles farther S. Two sand hills rise steeply from the E shore of the cove to a height of nearly 701m. A cone rises to a height of about 32m, about 0.8 mile SE of the N entrance point. The ruins of a former nitrate shipping village are situated at the head of the cove. A conspicuous road winds back and forth along a slope to the nitrate mines beyond Alto de Junin.

Rocks and islets lie off both the N and S entrance points. Shoals extend from these points and line the shore of the cove to a distance of about 0.2 mile. A wreck, with a depth of 8.2m, lies about 0.3 mile NNE of Punta Junin.

The depths in Caleta Junin are generally moderate, diminishing from 37m in the center of the entrance to 9.1m close off the shoals which fringe the shore.

Pilotage.—Pilotage is available; the pilot boarding place is situated off Punta Junin.

Anchorage.—Anchorage can be taken, in 27.4m, about 0.5 mile N of Punta Junin. Anchorage may also be taken 0.1 to 0.2 mile farther S, in depths of 29 to 31m. The anchorage is exposed to a SW swell and vessels should moor on a SW heading.

Foul ground extends 183m from the shore at the head of the cove.

4.7 **Punta Piojo** (19°42'S., 70°10'W.), about 1.8 miles S of Punta Junin, is somewhat circular in shape. Cerro Junin rises to a height of 1,060m about 3 miles SE of Punta Piojo.

Caleta Mejillones del Norte (19°49'S., 70°10'W.) can be recognized easily from the N by a road which passes over the hills backing it and by Quebrada de la Aurora, a ravine a little to the S.

Anchorage.—Anchorage can be taken off the entrance of Caleta Mejillones del Norte, in 20.1 to 23.8m, sand.

Isla Peninsula (19°49'S., 70°10'W.) lies about 8 miles S of Punta Piojo. It is the S entrance point of Caleta Mejillones del Norte and is joined to the mainland at its NE end. Several white patches characterize the Isla Peninsula. Close off the N side are a number of submerged rocks and an islet, the N extremity of which is black.

Islotes Mejillones, nearly 0.5 mile SW of the Isla Peninsula, consist of three large and several smaller rocks, all of a whitish color. The passage between them and the Isla Peninsula has depths of 10.1 to 14.6m, but there is a rock awash in the middle of the passage, and it should not be attempted.

Caleta Buena, at the foot of a bluff about 3.5 miles SSE of the Isla Peninsula, is exposed but free from danger. Several rocks lie close off the shores of the cove and a rock, awash, lies about 151m offshore. Caleta Buena was formerly a place of shipment for nitrates, but the piers have been demolished and the buildings and installations are in ruins. The nitrate slides falling from the plateau S of the cove and a prominent cemetery at its N end serve as good marks.

Pilotage.—Pilotage is available; the pilot boarding place is off the cove.

Anchorage.—Anchorage can be taken, in 18.3 to 20.1m, sand and gravel, a little over 0.3 mile offshore. The anchorage is somewhat protected from the S by the S entrance point of the cove and the holding ground is good. A vessel should be moored on a SW heading.

4.8 **Punta Ballena** (19°54'S., 70°09'W.), about 4.8 miles S of the Isla Peninsula, is high, steep, and rocky with no off-lying dangers. The hills near this point approach very close to the coast. Rocas Union, rocks awash, lie close offshore about 3 miles S of Punta Ballena. Punta Guaneras is located about 4 miles S of Punta Ballena. Islotes Cololue consist of two small rocks which lie close W of Punta Guaneras. Submerged rocks lie about 0.8 mile NW of these islets.

Punta Colorada, 10 miles S of Punta Ballena, can be recognized easily by its reddish color. Caleta Punta Colorada is an unsheltered cove N of the point. The cove has depths of 16.5 to 23.8m and was formerly equipped for the shipment of nitrates.

Ensenada Guanillos, about 5 miles S of Punta Colorado, affords anchorage at a prudent distance offshore, in 20.1m. Nitrates were formerly shipped from this small bay.

Punta Piedras (20°09'S., 70°09'W.), about 6 miles S of Punta Colorada, is a small rocky promontory which rises steeply to an elevation of 278m. The rocky heights E of the point attain an elevation of over 701m. Rocks and breakers extend more than 0.2 mile W of the point.

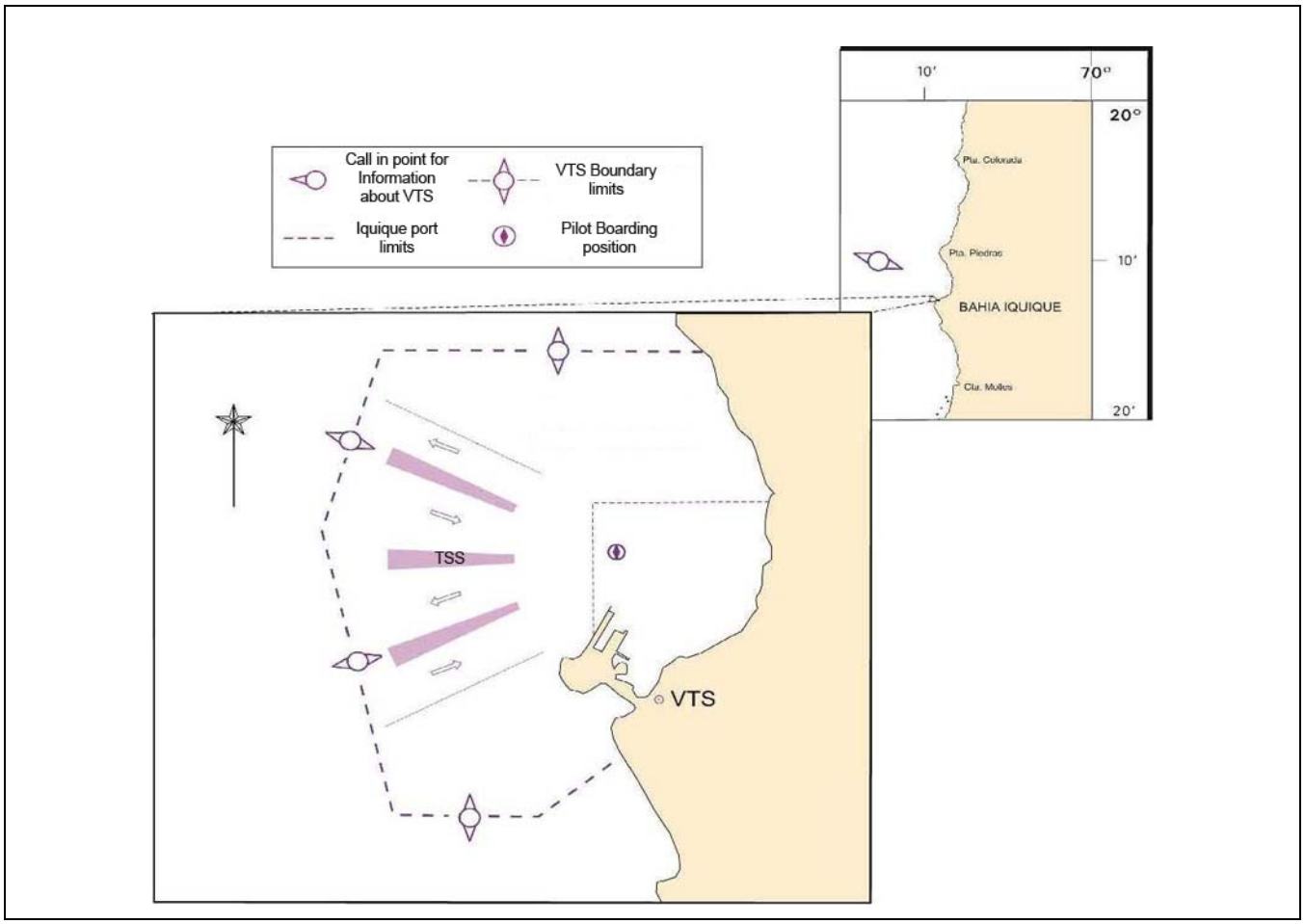
Iquique (20°12'S., 70°10'W.)

World Port Index No. 14760

4.9 Iquique is an artificial port composed of a mole (Molo de Union), 480m in length, linking Serrano Island with the mainland. A breakwater (Molo de Abrigo) extends NNE from Peninsula Serrano NNE for 846m, marked by a light at the head.

Iquique is principally a fishing port, with local factories producing fish meal, frozen fish, and canned fish. Other cargoes handled include copper concentrates, slag or ores, vegetable and soya oils, and petroleum products. The harbor is well-protected and large vessels berth alongside for the handling of cargo.

Bahia de Iquique lies between the W extremity of Peninsula Serrano and Punta Piedras, about 3 miles N. The harbor consists of Molo de Abrigo and Espigon de Atraque which extend NNE from the N side of the peninsula. Molo de Abrigo acts as a breakwater. Two offshore tanker berths lie about 0.3



VTS Iquique

mile from the E coast of the bay ENE of Espigon de Atraque.

Iquique Home Page
http://www.epi.cl

Winds—Weather.—Bahia de Iquique is open to winds between the NW and NE, however, these winds seldom occur. Isla Serrano and the breakwater extending NE from it protect the harbor from the prevailing winds which blow from the S and SW.

Iquique is ordinarily entirely free from storms of any kind and strong winds are very unusual. The light breezes are generally from the SW. Mist frequently obscures the hills behind the town, particularly in the early morning and afternoon. Even the town itself may be obscured at times by a low-lying mist.

Gales off the S part of the coast of Chile cause a swell at Iquique from 2 to 4 days later. During N winds, surf enters the area between the moles sometimes necessitating the reinforcement of mooring lines.

Tides—Currents.—The spring rise here is 0.9m, while the neap rise is 0.5m.

In addition to the general current that sets N, there is an inshore current of variable velocity from 0.5 to 3 knots. It sets N following the configurations of the coast and is more noticeable from Iquique northward. This current, which is scarcely noticeable in the vicinity of Punta Gruesa, sets dangerously onto Punta Cavancha and Punta Piedras.

Depths—Limitations.—Cargo operations within the port are carried out at Molo de Abrigo and on Espigon de Atraque, extending NNE from Penisula Serrano, located close E of the breakwater. There are a total of four berths available. For further information, see the table titled

Muelle Pesquero Corfo, a fishing pier, extends about 200m E from the root of Espigon de Atraque with depths of 8m alongside on the N side of the pier. It is not advisable to use the S side of this pier since there are numerous dangerous rocks and obstructions between Penisula Serrano and the fishing pier.

Two small piers (Muelle Depasajeros and Muelle La Puntilla) are located in the extreme S part of the bay and are used for small passenger craft.

Farther N along the mainland coast, about 0.4 mile E of Espigon de Atraque, is Naval Pier, 170m in length. The head of this pier is collapsed.

Muelle Coloso, 300m in length, Lies about 700m N of Naval Pier but is presently inactive.

Two offshore CBM tanker berths, consisting of three mooring buoys, lie N of Muelle Coloso. These tanker berths are situated off Playa del Colorado in the vicinity of position

20°11'18"S, 70°08'54"W, as follows:

1. The Copec/Shell Terminal, the southernmost terminal, can handle tankers up to 57,000 dwt and 229m in length. Depths in the area are 12m at LW and the maximum draft allowed is 11.34m at HW.
2. The Esso Terminal, the northernmost terminal, can handle tankers up to 32,229 dwt and 179m in length. The maximum draft allowed here is 10.65m at HW.

Note.—Vessels must berth in daylight, but can sail at any time. Only one tanker can berth at a time, as the lines are near each other. In both cases the vessels moor to three stern buoys, with the intake on the port side, heading 270°, and both anchors streamed.

Aspect.—Cerro La Cupula, a dome-shaped mountain 905m high, lies about 3 miles E of the peninsula and in clear weather makes a good landmark for recognizing the port. A winding road, low on the N side of Cerro La Cupula, shows up well when close inshore. The summit of a sandhill S of the city shows up sharply from the N. The railroad which leads along the mountainside N of the city and both ends of its circular tunnel are conspicuous.

The city of Iquique, with the roads leading to it, is perhaps the best landmark in the area because of the mist which frequently obscures the hills. At such times as the city is obscured, all that is visible to vessels approaching from the W is the line of hills showing a sandy color and having no distinguishing marks for miles N or S. It is reported that at night, under certain conditions of clouds, the loom of the city lights may be seen up to 40 miles seaward.

Near the roadstead, the following features are conspicuous;

1. The chimney of the hospital on high ground at the back of the city, about 1.3 miles ESE of the peninsula.
2. The cranes on the piers.
3. A church with two small towers in the S part of the city.
4. Oil tanks a short distance inland from the E side of the bay and a chimney connected therewith.
5. The light standing on the peninsula.
6. Three radio towers, each 18m high and marked by obstruction lights, standing close S of the disused light tower.

A light is shown from a prominent conical tower, 13m high, standing at the head of Molo de Abrigo. A lighted buoy is moored about 1.3 miles NNE of the light tower. For further information, see the table titled **Iquique—Berth Information**.

Pilotage.—Pilotage is compulsory for entering the port, whether for anchoring or to discharge or load cargo and for mooring at the oil terminals. The pilot boards in the pilotage area, 0.5 mile N of Molo de Abrigo light, as best seen on the chart.

Regulations.—An IMO-adopted Traffic Separation Scheme lies in the approaches to the port and may best seen on the chart.

The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.
5. Description of the health of the crew and any passengers onboard.
6. Any special requirements such as water and stores requirements.

The use of tugs is required for all maneuvers associated with berthing and unberthing.

Contact Information.—Port contact information can be found in the table titled **Iquique—Contact Information**.

Vessel Traffic Service.—A Vessel Traffic Management System (VTM-STM) operates 24 hours in the port limits of Iquique and outward to the boundary depicted in the diagram titled **VTS Iquique.** The VTS center is located in the city in the city of Iquique.

Iquique—Berth Information

Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Beam	
Empresa Portuaria Iquique (EPI)					
No. 1	404m	275m	9.3m	36.5m	Chemicals, PCC, breakbulk, multipurpose, and PCC.
Copec Terminal					
MBM	—	299m	11.3m	32.2m	Crude.
Esso Terminal					
MBM	—	—	10.6m	32.2m	Clean products (CCP) and crude.
Iquique Terminal Internacional (ITI)					
No. 3 (NW)	335m	232m	9.3m	34.8m	PCC, containers, fishing vessels, and breakbulk.
No. 4 (SE)	294m	360m	11.4m	48.2m	PCC, containers, breakbulk, and reefer. Berthing length of 365m (including dolphins),

Iquique—Contact Information	
Port	
Port Call sign	Iquique Capuerto Radio (CPA30)
VHF	VHF channels 14 and 16
RT Frequency	2182 and 2738 kHz
Telephone	56-57-240-1951
	56-57-240-1934
Facsimile	56-57-240-1937
E-mail	sctmiquique@directemar.cl
Pilots	
VHF	VHF channels 8 and 16
Harbormaster	
Telephone	56-57-240-1916
Facsimile	56-57-242-4669
E-mail	cpiquique@directemar.cl
Port Authority	
Telephone	56-57-240-0100
Facsimile	56-57-241-3176
E-mail	info@epi.cl
Web site	http://www.epi.cl
International Terminal	
Telephone	56-57-239-6000
E-mail	terminal@iti.cl
Web site	http://www.saam.com/en/port-terminals/iquique-international-terminal-iti/

Participation in VTS Iquique is mandatory for all vessels operating within Bahia de Iquique and at anchor. Participation is voluntary for vessels passing through the VTS limits without stopping. Vessels entering the VTS Iquique operational limits should advise their name, call sign, and ETA at the VTS limits 1 hour in advance through both VHF channel 16 and Iquique Capuerto Radio (CBA30). Vessels departing the VTS operational area must contact VTS Iquique with their name. departure time from the port, port destination and the ETA at that destination.

Additional communication with VTS Iquique is to be carried out in accordance with the information in the table titled **VTS Iquique—Contact Information**.

The vessel's Automatic Identification System (AIS) equipment must be working and turned on while vessel is within the bay and for any other vessels transiting through the VTS operational area.

Anchorage.—Ocean-going vessels will find general anchorage off the port, clear of the special and prohibited anchorages, in depths of 14 to 40m, sand. Anchorage areas as well as areas prohibited for anchoring are best seen on the chart. Vessels are urged to consult the local authorities and the pilot before anchoring.

Anchorage and prohibited areas, the limits of which are shown on the chart, lie N of the port and in the vicinity of the naval pier which is situated about 0.5 mile E of Espigon de Atrague.

The quarantine anchorage lies about 0.5 mile W of the head of Molo de Abrigo. An explosives anchorage lies 0.8 mile W of the head of Molo de Abrigo.

The special (explosives) anchorage shown on the charts is reported no longer used, as there are no lighters. With prior authority from the Maritime Governor, explosives are unloaded at the berths and removed immediately under special security conditions.

VTS Iquique will assign anchorage areas in response to application from the vessel.

The bay is open to winds from NW and NE, but these winds seldom occur. It is sheltered from the prevailing winds from S and SW, by Peninsula Serrano and the breakwater extending from it.

Anchorage may be obtained at five designated anchor berths as follows:.

Iquique—Designated Anchorages	
Number	**Position**
No 1	20°11.88'S, 70°09.73'W
No 2	20°12.02'S, 70°10.07'W
No 3	20°12.30'S, 70°10.40'W
No 4	20°12.80'S, 70°10.30'W
No 5	20°13.35'S, 70°10.20'W
No 6	20°11.50'S, 70°09.10'W

Caution.—Fishing vessel traffic is reported to be heavy within the port and approaches.

Two submarine pipelines extend about 0.4 mile W from a point on the E shore of the bay, 1.3 miles NE of the head of Molo de Abrigo.

Several dangerous wrecks lie in the bay E of Espigon de Atrague and may best be seen on the chart.

A patch, with a depth of 12.7m, lies at the E end of the inbound traffic lane, about 0.6 mile WNW of the head of Molo de Abrigo.

A prohibited area, the limits of which are shown on the chart, lies close W of Molo de Abrigo and the peninsula.

Iquique to Tocopilla

4.10 Caleta Cavancha recedes about 0.5 mile eastward, 1.3 miles S of Peninsula Serrano. A small pier, 35m long, and a canning factory, are situated on the S side of the cove. The S part of the town of Iquique backs the NE shores of Caleta Cavancha. Some abandoned submarine cables exist in Caleta Cavancha. Punta Cavancha, the S entrance point, is low and rocky. An inshore current sets dangerously onto Punta Cavancha.

A sandy beach, interrupted by a rocky patch about 0.3 mile wide, lies between Punta Cavancha and a point about 3 miles

Port of Iquique

S. Farther inland there is a ridge of yellow sand, the N summit of which is 270m high.

It was reported that a depth of 6.2m was found to lie about 5.3 miles WSW of Punta Cavancha.

Caution.—An anchoring and prohibited fishing area has been established about 0.4 mile SE of Punta Cavancha.

4.11 Caleta Molle (20°18'S., 70°08'W.), about 4 miles SSE of Caleta Cavancha, may be identified by a winding road which descends the hill behind it, the high sand dunes along the N shore of the cove, and the yellow sand beach at its head. Rocas Miami extend NW from the S entrance point of the cove and are marked by kelp. Breakers are sometimes seen over these rocks. A former whaling station is situated in the cove. A ramp and a pier, 53m long, are situated near two tanks and a small oil refinery on the S side of the cove. A 2.7m shoal lies NW of the pier. The cove should not be entered without local knowledge.

Punta Gruesa (20°21'S., 70°11'W.) lies about 5 miles SSW of Caleta Molle. The coast between is fronted by rocks and shoal water to a distance of nearly 1 mile offshore. The point is low and cliffy, with three white patches on its N side. It forms

the end of a spur extending from Morro Tarapaca, a mountain about 4 miles ENE. Rocas Los Gemelos consist of two sunken rocks which lie at the outer extremity of foul ground which extends about 1.5 miles NW from the N end of Punta Gruesa. The SW rock has a depth of 4.9m over it. Three dark-colored above-water rocks lie about 0.3 mile NE of Punta Gruesa, which should be given a berth of at least 3 miles due to heavy swells and irregular currents. A light is shown from the point.

Caleta Toyos, about 3 miles SE of Punta Gruesa, may be recognized by the settlement and small pier at its head. Punta Sargazos, the N entrance point, is surrounded by kelp to a distance of about 151m offshore. Rocks lie nearly 0.2 mile off Punta Rompientes, the S entrance point, which should be given a wide berth. Small vessels may anchor close offshore, with a bottom of sand and shells. Local knowledge is required.

Punta Sarmenia (20°27'S., 70°10'W.) is located about 7 miles S of Punta Gruesa. Caleta Sarmenia and Caleta Ligate are small coves which lie N and S, respectively, of Punta Sarmenia. Cerro Oyarbide rises about 5 miles ENE of Punta Sarmenia. Four radio masts, marked by red lights, stand in the vicinity of Caleta Sarmenia.

Punta Chucumata lies about 3.5 miles SSW of Punta Sarmenia. Submerged rocks and foul ground fringe the point to a distance of 0.5 mile offshore. Caleta Chucumata, close NE of the point, affords anchorage, in 12.8 to 18.3m, slightly sheltered from the S. Nitrates were formerly shipped from the cove, but at present there are no installations of any kind. Islote Gaviotas lies about 0.5 mile offshore, about 2.5 miles S of Punta Chucumata. An aeronautical radiobeacon is situated about 2 miles SSE of Punta Chucumata.

Caution.—An air and naval exercise area, where navigation is restricted, is charted in the area of Islote Gaviotas, extending about 4 miles N and S, and 2 to 3 miles offshore.

4.12 Caleta Patillos (20°44'S., 70°12'W.) (World Port Index No. 14671) is situated about 12 miles S of Punta Chucumata. The cove recedes about 1 mile E between Punta Cotitira and Punta Patillos, about 1.5 miles S. Rocks, with depths of less than 1.8m, lie within 0.3 mile of Punta Cotitira, and a submerged rock lies about 0.2 mile offshore, a little over 0.3 mile SE of the point. Bajos de Cotitira, consisting of a number of submerged rocks and rocks awash, lie about 0.3 mile offshore, 0.8 mile NW of Punta Cotitira.

Islotes Patillos consist of three islets, one of which lies about 0.1 mile W of Punta Patillos and the others about 0.4 mile SW of the point, and a little over 0.3 mile offshore. There is a small islet a little over 0.5 mile S of Punta Patillos. Islotes Patillos are whitish in color and visible from a considerable distance seaward. A light is shown from Punta Patillos.

Winds—Weather.—A vessel calling here in the month of July reported that a moderate swell was felt in an area SW of Punta Cotitira, but little current or swell was found off the bay's NE shore. The vessel also reported finding a slight to moderate swell at the pier.

Tides—Currents.—The tidal range at the pier is 1m.

Depths—Limitations.—The sole purpose of this port is for shipment of salt from a conveyor pier.

Entrance to the port is from a cove, 1 mile wide, with minimum depths 200m offshore of around 18m.

Two terminals are available in the port for alongside berthing. Terminal No. 1, a conveyor pier, 91m long, with mooring buoys at the head in depths of 15.2m, is situated about 0.5 mile ENE of Punta Patillos. The loading arm is retractable but fixed, so the vessel will have to warp along the pier head for positioning the cargo holds during loading. Terminal No. 2 is located 600m S of Terminal No. 1. Both terminals can accommodate vessels up to 100,000 dwt, with a length of 250m, a beam of 41m, and a maximum draft of 14.3m.

Caleta Patillos

Aspect.—A prominent monument stands about 0.5 mile NE of the pier. The salt conveyor structure on the pier is conspicuous. Four range beacons stand on the shore close SW of the pier. A light is shown from Punta Patillos. The conspicuous lights of the salt-loading terminal can be seen at night up to 20 miles seaward.

Pilotage.—Pilotage is compulsory. The pilot boards in position 20°44'16"S, 70°12'00"W. Pilots can be contacted through VHF channels 1, 6, 8, 10, 12, 14, and 16.

The pilot comes from Iquique. Two pilots are required for vessels that are greater than 220m in length.

Contact Information.—The port can be contacted through Punta Patache. See the table titled **Patache—Contact Information** in paragraph 4.13 for details.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Tugs are ordered from Iquique. Only one tug is needed for vessels up to 220m in length, with two tugs being required for vessels longer than 220m. One tug will remain standing by until completion of loading.

Anchorage.—Four designated anchorages are located 0.7 to 0.9 mile NNE of Punta Patillos, in depths of 22 to 34m.

Caution.—A rock, with a depth of 5.5m, lies SSW of the conveyor pier.

A shoal area, with a depth of 17m, lies about 0.8 mile NE of Punta Patillos.

4.13 Punta Patache (20°49'S., 70°12'W.), the S entrance

Punta Patache Terminal

point of Caleta Patache, lies about 4 miles S of Punta Patillos. It is low, rugged, and salient. An islet lies about 0.3 mile W of the point. The coast in this area is backed by the steep slopes of Alturas de Oyarvide, a plateau 3 miles E of Punta Patillos. Monte Carrasco, conical in shape, rises in a position about 10 miles SE of Punta Patache.

Patache Home Page
http://www.tmp.cl

Depths—Limitations.—Depths increase rapidly from shore reaching 21m depths only 200m from the coastline. Facilities consist of a single pier (Punta Patache Terminal), 230m long and 32.2m wide. Cargo worked includes the discharge of bulk cargo through cranes, hoppers, and conveyor belts as well as transfer of sulphuric acid through chutes directly to a tank on the ground. Loading of dry bulk cargo is accomplished through use of conveyor belts and a loading boom. Vessels as large as 70,000 dwt and maximum draft of 13m can be accommodated at the terminal.

Pilotage.—Pilotage is compulsory. The pilot boards in position 20°47'34"S, 70°12'25"W.

Contact Information.—Port contact information can be found in the table titled **Patache—Contact Information**.

Patache—Contact Information	
Port	
Port Call sign	CBA49

Patache—Contact Information	
VHF	VHF channels 9, 14 and 16
Facsimile	56-57-242-6969
Pilots	
VHF	VHF channels 1, 6, 8, 10, 12, 14, and 16
Harbormaster	
Telephone	56-57-240-1912
Facsimile	56-57-240-1911
E-mail	cppatache@directemar.cl
Terminal Maritimo Minera Patache	
Telephone	56-57-247-5220 56-57-247-4299
Facsimile	56-57-247-5220
Terminal Maritimo Dona Ines de Collahuasi	
Telephone	56-57-251-6972 56-57-247-3830
Facsimile	56-57-241-0778
Terminal Maritimo Servicios Portuarios Patillos SA	
Telephone	56-57-251-3251 56-57-251-3236
Facsimile	56-57-251-3264

4.14 Caleta Chanavaya (20°53'S., 70°08'W.), about 6 miles SE of Punta Patache, affords anchorage to small vessels, in 31m, about 0.5 mile NW of its S entrance point. There are some brightly colored houses on the shore of the cove. A landing place, sheltered by four islets and several rocks, is situated on the S shore of the cove. Lighters can load safely at the landing place. Caleta Pabellon de Pica, close S of Caleta Chanavaya, is entered between Punta Colina, the N entrance point, and a point about 0.5 mile S. A guano-covered hill, nearly 15.2m high, rises close E of Punta Colina. A reef, with above-water rocks on it, extends about 0.2 mile from Punta Colina. Cerro Pabellon de Pica, about 0.3 mile E of the S entrance point, rises to a height of 318m. The mountain is conical in shape, and being covered with guano, presents a strong contrast with the barren sunburnt brown of the surrounding hills. Depths of 21.9 to 25.6m in the entrance of Caleta Pabellon de Pica decrease gradually toward the head of the cove. An exposed anchorage for large vessels is in 44m, about 0.4 mile SW of the S entrance point.

Quebrada de Pica is located about 5 miles SSW of Cerro Pabellon de Pica. This ravine consists of a narrow gorge enclosed by high hills which fall almost vertically to the sea. Above-water rocks fringe the coast between these two features. The rocks are whitened by guano and have the appearance of boats under sail.

Caleta Pescadores, about 1.5 miles N of Punta Lobos, is entered between Punta Piojo and Punta del Faro, about 0.8 mile S. Rocks and reefs fringe both entrance points and the shores N and S of the cove for a distance of about 0.1 mile off.

Anchorage.—The best anchorage in Caleta Pescadores is about 0.5 mile N of Punta del Faro, about 0.2 mile offshore, in a depth of 35m, sand.

Caleta Lobos indents the coast about midway between Punta del Faro and Punta Lobos, about 0.8 mile S. Rocks fringe each of these points to a distance of 0.2 mile offshore and also line the S shore of the cove for the same distance off. A rock, which dries, and a submerged rock lie about 0.3 and 0.2 mile, respectively, NW of the head of the pier. A submerged rock lies close NW of the pier head.

Anchorage.—Anchorage for working cargo is obtained, in depths of 16 to 22m, NW of Punta Lobos; local knowledge is required.

Small vessels can anchor close offshore, in depths of 33 to 37m, rock, with Islote Pajaros obscured by Punta Lobos.

4.15 Punta Lobos (21°01'S., 70°10'W.) is steep with several hummocks on its outer end. About 2.5 miles NE of the point, the land rises to a height of 900m. The point can be easily recognized for a long distance by Islotes Pajaros, two white steep-to islets lying about 1.5 miles SE and 0.5 mile offshore. A disused light structure stands about 0.8 mile NNE of the point. Rocks fringe the point to a distance of about 0.2 mile. A line of breakers, which should be given a wide berth, lies about 0.6 mile SW of the point.

Punta Patache—Berth Information							
Berth	Length	Depth	Maximum Vessel				Remarks
			LOA	Draft	Beam	Size	
Terminal Maritime Collahuasi							
Mechanical Pier	25m	21.0m	225m	13.0m	32.26m	60,000 dwt	Copper concentrate and mineral ore. Berthing length of 200m (including dolphins).
Terminal Maritimo Patache (TMP)							
TMP Pier	40m	21.0m	230m	14.0m	32.26m	60,000 dwt	Chemicals, coal, salt, and multipurpose. Berthing length of 132m (including dolphins).

Punta Patache—Berth Information							
Berth	Length	Depth	Maximum Vessel				Remarks
			LOA	Draft	Beam	Size	
Note.—Vessels must have both anchors operative with 10 shackles each. Vessels mush have at least 10 mooring lines of 350m in length and 10 inches in diameter in sound condition.							

Punta Chomache lies about 7 miles SSE of Punta Lobos. It can be recognized by patches of guano on its side and by a small fishing settlement 1 mile N. Farallones de Chomaches consist of a group of rocks, awash, on a reef which extends over 1 mile W from Punta Chomache. The outer part of the reef is marked by breakers. Bahia Chomache is between these two points. A light is shown from Punta Chomache.

Caution.—The waters in the vicinity of Punta Chomache are dangerous and should not be approached at night or in low visibility.

4.16 Punta Guanillo del Norte is located about 5.5 miles SSE of Punta Chomache. Rocks and breakers extend up to 1 mile from the coast between these two points. Punta Guanillo del Norte can be identified for a considerable distance by a large white patch on its seaward side. The point is steep-to and there is a large amount of guano on or near it.

Caleta Guanillo del Norte is entered close N of a point about 0.5 mile N of Punta Guanillo del Norte. Monte de la Cruz is a small conical hill close E of the S entrance point, and Monte Boca del Diablo is a hill on the N side of the cove. A village is situated close NE of Monte de la Cruz. A small pier is situated about 0.2 mile N of the S entrance point, and another pier, where guano is loaded, is situated about 0.2 mile SE of Punta Guanillo del Norte. Vessels bound for Caleta Guanillo del Norte should endeavor to make the land S of the cove. Local knowledge is required.

Anchorage.—Small vessels may find anchorage in Caleta Guanillo del Norte, about 0.5 mile WNW of the S entrance point, in 25.6 to 27.4m, sand and rock. As a heavy swell occasionally sets into the cove, anchorage farther in is not recommended. Vessels may anchor about 0.4 mile SW of the pier, SE of Punta Guanillo del Norte, in 33 to 46m, sand.

4.17 **Punta Blanca** (21°15'S., 70°05'W.) lies about 3 miles S of Punta Guanillo del Norte and can be easily identified for a considerable distance by a white patch on its S side. Rocks and shoals lie up to 0.5 mile off the point. Cerro Chipana, a 1,285m high mountain, stands about 2.5 miles inland, about 3.5 miles SE of Punta Blanca.

Caleta Chipana is entered between Punta Falsa Chipana, on which a light is shown, about 5.5 miles S of Punta Blanca, and Punta Chipana, a little over 1 mile NE. Rocks lie 0.1 mile off Punta Falsa Chipana. Foul ground extends about 0.5 mile NW of Punta Chipana, and 0.2 to 0.4 mile from the shore of the cove. Farallones de Chipana consist of two above-water rocks and a rock awash which lie between 0.8 mile and 1 mile NNW of Punta Chipana. A rock, awash, lies about 1 mile NW of Punta Chipana.

Punta Chileno lies about 8.5 miles S of Punta Falsa Chipana. The Rio Loa discharges into the head of Caleta Loa, which recedes about 2 miles E between the two above points. The Rio Loa is the principal river of northern Chile. During summer, the Rio Loa is only a shallow stream which flows within 0.3 mile of the coast, where it spreads and flows over or filters through the beach. The river does not make any channel or throw up any banks. About 0.5 mile inland on the N side of the river may be seen the ruins of a village.

The best landmark for recognizing the Rio Loa is the ravine through which it flows. The hills on the N side of the river are high and irregular, while those on the S side are quite low.

Punta Lautaro (21°32'S., 70°06'W.), about 4 miles S of Punta Chileno, is 70m high, rugged, and has a white summit. Caleta Lautaro is just N of the point. Depths of 12.8 to 16.5m in the entrance of the cove decrease gradually to a sand beach at the head of the cove.

Anchorage.—Anchorage, suitable for small coasting vessels, is obtainable, in a depth of about 24m, with the N extremity of Punta Lautero bearing 188°, distant 0.1 mile, but local knowledge is required.

Caleta Punta Arenas lies close N of Punta Arenas and about 5 miles SSW of Punta Lautaro. The S and NE shores of the cove are bordered by shoal water to a distance of about 0.2 mile offshore.

Anchorage may be taken, in 21.9m, fine sand, about 0.3 mile offshore in a position about 0.8 mile NE of Punta Arenas.

4.18 **Punta Arenas** (21°38'S., 70°09'W.) is low and sandy. It is fringed by rocks which extend to about 0.2 mile offshore. A fishing village is situated on the S side of the point. Cerro Mogote rises to a height of 998m, about 3 miles E of the point.

Cabo Paquica, about 16 miles S of Punta Arenas, extends about 1 mile W from the general trend of the coast. It is a salient promontory, the N point of which is covered with guano. An islet lies about 0.5 mile W of the point. Roca Tortuga, a sunken rock, lies about 1 mile S of Cabo Paquica and about 0.5 mile offshore. A second rock lies roughly halfway between the rock and the point. Cerro Tolar, about 6 miles ESE of Cabo Paquica, is a conical mountain.

Rocks lie up to 0.5 mile off Punta Mal Paso, about 4.3 miles S of Cabo Paquica.

Punta Algodonales lies about 12 miles SSW of Cabo Paquica. Bahia Algodonales is entered between the point and Roca Blanca, a small white islet located about 1.8 miles NE. Roca Duendes, with 3.3m over it and surrounded by reefs, lies about 0.3 mile offshore. It is the outermost of several rocks which lie NW of Roca Blanca. Islote Blanco is the largest of a group of islets and rocks which extend about 0.4 mile W and NW from Punta Algodonales. A light is shown from a tower, 8m high, standing on Islote Blanco.

Tocopilla (22°05'S., 70°14'W.)

World Port Index No. 14720

4.19 Tocopilla lies at the S end of Bahia Algodonales midway between Iquique and Antofagasta. The port is a major nitrates port that also has fishmeal, bulk coal, containers and petroleum products being shipped.

Tocopilla Home Page
http://www.cptocopilla@directemar.cl

Winds—Weather.—The port of Tocopilla is well-protected from the prevailing S and SW winds, but it is exposed to strong N and NW winds during the winter months. Frequent fogs occur from June to September. When fogs are low, it is impossible to determine accurately a vessel's position offshore and caution must be exercised when calling at the port.

There is a condition known as the 'Surf' that occurs between May and September. The Surf is a heavy swell condition that can cause a reduction in productivity and in some extreme cases a complete stoppage of cargo operations and require the need for vessels to change berths.

Tides—Currents.—The mean spring range is 0.8m and the mean neap range is 0.5m. Currents setting ENE at velocities up to 3 knots may be experienced in Bahia Algodonales. During storms or when the wind is from the E, the currents change and set S or SW and are strong, particularly during solstices.

Depths—Limitations.—Vessels anchor or moor; cargo is worked by barges. There are five piers plus two offshore berths available, although only two of the mooring berths appear to be used for ocean-going vessels. For further information, see the table titled **Tocopilla—Berth Information**.

Muelle Codelco (Electroandina Pier) is the farthest W of all the berths, about 225m NE of Punta Algodonales. This pier is 234m long with a T-head, 82m long and depths of 19m alongside. Cargo handled at this berth include sulphuric acid, bulk coal and potash, liquid cargo, bagged cargo, and containers. Vessels up to 80,000 dwt and a maximum draft of 14.1m can be handled at the terminal with the use of several mooring buoys.

Servicios Integrales de Transitos (SIT) Terminal is located about 500m E of the Muelle Codelco on Muelle de la Planta. It is an offshore mooring berth for bulk ore, nitrates and saltpeter. Vessels moor offshore on a heading of about 265°, port side-to shore, using the starboard anchor and making bow and stern lines fast to mooring buoys. The nitrate loader can reach all hatches without shifting the vessel. Mechanical trimmers are available. Vessels up to 50,000 dwt, with a maximum draft of 11m, can be accommodated at the mooring berth. Only one vessel can load at a time, at a rate of 1,000 tons per hour.

Tocopilla Loading Facilities

Several piers extending from the shores of the bay are used by barges for handling cargo and for landing passengers. Pier No. 5, located close W of the SIT Terminal, extends about 120m from shore, with depths alongside of 4.2m. Pier No. 1, located close E of the SIT Terminal, extends about 140m from shore, with depths alongside of 9.2m and is marked by a light at the pier head. Muelle Fiscal, used by fishing vessels, is located about 300m E of Pier No. 1 and will have numerous small local fishing boats frequenting the area.

Two offshore berths, Anglo Buoy No. 1 and Anglo Buoy No. 2, are available within the bay. Vessels are moored with both anchors down and lines to stern buoys. Cargo worked at these anchorages include general cargo, bagged nitrates, and fishmeal. Vessels up to 45,000 dwt, a length of 200m, and a maximum draft of 14m can be handled.

Tocopilla—Berth Information

Berth	Pier Information		Maximum Vessel		Remarks
	Length	Depth	LOA	Size	
Anglo Buoy 1	—	20.0m	200m	45,000 dwt	General cargo, bagged nitrate, and bagged fishmeal.
Anglo Buoy 2	—	20.0m	200m	45,000 dwt	General cargo, bagged nitrate, and bagged fishmeal.
SIT Plant	—	23.0m	230m	50,000 dwt	Bulk and bagged nitrates.
Pier Number 5 Barges Terminal					
East Side	120m	4.2m	—	—	General cargo and barges.

Tocopilla—Berth Information					
Berth	Pier Information		Maximum Vessel		Remarks
	Length	Depth	LOA	Size	
West Side	120m	4.2m	—	—	General cargo and barges.
Muelle Pescadores—Fishing Vessels Terminal					
East Side	120m	4.2m	—	—	General cargo and barges.
West Side	120m	4.2m	—	—	General cargo and barges.
Multipurpose Terminal					
Codelco Jetty (Electroandina)	82.0m	19.0m	250m	85,000 dwt	Bulk coal, bulk potash, bulk liquid, containers, bagged cargo, and heavy-lift.

Aspect.—The vicinity of the port may be recognized by Quebrada de Tocopilla, a ravine which cuts through the coastal range and descends to the sea from the high land behind the city. About 9 miles NNE of Punta Algodonales is a group of mountains, two of which are conspicuous landmarks because their summits terminate in bluffs. Southward of Quebrada de Tocopilla is Monte Culillaca which has a broad light-colored band that is visible many miles at sea. A wide dark-colored band marks a place on the coast about 1 mile S of Punta Algodonales.

The light shown from Islote Blanco is difficult to identify by ships approaching from the S because of the factory on the point and the lights in the town.

To vessels approaching from the S, the smoke of the smelting works will be seen apparently seaward of the land; Punta Algodonales does not appear until later. At night the reflection of the lights of the town is reported to be visible 30 miles under favorable conditions. The lights of the city can ordinarily be seen 10 miles and the lights of the smelting works can be seen 15 miles.

A large power station, with a number of tall chimneys, is situated W of the city and is perhaps the best landmark on the bay. The oil tanks on Punta Algodonales serve as additional marks for identifying the place. A cemetery, about 1 mile NE of the town, is conspicuous from the offing. Several tanks, marked at night by obstruction lights, are situated on the hill behind the town. The aluminum silos, which are also marked by lights, situated at the nitrate loading berth, provide an excellent landmark.

Pilotage.—Pilotage is compulsory. There are two separate pilot boarding areas located about 0.9 mile N of Punta Algodonales. One boarding area is for tankers and one is for all other vessels; both are can be best seen on the chart.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Contact Information.—Pilots can be contacted on VHF channels 6 and 16.

Tocopilla—Contact Information	
Port Operations	
Call sign	Tocopilla Radio (CBA21)
VHF	VHF channels 9, 14, and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	56-55-813279
Facsimile	56-55-813279
Terminal Maritimo Minera Patache	
Telephone	56-55-813279
Facsimile	56-55-813279
E-mail	cptocopilla@directemar.cl

Anchorage.—Anchorage should be obtained approximately 1 mile N of the port, in depths of 32 to 72m, at any one of three designated anchorages. The following positions are the center positions of these anchorages:

1. Area A—22°05'09"S, 70°13'37"W.
2. Area B—22°04'51"S, 70°12'57"W.
3. Area C—22°04'32"S, 70°12'37"W
4. Area D—22°05'13"S, 70°13'13"W.
5. Area E—22°04'36"S, 70°13'09"W.

Vessels which are to remain in the port more than one day are advised to moor; however, if vessels should remain at anchor they should use two anchors and lie with their bows in a W direction.

Caution.—Several wrecks lie in the vicinity of the port as well as around the area recommended for the inner anchorage and may best be seen on the chart.

Tocopilla to Mejillones

4.20 Between Punta Algodonales and Punta Atala, about 11 miles S, the coast is high with a number of sandy coves which are separated by rocky points. The coast is backed by a range of mountains from 610 to 1,557m high. The outermost dangers consist of rocks which lie from 0.5 to 0.8 mile off some of the points.

The working lights of mines, situated close inland of Punta

Blanca and about 3 miles N of that point, are conspicuous. The lights run vertically up a steep hill.

Punta Blanca (22°10'S., 70°14'W.) is rocky. Three sunken rocks lie about 0.5 mile off the point. Caleta Blanca, close N of Punta Blanca, is a place where vessels anchor occasionally to load copper ore. Punta Agua Dulce, about 5 miles S of Punta Blanca, is the W extremity of a chain of hills. It is of medium height and cliffy.

Between Punta Atala (22°17'S., 70°15'W.) and Punta Yayes, about 31 miles S, there are a number of rocky points, behind which lie high barren hills. Rocks and islets front much of this part of the coast up to about 1 mile offshore.

Punta Copaca lies about 2.5 miles S of Punta Ataia, the coast between being foul. The point is rocky with some knolls at its extremity. The coast between Punta Copaca and Punta Ampa, about 2 miles S, is generally foul and is fronted by shoals and submerged rocks to a distance of 0.7 mile. Punta Ampa is low, rocky, and fringed with reefs which extend 0.7 mile offshore.

Punta Guanillo del Sur (22°23'S., 70°16'W.) has several rocks, above-water and awash, about 228m SW of it. Caleta Guanillo del Sur is entered between Punta Guanillo del Sur and a point nearly 1 mile S. Islotes Negros, which are mostly white with guano, and some submerged rocks lie up to 137m off the S entrance point of the cove. A rock, awash, lies about 0.3 mile NNE of the S entrance point. Some copper mines are situated about 3 miles inland; a prominent zigzag road leading up to one of them provides a good landmark.

Punta Bandurria del Norte lies about 0.5 mile SW of Caleta Guanillo del Sur. Islotes Blancos consist of 5 islets which lie about 0.2 mile offshore, about 0.3 mile S of Punta Bandurria del Norte. Caleta Chinos is entered close S of Islotes Blancos and is visited by fishing vessels. A reef extends about 0.8 mile seaward from Punta Chinos, the S entrance point of the cove.

4.21 Punta Grande (22°28'S., 70°16'W.) is rocky and crowned with several flat-topped hills. Reefs extend 0.5 mile seaward from the point.

Caleta Gatico recedes about 0.8 mile E between Punta Grande and Punta Gatico, about 3 miles SSE. Rocks extend as much as 0.1 mile from the N side of Punta Gatico and about 91m from the W and S sides of the point. A good landmark for approaching the cove is a two-story white house with a red roof, about 0.8 mile NE of Punta Gatico. There is good anchorage, in 33m, sand, about 0.3 mile W of the head of the cove. Closer in and more to the S the bottom is rocky and unsuitable for anchoring. Heavy swells sometimes set into the cove very suddenly. A village at the head of the cove is reported to be abandoned. Some wharves, in ruins, extend up to 0.8 mile off the coast of the cove.

Vessels approaching Caleta Gatico from the N have frequently mistaken Caleta Guanillo del Sur for this cove. One feature by which the coves may be distinguished is that the rocks off Punta Guanillo del Sur are white from guano, while the rocks off Punta Gatico have a dark appearance.

Punta Guacache, about 1 mile S of Punta Gatico, has islets and rocks about 0.2 mile off it. Caleta Cochinos is a small cove with a sandy beach between these two points.

Punta Cobija (22°33'S., 70°17'W.) forms the W end of a rocky peninsula. It attains a height of 33m a short distance inland. Close W and S of Punta Cobija is a group of rocks, one of which is called Roca Blanca. This flat rock is white and stands out clearly against the background of the black rocks on the shore behind it.

Rada de Cobija lies between Punta Cobija and Punta Guacache. The roadstead is about 2 miles wide at the entrance, and the shores are rocky and foul. Foul ground extends up to 0.2 mile from the S shore of the cove, with depths of 9 to 14m close outside it. The hills rise directly from the coast and form an almost unbroken ridge 610 to 914m high, with no sufficiently marked feature to indicate the position of the ruins of an abandoned port at their base. The ruins of the former port can be seen from a distance of 5 miles and form a landmark in the approach to Rada de Cobija. Roca Blanca would be a good mark, but there is a similar rock some miles to the N.

It is reported (1990) that a pier, which was situated 914m E of Punta Cobija, has been destroyed and that landing is impossible.

Anchorage.—The best anchorage is in the S part of the bay, in about 18.3 to 23.8m, sand, about 0.5 mile ENE of Punta Cobija. There is good anchorage for large vessels, in 35m, about 0.6 mile NE of Punta Cobija.

4.22 Punta Guasilla (22°34'S., 70°17'W.) is conspicuous because of two small flat-topped islets which lie 1 mile off it. The coast between Punta Guasilla and Punta Tamira, about 2 miles S, is foul to a distance of 1 mile offshore. An islet lies about 0.1 mile S of Punta Tamira. Punta Chungungo, about 2 miles S of Punta Tamira, is rough, steep, and of a blackish color.

Punta Tames (22°40'S., 70°20'W.) is rugged and one of the most conspicuous points along this section of coast. Rocks fringe the point to 91m off. Islotes Blanco lies nearly 0.5 mile NE of the W end of the point and about 91m offshore. Caleta Tames recedes nearly 1 mile E between Punta Tames and Punta Chungungo.

Anchorage.—Anchorage, with good holding ground, can be taken, in a depth of 23m, shells, 0.2 to 0.3 mile offshore.

Punta Guaque, about 2 miles S of Punta Tames, is low. Islote Negro lies about 0.2 mile off the point. Caleta Michilla lies between Punta Guaque and Punta Michilla, about 3 miles S. The cove is about 0.8 mile wide at the entrance and recedes nearly 0.5 mile eastward. Depths of 21.9m in the entrance decrease to 12.8m about 0.3 mile from the shore. Small vessels can find good anchorage about 0.3 mile N or NW of the S entrance point, in 21.9m, sand. There is a small settlement and the ruins of a pier, on the S shore of the cove.

Punta Gualaguala (22°46'S., 70°20'W.) is high, rocky, and somewhat conspicuous because of the low black hills with which it is crowned. Rocks extend a short distance off the point. Caleta Gualaguala lies between Punta Michilla and Punta Gualaguala, and has a small pier for the shipment of ore. There is partly-sheltered anchorage, with fair holding ground, from 0.5 to 0.8 mile WNW of the pier. A small settlement is situated near the pier.

4.23 Punta Hornos (22°55'S., 70°18'W.) lies about 9.5 miles S of Punta Gualaguala. Above and below-water rocks lie up to 0.2 mile W and nearly 0.5 mile SW of Punta Hornos. Caleta Playa del Horno, N of Punta Hornos, has a sandy beach on its S side where landing can be made at all times. A rock,

awash at low water, lies about 183m N of the beach. A rock, surrounded by a drying reef, lies about 0.1 mile off the S entrance point of the cove. Good anchorage may be taken in the cove between 0.8 and 1 mile N of Punta Hornos; in depths of 25m; however, depths shallower than charted have been reported in the vicinity of the anchorage.

Punta Chacaya lies about 3 miles SSW of Punta Hornos. Patches of foul ground lie from 0.5 to 1 mile offshore between these two points. It is reported that a conspicuous white pyramid stands about 2.3 miles SSW of Punta Chacaya. Caleta Chacaya is a small cove which is entered N of Punta Chacaya. Small vessels can take anchorage about 0.3 mile NW of Punta Chacaya; in a depth of 29m, but it was reported that shoaling had taken place in the cove.

Punta Angamos (23°01'S., 70°31'W.) lies about 11 miles SW of Punta Chacaya. The point is a remarkable headland about 220m high and extends N. It is entirely covered with guano, which gives it the appearance of a chalky cliff. Roca Abtao is a detached rock a little over 0.8 mile NW of Punta Angamos. This rock has about 2.4m of water over it and usually is unmarked by breakers. A light is shown from the point.

Bahia Mejillones (23°03'S., 70°27'W.) is entered between Punta Chacaya and Punta Angamos.

The approaches to the bay are clearly depicted by radar from a distance of about 30 miles. Punta Angamos, Punta Chacaya, Morro Mejillones, and Tetas de Mejillones serve as excellent radar landmarks.

Morro Mejillones has the appearance of a truncated cone and stands conspicuously above the surrounding heights. In clear weather this is the best landmark in the vicinity, but as the tops of the hills on this coast are frequently covered with heavy clouds, Punta Angamos is a surer mark. Punta Angamos cannot be mistaken. Besides a chalky appearance, it is the N extremity of the peninsula, and the land eastward recedes sharply S.

Tetas de Mejillones consist of two peaks, 325 and 330m high, on the W shore of the bay about 1.5 miles S of Punta Angamos. A conspicuous group of houses is situated on the N slope of Morro Mejillones. The lights of the buildings are clearly visible at night for a distance of 15 miles between the bearings of 090° and 215°. An unusual phenomenon is the occurrence of large and small areas of discolored water, known as “aguaje.” These give the appearance of shoals and have been observed in the bay. They are of a coffee, red, or yellow color and are caused by the presence of great quantities of marine growth.

Mejillones (23°06'S., 70°28'W.)

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4.24 Mejillones lies on the S shore of Bahia Mejillones del Sur, which is said to be one of the best natural harbors on the W coast of South America. The port consists of passenger berths (Muelle Fiscal), one fishing vessel berth, and one terminal with three mooring buoys for the discharge of ammonia. Large areas of red or coffee-colored plankton are a local phenomenon. Sometimes the waters turn yellow, giving the impression there are shoal banks. Between six and 12 explosives-carrying ships berth here each year.

Mejillones Home Page
http://www.puertoangamos.cl

Winds—Weather.—Light N winds may start after midnight and continue until about noon. Southwest winds start about noon and last until evening. Although these winds descend from the highlands and are usually quite strong, they do not interfere with the traffic in the port. Fog is rare, but sometimes occurs between June and September. As the bay is sheltered from the prevailing SW winds, storms do not generally enter the bay. Offshore storms produce a swell in Bahia Mejillones del Sur that, although not interfering with the ships at anchor, is felt close inshore and alongside the piers.

Tides—Currents.—Tides rise 0.9m at springs and 0.6m at neaps.

Depths—Limitations.—Several piers, two of which are in use, are situated in the S part of the harbor. The piers are used by small craft and lighters. One of these piers in use is Muelle Fiscal, with a depth of 4m at the head, and used for off-loading passengers. There is a small fishing wharf, 53m long, with a depth alongside of 3m. Another pier, Muelle Fertillzante, located 1.25 miles W of Puerto Mejillones del Sur Light is out of service.

There are several privately-owned and publicly-owned terminals used for the loading and discharge of various chemicals and other products situated ENE of the Mejillones del Sur Light and S of this area. Details of these berths are, as follows:

1. Enaex Terminal (CBM), located 1 mile ENE of the Puerto Mejillones del Sur Light, is comprised of five mooring buoys and a submarine pipeline for discharging ammonia. Vessels up to 21,000 dwt, with a maximum length of 185m, a beam of 27.4m, and a draft of 9.4m, can be accommodated.
2. Puerto de Mejillones Terminal Maritimo, located 2.15 miles ENE of the Puerto Mejillones del Sur Light, consists of two piers and is used for coal and chemical (sulphuric acid) cargo operations.

Pier No. 1, 70m long, is a T-shaped jetty-type pier for loading coal located at the end of a long trestle pier with dolphins, mooring poles, and two mooring buoys. Vessels up to 71,770 dwt, with a maximum length of 230m, a beam of 32.2m, and a draft of 14.38m, can be accommodated.

Pier No. 2 is a finger pier for discharging sulphuric acid. Vessels up to 80,000 dwt, with maximum length of 230m, a beam of 34m, and a draft of 14.38m can be accommodated at this pier. Note that berthing can be carried out only during daylight hours.

3. Interacid Terminal, a jetty with a berth on each side, is located 3.5 miles ENE of the Puerto Mejillones del Sur Light and used for discharge of sulphuric acid. Depths alongside Berth No. 1 are 16m, while depths alongside Berth No. 2)are 15.5m. Vessels up to 67,000 dwt, with a maximum length of 238m in length, a beam of 34m, and a draft of 14.0m, can be accommodated at either berth.
4. Muelle Bascunan, a small pier close E of the Interacid Terminal is used mostly for small local vessels and has a depths of 3m at the head.

5. Puerto Angamos Terminal, located 4 miles ENE of the Puerto Mejillones del Sur Light, consists of four berths on a T-shaped quay capable of handling vessels with copper and containers. A breakwater, 192m in length, runs parallel to the shoreline in this area.

6. Terminal Maritimo Oxiquim S.A., close NE of Puerto Angamos Terminal, is a jetty with three dolphin buoys and an operating platform marked by a buoy for the discharge of sulphuric acid. Vessels up to 95,000 dwt, with a maximum length of 250m, a beam of 36m, and a draft of 13.5m can be accommodated at this pier.

7. Terminal de Graneles Norte, close E of Vopak-Oxiquim, is a jetty used for the discharge of coal to the power station.

8. GNL Mejillones LNG Terminal, located approximately 5 miles NE of the Puerto Mejillones del Sur Light, is an off-loading jetty for LNG and consists of two berths.

The N berth is permanently occupied by a tanker used to discharge LNG ashore for supplying energy to the mining industry of northern Chile.

The S berth is for a conventional LNG tanker to transfer LNG to the tanker at the N pier. Tankers up to 130,000 gt with a maximum draft of 12.5m can be accommodated at the S berth.

9. Michilla Marine Terminal (Maritimo Minera Michilla), located well N of Bahia Mejillones at Caleta Michilla (22°43'S., 70°19'W.), is an offshore CBM facility used for discharge of sulphuric acid. Three buoys are available for use with both anchors down for mooring. Tankers up to 19,000 dwt, with maximum length of 180m, a beam of 24m, and a maximum draft of 9.0m can be accommodated at this CBM. Maneuvering of tankers is not permitted in wind conditions of Force 4 and stronger.

Additional berth information for the terminal can be found in the table titled **Mejillones—Berth Information**.

Aspect.—Cerro San Luciano, a prominent hill that rises to an elevation of 522m, stands in the SW corner of the bay, about 4.5 miles SSE of MaritimoPunta Angamos.

An aeronautical radiobeacon is situated close S of the port.

See the description of Bahia Mejillones in paragraph 4.23.

Lighted ranges indicates the approaches to the berths. The limit of shoal areas located on the SW side of this range are marked by two red lighted buoys; the limit of shoal areas located on the NE side of this range is marked by two green lighted buoys.

Pilotage.—Pilotage is compulsory for all vessels. However, as there is no resident pilot in Mejillones, a pilot is sent from Antofagasta. The pilot boards in different places, depending on the terminal vessel is heading for. Pilot boarding positions are, as follows:

1. Enaex Terminal and Puerto de Mejillones Terminal Maritimo—position 23°04'00.0"S. 70°25'30.0"W.

2. Interacid Terminal and Puerto Angamos Terminal—position 23°03'12.0"S, 70°24'18.0"W.

3. Michilla Maritime Terminal—position 22°42'25.2"S, 70°19'06.0"W.

4. GNL Mejillones LNG Terminal—position 23°02'01.2"S, 70°24'22.2"W.

Mejillones—Berth Information

Berth	Length	Draft	Maximum Vessel			Remarks
			LOA	Draft	Size	
Puerto Angamos						
No. 1	225m	14.6m	225m	12.84m	70,000 dwt	Multipurpose.
No. 2	—	14.6m	265m	12.84m	70,000 dwt	Multipurpose. Continuous berthing length of 445m.
No. 3	—	12.5m	200m	11.16m	70,000 dwt	Multipurpose. Continuous berthing length of 400m.
No. 4	180m	12.5m	180m	10.70m	70,000 dwt	Multipurpose.
Terminal de Graneles Norte (TGN)						
Pier 1	142m	—	250m	14.40m	65,000 dwt	Coal. Berthing length of 428m (including dolphins).
Maritimo Puerto Mejillones						
Pier 1	70m	18.0m	230m	14.38m	71,800 dwt	Chemicals and coal. Berthing length of 500m (including dolphins).
Pier 2	46m	18.0m	230m	14.38m	80,800 dwt	Chemicals. Berthing length of 277m (including dolphins).
Tanker Terminals						
Enaex	—	11.5m	185m	9.40m	21,800 dwt	Chemicals. Five mooring buoys
GNL North Berth	37m	12.5m	300m	14.38m	130,000 dwt	LNG. Berthing length of 430m (including dolphins).

Mejillones—Berth Information						
Berth	Length	Draft	Maximum Vessel			Remarks
			LOA	Draft	Size	
GNL South Berth	37m	12.5m	300m	14.38m	130,000 dwt	LNG. Berthing length of 430m (including dolphins).
MBM	—	13.0m	180m	9.0m	19,8000 dwt	Chemicals. Mooring buoy.
Minera Centinela	26m	—	—	—	—	Copper concentrate, sulfide and oxide. Berthing length of 395m (including dolphins).
Odjell Terquim (E)	94m	12.8m	240m	14.38m	65,000 dwt	Chemicals. Berthing length of 320m (including dolphins).
Odjell Terquim (W)	94m	12.8m	240m	14.38m	65,000 dwt	Chemicals. Berthing length of 320m (including dolphins).
TM 1 (E)	38m	16.0m	238m	14.00m	67,000 dwt	Chemicals. Berthing length of 309m (including dolphins).
TM 2 (W)	38m	15.5m	238m	14.00m	67,000 dwt	Chemicals. Berthing length of 309m (including dolphins).
Vopak MBM	mooring buoy	—	250m	13.50m	95,000 dwt	Chemicals and LPG.mooring buoy.

Maritimo Puerto Mejillones

https://www.puertoangamos.cl

Puerto Angamos Mejillones Terminal

Regulations.—The vessel's ETA should be sent 5 days prior to arrival, then once every day at 0800 until arrival. The ETA message should contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) operates 24 hours. This VTS is in effect for the waters of Bahia Mejillones del Sur and the area bounded by the following positions:

a. 23°01'30"S, 70°30'29"W.
b. 23°01'30"S, 70°35'55"W.
c. 22°50'46"S, 70°41'20"W.
d. 22°44'48"S, 70°35'08"W.
e. 22°40'54"S, 70°27'08"W.
f. 22°40'54"S, 70°16'47"W.

Participation in the VTS is mandatory for all vessels entering, departing, or heading towards Bahia Mejillones del Sur or vessels anchoring within the port limits. Voluntary participation is allowed for vessels passing through the area but not going to the bay. All vessels must keep their Automatic Identification System (AIS) equipment on at all times while in

the VTS area.

VTS Mejillones—Contact Information	
Mejillones Radio	
Call sign	CBA22
VHF	VHF channels 14, 16, and 68
Telephone	56-55-2621513
Facsimile	56-55-2623279
E-mail	sctmmejillones@directemar.cl
MMSI	007250040
Harbormaster	
Telephone	56-55-2621513
Facsimile	56-55-2621513
E-mail	cpmejillones@directemar.cl
Enaex Terminal **	
Telephone	56-55-2621511 56-55-2621831
E-mail	rvisedo@enaex.cl
Mejillones Terminal *	
Telephone	56-55-2621140
E-mail	lackermann@puertomejillones.cl
Interacid Terminal *	
Telephone	56-55-2621792
Facsimile	56-55-2621960
E-mail	interacid@entelchile.cl
Michilla Terminal **	
Telephone	56-55-2637617
E-mail	jagurto@michilla.cl jotero@michilla.cl
Puerto Angamos Terminal *	
Telephone	56-55-2357070
Facsimile	56-55-2357077
E-mail	abaus@puertoangamos.cl
	gzamoreno@puertoangamos.cl
Web site	http://www.puertoangamos.cl
Note: * Open 24 hours. ** Open only during daylight hours.	

Vessels must contact the VTS on VHF channel 16 one hour prior to entering the VTS area to confirm the following information if proceeding to port or anchoring:

1. Vessel name.
2. Vessel call sign.
3. ETA at the pilot boarding station.

If the vessel is only proceeding through the VTS area without stopping, the following information shall be provided:

1. Vessel name.
2. Departure time from last port.
3. Destination port and ETA at that port.

Contact Information.—Port contact information can be found in the table titled **Mejillones—Contact Information**.

Anchorage.—Anchorage can be taken in several places within the harbor, all shown on the chart, as follows:

1. Area A—1 mile N of Muelle Fiscal.
2. Area B—0.8 mile N of Mejillones Terminal.
3. Area C—0.5 mile away from the pierhead at Interacid Terminal.
4. Area D—0.7 mile N of Puerto Angamos Terminal.
5. Area B—1 mile NNE of Puerto Angamos Terminal.

Anchorage can also be obtained within 0.8 mile of the shoreline within the bay, sand, good holding ground. Caution should be taken however since depths decrease rapidly inshore of this line.

There is an explosives and inflammable anchorage area 2.5 miles ENE of Cerro San Luciano, about 700m offshore, in depths of about 20m. Caution should be taken to avoid a shoal area of 4.7m located 0.5 mile E of this anchorage.

Vessels are prohibited from anchoring within 100m E of the submarine pipeline which extends 900m N from the shoreline 0.3 mile W of Puerto Mejillones de Sur Light. This pipeline is marked by lighted buoys.

Vessels should not anchor N of Punta Choros; the coast is steep-to and the holding ground is bad.

Caution.—There are numerous shellfish beds on the W side of the harbor, marked by numerous buoys of different shaped and colors which need to be avoided.

Two dangerous wrecks lie close off the town. Another dangerous wreck lies 3.75 miles N of Muelle Fiscal.

A sunken wreck, in a depth of 40m, lies 0.86 mile offshore, with Puerto Mejillones del Sur Lighted Beacon bearing 187°.

A dangerous wreck, in a depth of 6m, lies 0.47 mile offshore, with Puerto Mejillones del Sur Lighted Beacon bearing 231°.

Due to significant changes to the port infrastructure, mariners should contact local port authorities and pilots for current information.

The area is a habitat for whale migration, breeding and feeding. To avoid the risk of collision mariners are advised to keep a good lookout and adhere to speed restrictions.

Mejillones to Antofagasta

4.25 Peninsula Mejillones del Sur is the high landmass W of Bahia Mejillones del Sur. Its E side extends from Punta Angamos to the SW extremity of the bay. Its W side trends about 7 miles SW to a position on the coast about 1.5 miles SE of Punta Loberia.

From Punta Angamos the coast trends about 5 miles SW to Punta Baja, which is low, rocky, and surrounded by submerged rocks to a distance of nearly 0.5 mile. Rocks and reefs extend from 0.3 to nearly 0.5 mile offshore between these points. Punta Loberia lies about 1.5 miles S of and is similar to Punta Baja. A reef, with a rock awash and submerged rocks, extends nearly 1 mile W from Punta Loberia.

Punta Jorgino lies about 8.5 miles S of Punta Loberia. The point is rocky and rounded. It lies at the foot of Morro Jorgino

which is high, rugged, and forms the N end of a tableland.

Banco Lagartos extends about 0.5 mile seaward from Punta Lagartos (23°22'S., 70°37'W.). Islote Lagartos lies at about the center of the bank. The islet, 4.9 to 5.8m high, is rock covered with white shells and can be recognized for 3 miles. Rocks extend some distance NW and S from the islet. A reef extends nearly 0.5 mile NNW from the islet and terminates in an above-water rock. The boilers of a wrecked steamer lie on this reef and are always visible.

Roca Esmeralda, a submerged rock over which the sea breaks violently, is charted nearly 3 miles WNW of Punta Lagartos. As the position of the rock is doubtful, caution must be observed to give it a wide berth. The light on Punta Tetas is obscured over Roca Esmeralda.

A rock lies close off and a reef extends nearly 0.5 mile seaward from an unnamed point about 2.5 miles S of Punta Lagartos. From this point the coast trends about 1 mile SE to the N entrance point of Caleta Constitucion. Rocks extend 0.5 mile seaward between these two points.

The coast recedes about 0.8 mile E between the N entrance point of Caleta Constitucion and an unnamed point about 3 miles S. Isla Santa Maria lies about midway between these two points. Reefs extend a little over 0.5 mile SSW from the S side of the island and up to 0.3 mile from all other sides.

4.26 Caleta Constitucion (23°25'S., 70°36'W.) is entered N of Isla Santa Maria and lies NE of the island. The entrance between the reefs, which extend N from the island and those which extend about 0.3 mile S from the N entrance point, is about 0.5 mile wide and has a least depth of 13.7m. A channel, about 180m wide at its narrowest part and with a depth of 11.9m, trends S between Isla Santa Maria and the mainland and connects Caleta Constitucion and Caleta Errazuriz. This channel is used only by small vessels with local knowledge.

Anchorage.—Small vessels can take sheltered anchorage in the cove, between the NE side of Isla Santa Maria and the mainland NE. The best anchorage is about 0.5 mile ENE of the N end of the island, in 11 to 18.3m, mud. Farther out the holding ground is poor. The land breeze, called "paracas," is sometimes strong, especially at night.

Caleta Errazuriz is entered S of Isla Santa Maria and lies S of the island. The channel between the reefs, which extend SSW from the island and those which extend about 0.3 mile N from the W entrance point of the cove, is about 0.3 mile wide and has depths over 27.4m.

Peninsula Moreno is the high land mass S of Caleta Errazuriz. Cerro Moreno, the dominant peak in this region, lies about 3 miles ESE of Caleta Errazuriz in the N part of the peninsula. The mountain is inclined on its S side, but to the N it ends abruptly over a barren plain. It is dark in color, lacks vegetation of any kind, and is split by a ravine on its W side.

4.27 Punta Tetas (23°31'S., 70°38'W.) is the SW extremity of Peninsula Moreno. The point is of moderate height, rocky, and arid. Two hillocks on the point, aligned NE and SW, are conspicuous and facilitate the recognition of the point from a long distance. Punta Tetas is steep-to and free of off-lying dangers. A light is shown from the point.

Anchorage.—Anchorage is obtainable, in a depth of 46m with Punta Tetas Light bearing 303°, distant 1.2 miles. This berth is usually used by the lighthouse tender; there is a landing place nearby. Better shelter is obtained by anchoring 0.5 mile ENE of the light, over a sandy bottom.

The coast between Punta Tetas and Antofagasta, about 14 miles ESE, recedes about 6.5 miles NE. A small bight recedes about 1.3 miles N between Punta Tetas and Punta Jorge, about 4 miles E. Islote Lobos lies close offshore in the N part of this bight, in a position about 2 miles ENE of the S extremity of Punta Tetas. Roca Blanca lies close offshore, about 2.5 miles E of Punta Tetas.

Bahia Moreno recedes about 4.5 miles N between Punta Jorge and Isla Guaman, about 7.5 miles ESE. Except for a sandy beach at the head of the bay, the shores are formed by rocky cliffs.

Caleta Abtao (23°31'S., 70°32'W.) indents the W shore of Bahia Moreno. The cove is well-sheltered and has little or no swell. Small vessels can take anchorage about 0.3 mile N of the S entrance point, in about 17m. There is a landing place at a small wooden pier.

The airport for Antofagasta is situated on the NE side of Bahia Moreno. Several conspicuous lights are shown from there.

La Loberia, a group of above-water rocks, and La Portada, an above-water rock, lie close offshore along the NE shore of Bahia Moreno. The highest part of this coast is abreast La Loberia, where it rises to about 19.8m.

Isla Guaman (23°33'S., 70°25'W.) is about 21.9m high and white. Rocks extend nearly 0.1 mile NW from the NW end of the island and shoals extend about 91m off all other sides of the island. It is connected to the mainland by a causeway. A beacon, 6m high, equipped with a can-shaped topmark with red and white bands, stands on Isla Guaman.

4.28 Caleta La Chimba lies NE of Isla Guaman and is protected from the S by a causeway joining the island to the mainland. There are depths of 25.6m in the entrance, which decrease to about 9.1m about 0.2 mile from the head of the cove. Above-water rocks lie about 0.3 mile NE of Isla Guaman. The entrance of the cove, between these rocks and the shoals extending from Isla Guaman, is about 0.2 mile wide. Small vessels anchor about 0.2 mile NE of Isla Guaman, in 16 to 24m, fine sand and shells. Large vessels anchor off the entrance of the cove, in 25.6 to 29.3m.

Depths—Limitations.—There is a discharge berth for liquefied gas (propane, butane, or mixed) in the cove. The entrance to the cove is 0.2 mile wide. The maximum draft accepted is 10m; the maximum length accepted is 150m.

Vessels moor to two buoys off each quarter, and are also held by a line from the shore to the port bow, with both anchors out, lying with ship heading 345°.

Pilotage.—Pilotage is compulsory. A pilot is essential and should be taken at Antofagasta, where vessels will also be received, unless the master has been to La Chimba before, then the pilot and officials will board off Guaman Island, where there is an anchorage, in 22.3m. There are no navigation lights nearby and entry or sailing is by day only.

Punta Brava (23°35'S., 70°23'W.) fronted by foul ground, lies about 2 miles S of Isla Guaman. The coast between is fringed by rocks and unapproachable. A line of high hills backs the coast about 1 mile inland. Punta Brava marks the N limit of Rada de Antofagasta.

Antofagasta (23°39'S., 70°25'W.)

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4.29 Antofagasta lies at the E side of Rada de Antofagasta, which recedes about 0.8 mile E between Punta Brava and a point about 6 miles S. It is an important commercial center. A large part of the import-export trade of Bolivia passes through the port. Bolivia maintains a customhouse here. The harbor is well-protected and large vessels berth alongside for handling cargo. The depth inside the port varies from 9.1 to 27.4m. The port has seven berths varying in depth alongside from 4.8 to 11.2m. It is the largest port in northern part of Chile.

Antofagasta Home Page
http://www.puertoantofagasta.cl

Winds—Weather.—There is no rain except for an occasional short shower. The interior and surrounding hills are completely dry and barren. The prevailing winds are from the SW and are somewhat stronger in summer than in winter. These winds usually rise during the day and die out in the evening. The nights are usually calm. A land breeze, called "puelche" or "terra," occasionally blows during the early morning hours. The land breeze is uncertain, but at times blows with great violence. During the winter the roadstead is visited by heavy squalls that sweep suddenly down through the mountain gorges from the elevated tableland of the interior and frequently interrupt lighter operations.

Fog is extremely rare, but fog and mist may occur sometimes during autumn and winter mornings.

Tides—Currents.—The mean tidal rise at Antofagasta is 0.6m, while the spring rise is 0.9m.

Currents in Rada de Antofagasta are ordinarily of a local nature and dependent on the winds. A coastal current setting S during calm weather has been observed.

A SW swell sets into Rada de Antofagasta throughout most of the year, being more or less pronounced in proportion to the strength of the prevailing winds. During May, June, and July the swell becomes heavier. At such times the sea in the roadstead becomes rough and breaks over the shoals and along the entire shore of the roadstead. This ordinarily lasts from 2 to 4 days.

Depths—Limitations.—The principal harbor, an artificial one situated at the W side of the city, is protected by a breakwater which extends WNW from the shore and thence N. It is entered from the N, the entrance being about 240m wide between the above breakwater and one which extends W from the shore. The harbor is about 0.2 mile wide in the N part and decreases to about 0.1 mile at its S end. The inner part of the outer breakwater is quayed on its SW and S sides. The E side of the artificial harbor has a long quay for large vessels and a small quay at its S part for small vessels.

The port has seven berths, all of which are used for general and dry bulk cargo, besides a fishing zone and a wharf zone. See table with title **Antofagasta Terminal—Berth Information** for more detailed berth information.

Caleta Poza del Salitre, the old harbor, lies about 0.5 mile ENE of the artificial harbor. Several piers extend from the shores of this cove, which is used only by small craft, yachts, and fishing vessels. The channel to Caleta Poza del Salitre is occasionally impassable because of the heavy swell which rolls over Arrecife Tawn and breaks across the entrance.

Light shown from the W breakwater

Three offshore oil berths with CBMs are located 1 to 2 miles N of the harbor entrance; these berths handle petroleum, lubricating oils, and clean products. Tankers up to 191m in length, with a maximum draft of 18.0m, can be accommodated at the two southernmost berths; the northernmost berth can accommodate vessels with a maximum draft of only 12.2m.

A single offshore oil berth with a CBM is located about 1 mile S of the harbor entrance. Tankers up to 250m in length, with a maximum draft of 15.0m, can be accommodated at this berth. However, it has been reported (2010) that this berth is not in use.

Aspect.—Cerro Moreno and Punta Tetas are visible at a considerable distance and cannot be confused by vessels approaching Antofagasta, either from the N or S. Morro Jara is a good landmark for vessels approaching from southward. Cerros del Ancia, a number of hills about 1 mile E of Antofagasta, rise steeply to a height of 293m. A large cement anchor, facing W, is situated near the top of one of these hills.

On closer approach to the port, a hospital, about 1 mile SE of the entrance of the artificial harbor, and a church tower close NW of it, are conspicuous. Large tank farms are situated about 1.5 and 2 miles NNE of the port. Numerous high chimneys and large buildings are situated throughout the city. Several prominent grain silos and warehouses stand on the E side of the harbor. A four-story building, illuminated by fluorescent lights, stands nearly 1 mile ENE of the head of the E breakwater, and two five-story buildings stand about 0.7 mile ESE of the same point. A conspicuous 24-story building stands about 1 mile SW of the hospital. A prominent brewery, with chimneys, stands about 0.8 mile NE of the E breakwater; this building is brilliantly lit at night.

A light is shown from a prominent tower standing on the head

Antofagasta Harbor

of the W breakwater. A radio mast, 75m high, stands on Arrecife Tawn close W of Caleta Poza del Salitre. Red obstruction lights are shown from a radio mast, 60m high, standing about 1 mile ESE from the E breakwater head. A light is exhibited close NE of Arrecifee Tawn at the end of Pier No. 1.

Pilotage.—Pilotage is compulsory. The pilot boarding area is within a 0.3 mile radius of position 23°38'19"S, 70°24'59"W. Vessels awaiting pilot for Caleta Coloso anchor close to the boarding area, in depths of about 40m, and are required to be underway before the pilot boards.

Regulations.—An IMO-adopted Traffic Separation Scheme lies in the approaches to the port and may best be seen on the chart. The inbound traffic lane is situated S of the separation zone.

Signals.—During periods of stormy weather, traffic to and from Caleta Poza del Salitre, as well as in other parts of the harbor, may be restricted. Signals indicating such restrictions are displayed from a mast on the tower of the Harbor Office, about 0.5 mile SE of the entrance of the artificial harbor, and are, as follows:

1. One ball at the dip—The movement of small craft is suspended. Other vessels should look to their moorings.
2. One ball at the masthead—The port is closed and all traffic is suspended.

Antofagasta Terminal—Berth Information

Berth	Maximum Vessel		Remarks
	LOA	Draft	
Fish Quay	135m	7.3m	Located close E of Berth No. 1.
No. 1	254m	9.1m	Containers, breakbulk, and cruise vessels.
No. 2	254m	9.1m	Containers, breakbulk, and cruise vessels.
No. 3	254m	9.1m	Containers, breakbulk, and cruise vessels.
Wharf Zone	130m	4.8m	—
No. 4	185m	8.7m	Containers and bulk vessels.
No. 5	185m	12.0m	Containers and bulk vessels.
No. 6	140m	9.4m	Copper concentrates, containers, and breakbulk vessels.

Antofagasta Terminal—Berth Information			
Berth	Maximum Vessel		Remarks
	LOA	Draft	
No. 7	260m	12.0m	Copper concentrates, containers, and breakbulk vessels.
Notes: 1. Although there are no designated ro-ro berths available in the terminal, these types of vessels can be accommodated in some of the berths listed above. 2. Container cargo can be accommodated at all berths.			

Contact Information.—The harbormaster can be contacted, as follows:

Antofagasta—Contact Information	
Harbormaster	
Call sign	CBA20 (Antofagasta Capuerto Radio)
VHF	VHF channels 9, 14, and 16
Telephone	56-55-2228008
Facsimile	56-55-2224464
E-mail	cpantofagasta@directemar.cl
Port Authority	
Telephone	56-55-2563709
Facsimile	56-55-2563735
E-mail	comunicationes@puertoantofagasta.cl
Web site	http://www.anfport.cl
Antofagasta International Terminal	
Telephone	56-55-2432350
	56-55-2432301
Facsimile	56-55-2432355
	56-55-2432309
E-mail	terminal@atiport.cl
	comercial@atiport.cl
Web site	http://www.atiport.cl

Anchorage.—Six designated anchor berths, best seen on the chart, lie N and SSW of the outer breakwater. Berth 1 trough Berth 4 are located NNW of the harbor entrance. Berth 5 and Berth 6 are SSW of the W breakwater. The holding ground is not good.

Vessels intending to remain at anchor for several days must anchor under the directions given by the pilot, on a SW heading.

A prohibited anchorage area, the limits of which are shown on the chart, fronts the harbor entrance.

Caution.—Roca Paita, awash, lies about 0.3 mile N of the E side of the entrance to the harbor. A dangerous wreck lies close N of Roca Paita. The rock is the outermost danger of a large shoal area which extends about 0.3 mile N from the harbor entrance, then E to the shore. Arrecife Tawn, consisting of drying and submerged rocks, lies within this area. A shoal, with a least depth of 2.3m, lies about 0.3 mile offshore, 0.8 mile NNE of the E breakwater head. Rocas Abel y Ema lie awash about 0.1 mile offshore, a little over 1 mile NNE of the harbor entrance. A dangerous wreck lies 0.2 mile WNW of Rocas Abel y Ema.

Roca Hornos, with above and below-water rocks and about 0.2 mile long, lies less than 0.3 mile NNE of Rocas Abel y Ema. Roca Celina lies awash about 0.2 mile NE of Roca Hornos. A rock, with a least depth of 8.9m, lies about 0.2 mile SW of Roca Hornos. This rock and others in the vicinity are especially dangerous to vessels mooring off the submerged pipelines in the area.

The head of the W breakwater should be given a wide berth, due to rocks extending up to 30m from it.

Vessels should exercise caution when approaching the anchorage at night, as the lights of the city are reported to be very deceptive.

Antofagasta to Taltal

4.30 Between Antofagasta and Morro Jara, about 12 miles SSW, the coast is backed by a high chain of hills which lies about 1 mile inland.

Caleta Coloso (23°45'S., 70°28'W.), with a mooring berth, recedes about 0.3 mile S between Punta Paso Malo, about 7 miles SSW of Antofagasta, and about 0.8 mile WSW of Punta Coloso. A light, with a racon, is exhibited at Punta Coloso. Shoal water extends about 0.1 mile off the S and E shores of the cove. A rocky patch, with 7.3m over it, lies about midway between the two entrance points and about 0.2 mile offshore.

Approach to the berth is made on green leading lights bearing 190°. Caution must be exercised to avoid the 7.3m patch mentioned above.

Depths—Limitations.—The berth for ore loading consists of a wharf head structure and two dolphins, one on each side of the wharf head. The berth can accommodate vessels up to 65,500 dwt, 200m in length, 33.5m in width, and a draft of 12.0m.

The starboard anchor is used for port side-to berthing on two dolphins, while two tugs assist. The least depth at MLW is 13m. Lines are doubled to five mooring buoys and four back springs are used to the dolphins.The berth usually is sheltered from the strong SW summer winds which. however. occasionally disrupts loading process.

Vessels will not be berthed if the winds exceed 18 knots.

Pilotage.—Pilotage is compulsory and should be ordered through the agents. Agents can be contacted on VHF channel

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The pilot boarding area is off Antofagasta in position 23°38'06"S, 70°24'52"W. Vessels awaiting pilot for Caleta Coloso anchor close to the boarding area in depth of about 40m and are required to be underway before the pilot boards.

The pilot vessel and tugs can be contacted on VHF channels 6, 8, 12, 14, 15, 16, 17, 68, 69, and 70.

Anchorage.—Vessels anchor, in depths of 20 to 24m, in a sand bed with good holding ground, 0.2 mile ENE of Punta Coloso; avoid the 7.3m shoal patch mentioned above, and the coastal bank, with depths of less than 5.5m, that extends 0.1 mile from SE shore of the cove.

4.31 Roca Negra (23°47'S., 70°29'W.), a small dark-colored islet, lies about 2 miles SSW of Punta Coloso and about 0.2 mile offshore. Caleta Bolfin indents the coast about 3 miles S of Roca Negra. The cove has moderate depths and affords anchorage for several large vessels, sheltered from SW winds.

Caution.—The coast between Punta Coloso and Caleta Bolfin, about 2 miles SSW, has been reported to extend about 2.5 miles farther SW than charted.

Morro Jara (23°52'S., 70°30'W.) is steep and conspicuous. It lies on a small peninsula that extends about 1 mile W from the coast. Monte Jaron, about 4 miles E of Morro Jara, is conspicuous and a good landmark for ships approaching Antofagasta from the S.

Islote Aguila lies close offshore, about 4 miles S of Morro Jara. A white pyramidal beacon stands on the coast about 3 miles S of Islote Aguila. Punta Amarilla lies about 9 miles S of Morro Jara. The point can be recognized by a large yellow patch which is visible at a considerable distance.

4.32 Caleta Agua Dulce (24°08'S., 70°30'W.) provides indifferent shelter with deep water and a bottom of stone, sand, and shell. The hills surrounding the cove rise abruptly from a rocky shore to a height of about 594m. Pica Agua Dulce, 714m high, rises at the N side of the cove. Another mountain, 1,890m high and with a yellow patch on its W side, rises about 4 miles ESE of the innermost shore of the cove.

Caleta Agua Salada, about 3 miles S of Caleta Agua Dulce, may be recognized by the large yellow patch on the 1,890m high mountain mentioned above. Punta Agua Salada, the S entrance point of the cove, is high, steep, and of a darker color than the adjacent coast. A submerged rock lies about 0.3 mile W of the point. Foul ground, marked by kelp, lies up to 0.2 mile off the SE shores of the cove.

Anchorage.—Anchorage can be obtained, with local knowledge, in depths of 22 to 31m, rock and sand, about 0.8 mile NE of Punta Agua Salada.

Punta Moreno, about 3 miles S of Punta Agua Salada, is low and rocky, and is the only low land in the vicinity. Roca Moreno, an above-water rock, lies at the outer edge of a reef which extends about 0.1 mile N from the point.

Caution.—It was reported that the coastline between Punta Moreno and Morro Jara, 25 miles N, lies up to 1.5 miles farther W than charted.

Caleta El Cobre recedes about 0.4 mile SE between Punta Moreno and a point about 0.8 mile NE. A winding road on the hill on the S side of the cove is a good landmark. Two white-topped islets lie close offshore, about 0.5 mile N of the NE entrance point of the cove. Just N of the islets is a long, black point with a dark sandy patch on it.

Anchorage may be taken in Caleta El Cobre, about 0.2 mile NE of Punta Moreno, in 21.9m. Small vessels can anchor closer inshore, in 12.8m, sand.

4.33 Punta Tres Picos (24°20'S., 70°32'W.) lies about 5 miles S of Punta Moreno, and Peninsula Cangrejos lies about 2 miles farther S. The peninsula is about 9.1m high and is connected with the coast by a sandy isthmus, about 0.9m high and about 0.3 mile long. Above and below-water rocks extend about 0.2 mile N from the peninsula. Caleta Blanco Encalada recedes a little over 0.3 mile S between Peninsula Cangrejos and a point nearly 1 mile ENE. The cove is protected from S winds by the peninsula. The S and E shores of the cove are fringed with rocks which extend up to 0.2 mile from the shore. The best anchorage is about 0.4 mile ENE of the N extremity of Peninsula Cangrejos, in 14.6 or 16.5m, fine sand.

Punta Dos Reyes (24°32'S., 70°35'W.), though low, is one of the most prominent on this part of the coast. The coast between Peninsula Cangrejos and Punta Dos Reyes is generally rocky with dangers lying nearly 1 mile offshore in places. A short distance inland is a hill with a depression about 280m high.

Punta Buitre lies about 4.5 miles SSE of Punta Dos Reyes. Roca Buitre, with 1.8m over it, lies about 0.5 mile W of Punta Buitre. The sea sometimes breaks violently over this rock.

Caleta Colorada recedes about 0.2 mile SE, between Punta Piedra, about 1.5 miles S of Punta Buitre, and a point about 0.5 mile NE. A rock lies awash about 0.2 mile offshore, in a position about 0.5 mile WSW of Punta Piedra. Rocks lie up to 0.1 mile W of the NE entrance point of the cove. A conspicuous observatory, which is visible for up to 50 miles, is situated 7 miles E of Caleta Colorada.

Anchorage.—Anchorage can be taken about 0.3 mile NE of Punta Piedra, in 18.3m. This berth affords the best protection from the prevailing SW swell.

4.34 Punta Plata (24°43'S., 70°35'W.) lies about 5 miles S of Punta Piedra. The N part of the coast between these two points has rocks which lie nearly 1 mile offshore. The point is low and rocky, but gradually rises in height to 509m. Rocks lie up to about 0.5 mile off the point. Punta Plata resembles Punta Dos Reyes, but is higher.

Punta Rincon lies about 14 miles SSE of Punta Plata, the coast between these two points having rocks which extend nearly 1 mile offshore. Punta Rincon consists of three low points backed by high mountains. Rocas del Rincon, consisting of a small white islet surrounded by above and below-water rocks, lie about 1 mile SW of Punta Rincon.

The coast recedes about 3 miles E between Punta Rincon and Punta Grande, about 10 miles S. The shores of this bight are generally rocky, foul, and subject to a frequent heavy swell that breaks on them. Punta Guanillo, low and white, lies about midway between these two points and at the innermost part of the bight. A rock lies about 0.1 mile W of the point.

Caution.—A magnetic disturbance has been reported near the coast in this vicinity.

4.35 Rada del Paposo lies between Punta Guanillo and a

point about 1.5 miles N. There are general depths of 12.8 to 40m in the outer part of the roadstead. The E shore of the roadstead is fringed by shallow water and rocks to about 0.2 mile offshore. Roca Guanillo, a very conspicuous rock of reddish-ash color, consisting of two pinnacles, lies about 0.8 mile N of Punta Guanillo and about 0.2 mile offshore.

A small village, practically abandoned, is situated E of Punta Guanillo. There is a small pier and telephone service to Taltal.

Punta Grande (25°06'S., 70°30'W.) appears high and rounded when viewed from the SW. It terminates in a low steep bluff, on which are several hummocks. The point is surrounded by rocks and breakers to about 0.8 mile offshore.

Bahia Nuestra Senora recedes about 4 miles E between Punta Grande and Punta Taltal, about 16 miles S. Rocks and reefs, which extend about 0.5 mile offshore, are scattered along the shores of the bay. Punta Taltal, the S entrance point, is low and has two conspicuous knobs on it. Islote de Afuera, with a rock close N of it, lies on a reef which extends about 0.2 mile N from the point.

Caution.—Caution should be exercised when rounding Punta Taltal, as the current sets toward Islote de Afuera and tide rips are experienced for about 1.3 miles N of the point. Breakers have been observed as much as 0.8 mile from the point during a strong wind. An unconfirmed depth of about 12.8m was reported about 5 miles NNW of Punta Taltal.

Caleta Oliva is a small exposed cove about 10 miles SSE of Punta Grande. Anchorage can be taken, in 40 to 48m, with a large wooden anchor on a hill near the beach bearing 099°. Closer in, the bottom is rocky, and many anchors have been lost here.

Cerro Perales, 1,084m high, rises about 5 miles E of Punta Taltal. The hill is conspicuous because of its brighter color than other hills in the vicinity.

Taltal (25°24'S., 70°29'W.)

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4.36 Taltal occupies a bight which recedes about 1 mile S between Punta Taltal and Punta Hueso Parado, about 2 miles E. The harbor of Taltal consists of Puerto Taltal and Caleta Ossa, a cove on the E side of Puerto Taltal. The port was important for the export of nitrates and metals, but is now reported to be largely a fishing port.

Winds—Weather.—The harbor is protected from the prevailing SW winds by Punta Taltal. It is open to winds between W and N, but these seldom blow with sufficient force to interfere with vessels at anchor. However, Chilean authorities have reported that winds have occasionally reached velocities able to cause damage to vessels at anchor. Occasional heavy swells set into the harbor from October through December and may interrupt work at the anchorage.

Fogs are rare, but may occur during the months from August to December.

Tides—Currents.—The mean tidal rise here is 0.9m, while the spring rise is 1.2m.

Within Puerto Taltal, there are currents which vary in rate and direction, making the mooring of ships difficult at times.

Depths—Limitations.—Muelle Fiscal No 2 is a small jetty used mostly by coasters for the shipment of copper concentrate to the smelter at Ventanas. Vessel with a maximum length of 70m can be accommodated in depths of 4.95 to 6.05m.

An offshore CBM tanker berth, with two mooring buoys, is situated in Caleta Ossa, in depths of 14.7m.

Taltal Harbor

Aspect.—A conspicuous white hill, 285m high, lies about 1 mile S of Punta Taltal.

The two N of a group of three conspicuous hills lie between 0.8 and 1 mile S of Punta Hueso Parado. The N hill is 56m high, conical, and surmounted by a red water tank. The second hill, about 0.1 mile SW of the above hill, is 31m high, while the third and S has a religious statue on its summit.

A 134m hill, nearly 1.5 miles S of Punta Hueso Parado, has some slag heaps on its W side which are black and visible at a considerable distance. There are white patches on points, about 1 mile and 1.3 miles SE of Punta Taltal. A conspicuous billboard is situated on a hill about 1.8 miles SE of Punta Taltal.

A conspicuous white church spire is situated in the town a little over 1 mile SSW of Punta Hueso Parado. A red brick chimney stands about 0.5 mile SSE of the same point.

Pilotage.—Pilotage is not compulsory, except for tankers proceeding to the tanker berth. Pilots must come overland from Antofagasta and they will board 1 mile E of Punta Taltal.

Regulations.—Vessels calling at the port should send their ETA to their agent 5 days prior arrival, then once each day at 0800 until arrival.

Taltal—Contact Information	
Harbormaster	
Call sign	Taltal Radio (CBA27)
VHF	VHF channels 9, 14, and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	56-55-2611033
Facsimile	56-55-2611033
Port Operations	
Telephone	56-55-2611033
Facsimile	56-55-2611033
E-mail	cptaltal@directemar.cl

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

Additionally messages can be sent via Playa Ancha Radio (CBV) Valparaiso, which maintains a constant watch on 500 kHz and works on 8522 kHz and 16663 kHz.

Anchorage.—Anchorage may be obtained, in depths of 20 to 26m, sand, 1 mile SW of Punta Hueso Parado. Good secure anchorage can also be obtained abreast the city from 0.2 to 0.3 mile offshore, in depths of 18 to 27m, sand.

An explosives anchorage is located 0.2 mile NW of Punta Hueso Parado.

Caution.—Entry into and departure from the port are allowed only during daylight hours since the only navigational light in the harbor is a red beacon shown from the head of Muelle Fiscal.

Numerous lighters, not lighted and hard to identify by radar, are moored along the shores of the port.

Taltal to Chanaral

4.37 Bahia Isla Blanca recedes about 3 miles SE between Punta Taltal and Punta San Pedro, about 9 miles SW. The shores of the bay are rocky and there are no anchorages. A number of white islets lie off a steep, prominent point on the SE side of the bay. Reefs extend about 0.5 mile from the SE side of the bay.

Punta San Pedro (25°30'S., 70°38'W.) is steep and has a conspicuous high, round hummock a short distance inland. Reefs extend about 0.5 mile from the N side of the point. The W side of the point has rocks which extend about 0.3 mile offshore.

Punta Tortolas, about 3 miles SSW of Punta San Pedro, has the appearance of an island, but is joined to the shore by a low shingle spit. The summit of Punta Tortolas is steep and has several sharp peaks on it. Close N of the point is a narrow cove where vessels load copper ore. The anchorage in the cove offers a depth of 11m.

Bahia Lavata (25°39'S., 70°40'W.) recedes about 1.5 miles SE between Punta Artigas and Punta Lavata, about 3.3 miles SW. Punta Molina, about 2 miles S of Punta Artigas, divides the bay into two coves. Caleta Cifuncho, the N of these coves, is further divided by Punta Garcia into two inlets, the N of which is of no consequence. The S inlet recedes about 0.6 mile SE between Punta Garcia and Punta Molina. A rock lies on the SW side of Caleta Cifuncho, about 0.2 mile E of Punta Molina.

Anchorage.—Anchorage can be taken about 0.5 mile ENE of Punta Molina, in 21.9m, sand.

Caleta de Afuera, the southernmost of the coves in Bahia Lavata, recedes about 0.3 mile SE between Punta Molina and Punta Lavata. Roca Silva, with less than 1.8m over it, lies about midway between these points and about 0.1 mile offshore. A shoal extends about 0.1 mile from the E side of Punta Lavata.

4.38 Punta Lavata is cliffy and has rocks projecting from its base. The highest part of the point has several steep summits which are furrowed by ravines.

Bahia Ballenita recedes about 0.8 mile SE between a point about 5 miles S of Punta Lavata and Punta Ballenita, about 2 miles SW. The shores of the bay are generally rocky and unprotected. The hills surrounding the bay present a rugged barren appearance.

Punta Ballenita (25°47'S., 70°44'W.), the SW entrance point of Bahia Ballenita, is nearly 46m high. Islote Tope Blanco, which has a white summit, lies about 1 mile W of the point. The channel between the island and the point has been reported to possess irregular depths, and is not recommended for navigation. A vessel reported striking a rock in a position about 0.5 mile N of Islote Tope Blanco . The position of the rock is doubtful.

Caution.—In addition to the general current, a coastal current has been observed between Punta Ballenita and Punta Morro. This current sets NE at a velocity of 1.5 knots. Because of this current, vessels should exercise caution and keep well seaward of Punta Ballenita.

Punta Ballena lies about 4.5 miles S of Punta Ballenita. Numerous small rocky islets lie close off the point.

4.39 **Caleta Esmeralda** (25°55'S., 70°42'W.) can be recognized by high hills behind it, one of which is 627m high. Islotes Fernandez Vial, between about 0.3 and 0.6 mile offshore, are also useful in recognizing the cove. The cove is visited by small coastal vessels.

Islotes Fernandez Vial have rocks and reefs which extend about 0.1 mile from their N sides, and rocks lie about the same distance NW of the N extremity of the W islet. Rocas Aldea consist of three rocks which lie about 0.1 mile offshore, nearly 1 mile N of the W islet. Small above-water rocks lie about 0.2 mile WSW and NW of the S entrance point of the cove. A shoal, with 7.8 to 9.1m, lies about 0.1 mile NE of the latter rock. The cove is lined with reefs and kelp which extend up to 0.1 mile offshore in places.

Depths of 27.4 to 29.3m in the center of the entrance of Caleta Esmeralda decrease gradually toward the shore. The passage between Islotes Fernandez Vial and the mainland, though deep, is narrowed by reefs and of use only to small vessels in good weather. A pier is situated in the cove. Several buildings are situated close E of the pier.

Anchorage.—The best anchorage is about 0.3 mile N of the E end of the E islet, in 25m, sand and mud.

Punta Carrizalillo lies about 9 miles SSE of Caleta Esmeralda. The coast between these points is generally low and rugged, but is backed a short distance inland by a chain of high hills. Rocks lie up to 0.5 mile offshore between the points.

4.40 **Isla Pan de Azucar** (26°09'S., 70°41'W.), about 6 miles S of Punta Carrizalillo, lies with its E extremity about 0.5 mile offshore. The island appears light brown and whitish in color. There are two peaks on the island, with the highest near the center. Above-water rocks extend nearly 0.5 mile NW from the island. The outermost and highest rock is 4.9m high, and lies nearly 2 miles offshore. An islet lies about 0.3 mile S of Isla Pan de Azucar.

When coming from the S, one should not confuse the two peaks on Isla Pan de Azucar with two similarly-shaped hills on the mainland. These lie a short distance inland and S of the island. The hills are higher and more rounded than those on the island.

Caution.—A current, which ordinarily sets N at a velocity of 0.3 knot, has been observed in the vicinity of Isla Pan de Azucar. Strong winds increase the velocity of the current con-

siderably. The current tends to set vessels toward the coast. With continued NW winds, the current is stopped and sometimes flows S.

4.41 Puerto Pan de Azucar is situated between Isla Pan de Azucar and the mainland to the E. Punta Rodriguez, about 1.3 miles ENE of the N extremity of Isla Pan de Azucar, is a jagged peak 76m high. The point divides Puerto Pan de Azucar into two coves, Caleta Norte which lies N and E of the point, and Caleta Sur which lies S of the point, between Isla Pan de Azucar and the mainland. About 1.5 miles SE of Punta Rodriguez, there is a white patch which is conspicuous from the N. The patch forms a good landmark as it is more easily identified than Isla Pan de Azucar.

The channel leading to Caleta Sur from the S, between Isla Pan de Azucar and the mainland, has depths of 11.9 to 13.7m, but is narrowed by shoals on either side to a width of about 0.1 mile.

Anchorage.—Vessels can take anchorage in Caleta Norte, about 0.5 mile NE of Punta Rodriguez and about 0.3 mile offshore, in 25.6m, sand. A strong offshore breeze blows in this cove for about 3 hours after sunrise, and vessels must use sufficient chain to prevent dragging to seaward. Anchorage may be taken in Caleta Sur, a little over 0.3 mile N of the E extremity of Isla Pan de Azucar, in 21.9 to 37m, sand. The depths increase rapidly N of this position. This anchorage is more protected than that in Caleta Norte.

Cabo Falso Pan de Azucar lies about 3 miles S of Punta Rodriguez. The point is hilly and moderately high. An islet lies close off its NW extremity. Caleta Playa Blanca, N of the point, provides some shelter from N winds, but is open to S winds.

Punta Achurra (26°18'S., 70°41'W.), about 6 miles S of Cabo Falso de Azucar, is low and rounded. A short distance inland there is a sandy plain on which are some conspicuous hills, the highest of which is 184m high. Farther E is a range of hills from 186 to 433m high, the summits of some being covered with bushes. The W and S sides of Punta Achurra are fringed with above and below-water rocks, and vessels should remain at least 0.5 mile off the point. A light is shown from Punta Achurra.

Chanaral (26°21'S., 70°39'W.)

World Port Index No. 14640

4.42 Chanaral is a small port and occupies the SE end of a bay, which recedes nearly 2 miles E between Punta Achurra and Punta Bryson, about 3.5 miles SSE. Caleta Barquito lies on the S side of the bay and is an important adjunct to the port of Chanaral. The town of Chanaral is situated on the SE shore of the bay. The port of Chanaral, along with Caleta Barquito, is important for the shipment of copper and ores.

Winds—Weather.—The prevailing winds blow from the S and SW and are quite strong, particularly during January and February. Storms from the W and NW may occur during May and June, and may interrupt all work in the harbor for short periods. Easterly winds, which generally blow at night, create a moderately-heavy sea in the bay.

Fogs are most frequent during the months from April to August, but may occur in other months also.

Tides—Currents.—When easterly winds off the land are blowing, a current is created which sets W along the S shore of the bay.

The mean tidal rise is 0.9m, while the spring rise is 1.1m.

Depths—Limitations.—The depths in the bay are moderate. There are depths of 33 to 37m in the entrance of the bay, which decrease gradually toward the shore. The 10m curve lies about 0.2 mile off the E shore of the bay and up to 0.1 mile off the S and SE shores. Vessels with a draft exceeding 7.6m are advised not to enter within the 20m curve in the bay without a pilot, as depths of 8.2m have been found in places.

Rocas Simpson extend about 0.3 mile WNW from Punta Bryson, the S entrance point of the bay. The outermost rock has a depth of 6m over it. Rocks with less depths, one of which is awash, lie between the outermost danger and the shore. Rocks, with depths of 5.2 and 5.5m, lie 0.1 mile ENE and E, respectively, of Punta Bryson, both about 0.1 mile offshore. Vessels approaching the bay should give Punta Bryson a wide berth.

Rocks, with a least depth of 3.9m, lie off Punta Piedra Blanca in a position about 0.5 mile NE of the head of the pier in Caleta Barquito.

The washings from a copper mine, discharged into the side of the bay, are mostly deposited in the SE corner and has caused considerable seaward extension of the coastline, with shoaling within about 0.8 mile of the shore.

Large vessels anchor or moor, and cargo is worked by barges. A Naval pier extends from the shore about midway between Punta Piedra Negra and Punta Piedra Blanca.

Muelle Punta Piedra Blanca, a T-headed mechanized pier, extends 38m NNW from the headland; the width of the head is 6m. The depth alongside is 16m, however vessels should not exceed 200m in length and a draft of 12.5m. Copper ore and concentrates are loaded at a rate of 700 tons per hour through a fixed chute, necessitating warping to position successive hatches beneath the chute. The pier is also used for discharging general cargo.

Vessels can be berthed alongside the face of the pier using seven mooring buoys, a shore line, and the starboard anchor. Care must be taken that the ship's bow does not swing on to the 4m rocky shoal which lies 91m SW of the head of the pier. Vessels are loaded one hatch at a time from a conveyor that extends from the shore.

Muelle Fiscal (Nuevo), reported to be in a poor state of repair and out of service, lies about 150m WSW of the mechanized pier. A pier in Caleta Barquito extends from the shore nearly 0.2 mile ESE of Punta Bryson, and is used by small craft.

A submarine pipeline extends about 0.2 mile N from the head of the pier in Caleta Barquito. The Codelco Oil Terminal in Caleta Barquito can handle tankers up to 58,000 dwt and 250m in length, with a draft of 18m. Tankers will moor with their starboard anchor forward and lines to three buoys aft.

Aspect.—The bay is large and exposed. A sandy beach, 2.8 miles long and on which the surf beats continuously, forms the head of the bay. On the S side of the bay, hills rise abruptly from the sea forming an excellent shelter from S winds. On the N side of the bay the hills, which are also steep, lie farther from the shore. The appearance of the land is barren. A broad valley runs inland with steep hills on either side, their lower slopes and hollows being covered with sand.

Isla Pan de Azucar is the most conspicuous landmark for

Chanaral

vessels approaching from northward. The white patch on Punta Rodriguez is also a useful mark.

Several oil tanks stand on Punta Bryson. A conical mountain a little over 0.5 mile S of Punta Bryson rises to a height of 369m and is conspicuous from the N.

A power station, with several tall chimneys, is situated in Caleta Barquito and is a good mark for recognizing the bay.

Punta Piedra Blanca, about 0.8 mile ENE of Punta Bryson, is whitish and has yellow rocks and hills above it. The ore loading pier at Punta Piedra Blanca is conspicuous. Punta Piedra Negra, nearly 0.5 mile ENE of Punta Piedra Blanca, is composed of black rocks which rise to a height of 33m. The contrast between these two points is remarkable. A prominent circular concrete tank surmounts Punta Piedra Negra.

Mogote Rayado, about 0.2 mile S of Punta Piedra Negra, is a dark rock about 52m high which shows up well against the sandy slopes behind it. A prominent white stripe runs down the face of the hummock.

The gateway of the cemetery, about 0.5 mile NNE of the town, consists of two buildings surmounted by crosses and is prominent. A radio tower is situated about 1.5 miles NE of Punta Piedra Blanca and another, which is occasionally lit, stands 0.8 mile SE of Punta Piedra Blanca.

Lights are shown from the ends of the ore loading pier and the small craft pier. Two sets of range lights mark the anchorage off Caleta Barquito. The first pair stand about 0.2 mile S of Punta Piedra Blanca and are in line bearing 110°. The second pair is situated about 0.2 mile SSW of Punta Bryson, and are in line bearing 200°.

Pilotage.—Pilotage is compulsory and available 24 hours for berthing, shifting and unberthing. The pilot boards about 1.1 miles NW of the light at the head of Muelle Mecanizado Santa Fe in an area centered on 26°20.4'S, 70°39.3'W.

Regulations.—Vessels should send their ETA 24 hours and 12 hours in advance and confirm 3 hours in advance. The following information should be included on the ETA message:

1. Vessel name, nationality, and call sign.
2. Length overall.
3. Expected draft at arrival.
4. Gross registered tons.
5. Confirmation that all cargo gear is in proper working order.
6. If any cargo shifting is expected.
7. presence of any dangerous cargo onboard.

Contact Information.—The port can be contacted, as follows:

Chanaral—Contact Information	
Port Operations	
Call sign	Chanaral Radio (CBA23)
VHF	VHF channels 9, 14, and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	56-52-2480442
Facsimile	56-52-2480447
Harbormaster	
Telephone	56-52-2480442
Facsimile	56-52-2480007
E-mail	cpchanaral@directemar.cl

Anchorage.—Deep draft vessels can anchor 1 mile NNW of Punta Bryson in depths of 31m. For vessels carrying explosives, the anchorage is 0.875 mile NNE of Punta Bryson or as directed by the harbormaster.

Smaller size tankers can anchor, in about 15.8m, good holding ground, one mile NE of Punta Bryson. Loading can be carried out by lighters at this berth but problems can frequently arise due to heavy swell, especially from may to the end of July. Anchorage may be obtained at the following berths, in depths of 30m to 50m:

a. 26°20.6'S, 70°39.7'W.
b. 26°20.2'S, 70°39.8'W.
c. 26°20.9'S, 70°40.4'W.
d. 26°20.2'S, 70°40.4'W.
e. 26°19.5'S, 70°40.4'W.

Caution.—When approaching the mooring buoys, caution is advised due to shoal water lying near them.

Vessels should moor on a WSW heading in order to keep

head on to the swell.

Chanaral to Caldera

4.43 Punta Las Animas (26°23'S., 70°42'W.) is low and rocky. A reef extends about 0.5 mile NW from the point. Cerro Tronador, about 3 miles SE of Punta Las Animas, is 632m high. Bahia Las Animas lies N of Punta Las Animas. Anchorage may be taken near the center of the bay about 0.5 mile offshore, in 12.8m, but the holding ground is poor and the anchorage is exposed to the prevailing wind and sea. The N entrance point of Bahia Las Animas consists of a rock and a round hill, which rises directly from the water's edge. The sides and top of the hill are lined with conspicuous black stripes.

Punta Infieles, about 2 miles S of Punta Las Animas, is backed by hills which rise to over 400m. Punta Salado lies about 5 miles S of Punta Infieles. Rocky islets lie close off all sides of the point. Punta Flamenco lies about 1.5 miles S of Punta Salado and is backed by hills which rise from the shore to a height of 225m. Two islets lie close off the point.

Puerto Flamenco recedes a little over 1 mile E between Punta Roca Baja, about 1.5 miles S of Punta Flamenco and Punta Patch, about 2 miles farther S. Punta Roca Baja is low and rocky with a detached hill rising from the low ground close inland. This point is surrounded on its W, S, and SE sides by an extensive reef, with numerous rocks which lie nearly 0.2 mile offshore. Punta Patch is dark and rugged. It is backed E and SE by five or six low hills, which rise directly from the shore. Two small groups of rocky islets lie close off the W and N sides of the point. At the head of Puerto Flamenco the land is low and a deep valley trends E between two ranges of rugged hills. The hills are covered with sand from their bases to about halfway up their sides. There is a settlement of about 60 houses on the SE side of the bay.

Except in its S part, Puerto Flamenco is not well-sounded. There are depths of 27.4m about 0.4 mile from the shore, decreasing toward the S. Depths of 5.5 to 9.1m are found close off the S shore. Rocks lie up to 0.1 mile offshore along the SE side of Puerto Flamenco. Anchorage may be taken about 0.5 mile E of Punta Patch, in depths of 12 to 14m, sand. The anchorage is protected from S winds by Punta Patch and from N winds by Punta Roca Baja. Puerto Flamenco is primarily a fishing harbor, but is visited by coastal vessels and occasionally by larger vessels which call here to load ore.

4.44 Punta Flamenquito (26°36'S., 70°42'W.) is low, rocky, and surrounded by several islets which lie within 0.5 mile offshore. Several low hills back the point. Punta Salinas, about 2 miles SSW of Punta Flamenquito, has a rounded appearance, but is rather rocky. Cerro Obispo rises about 2 miles SE of Punta Salinas. The W side of the mountain extends nearly to the point.

Punta Obispo lies about 3 miles SSW of Punta Salinas. A rock, with less than 10m, lies close N of the point. Caleta Obispo, NE of Punta Obispo, is exposed and not recommended, even for small vessels. Islote Blanco, close off a point about 1 mile SW of Punta Obispo, is a good landmark. Caleta Obispito recedes about 0.8 mile E between Punta Obispito, about 2 miles S of Punta Obispo, and a point about 2 miles SW. The rocks forming the S entrance point of the cove are remarkable for their blackness. Roca Blanca lies close offshore, about 0.5 mile SW of the S entrance point of the cove. The shore of the cove is generally low and rocky, and is fringed with reefs which extend about 0.3 mile offshore.

There is apparently no danger in entering Caleta Obispito, but the cove is quite open to the SW and a heavy sea sets in with the ordinary coastal wind. The best anchorage appears to be in the NE part of the cove, in 16.5m, sand, with a prominent house bearing between 102° and 113°.

A reef lies about 1 mile W of Punta Zenteno (26°49'S., 70°48'W.). The reef extends about 1 mile N and S, and consists of numerous submerged rocks over which the sea breaks violently whenever there is a heavy swell. Caleta Zenteno, S of Punta Zenteno, affords good anchorage, in 25.6m, sand. The anchorage is well-protected from the prevailing SW winds.

Punta Totoralillo, about 2 miles SW of Punta Zenteno, consists of a narrow peninsula which extends about 0.8 mile W from the general trend of the coast. Three small islets lie within 0.5 mile N of the point. Submarine pipelines lie between the inlets. Bahia de Totoralillo recedes about 1 mile E between Punta Totoralillo and Punta Cabeza de Vaca, about 1.5 miles SSW. A sandy beach lies at the head of the bay.

4.45 Punta Cabeza de Vaca (26°53'S., 70°50'W.), one of the most salient points along this part of the coast, has two small hummocks near its extremity. East of the hummocks, the land is low for some distance, then it rises to several low hills which form the W extremity of a chain of coastal hills.

Punta Frodden, about 4.5 miles SSE of Punta Cabeza de Vaca, is steep and rocky, and is fronted by several islets. The point is backed by hills of moderate height. Bajo Nef, with 6.4m over it, lies about 1.5 miles SW of Punta Frodden and about 1 mile offshore.

Caleta Mora (27°00'S., 70°49'W.), NE of Islotes Ramadas, provides anchorage, in 13.7m, about 0.3 mile offshore. It is sheltered from SW winds. Roca Pulpo, with 7.9m of water over it, lies about 1.3 miles WSW of Islote Ramadas. The sea breaks over Roca Pulpo in bad weather.

Punta Francisco (27°02'S., 70°50'W.) is the N entrance point of Puerto Caldera. Islets and rocks extend up to 0.2 mile NW and 0.2 mile SW from the point. Roca Chango, with 7m over it, lies about 0.5 mile W of Punta Francisco and is a danger in the immediate approach to Puerto Caldera. In heavy weather the sea breaks on this rock. There is a 14.5m stony patch, 0.3 mile WSW of Roca Chango.

Punta Caldera (27°03'S., 70°52'W.) is the S entrance point of Puerto Caldera. The point is low and located at the W end of a small peninsula. Islote Centinela Blanco and Islote Centinela Negro are islets which stand on a reef extending up to 0.3 mile W of the point. A light is shown from Punta Caldera.

Caldera (Puerto Caldera) (27°03'S., 70°50'W.)

World Port Index No. 14630

4.46 Caldera lies at the S end of a bight, which recedes a little over 1.5 miles SE between Punta Francisco and Punta Caldera, about 1.8 miles SSW. The town of Caldera is situated on the S shore of Puerto Caldera. The port is important for the

Puerto Caldera

shipment of ore and copper.

Winds—Weather.—The bay is protected from the prevailing SW winds. Strong N winds sometimes send a heavy swell into Puerto Caldera, particularly in the S part of the harbor. The port is situated at the N limit of these winds; they are seldom of sufficient force to interrupt work here.

The climate is very mild and there is no rain. Fogs are infrequent, and usually disappear by noon.

Tides—Currents.—The mean spring tidal rise here is 1m, while the mean neap range is 0.6m. Strong currents setting S into Puerto Caldera occur when there are strong N winds. A strong current was reported setting NE across the entrance of the bay.

Depths—Limitations.—Punta Caleta is located 1.2 miles SE of Punta Caldera, is steep-to, and is surmounted by some conspicuous monuments.

The iron ore pier, which extends 0.1 mile from the SW side of the bay, is 10m wide at its head and has been reported partially out of service since 1981. However, the loading arm has been repaired but is not mobile, meaning that vessels must shift position for each hatch under the tower. All cranes or derricks must be swung out to starboard before mooring port side-to for loading. Two concrete dolphins are situated on either side of the pier head, for springs, with seven mooring buoys positioned for use with bow and stern lines. Ships up to 270m in length, with a maximum draft of 12.5m can be accommodated.

Muelle Punta Caleta lies 300m NW of Punta Caleta and is used for loading or discharging fruit, iron ore, and general cargo. It has a berthing face 100m long, is 17m wide, and is constructed of concrete on steel piers. There are two roadways, each 4.6m wide and 70m long, giving access to the berth from the shore. The berth has good fendering and five mooring buoys in the vicinity. Vessels up to 222m in length with a maximum draft of 10.63m may use the berth. Range lights, in line bearing 225°, lead to the berth.

Muelle Fiscal, used for loading fishmeal from lighters and small craft berthing, is situated 1.5 miles SE of the light on Punta Caldera. The pier extends 225m NW from a rocky point. The pier can accommodate a vessel with a maximum draft of 5.3m. A short small craft pier projects from the coast close W of it.

A wharf, with a berthing face of 90m and four dolphins, is situated at Punta Padrones, about 0.6 mile E of Punta Caldera. Copper concentrate is handled at this berth. Ships up to 50,000 dwt, with a maximum length of 240m and a maximum draft of 12.4m, can be accommodated.

Muelle Mecanizado, reported out of service, is a T-shaped jetty 100m in length, with an alongside depth of 12.5m.

Aspect.—Most of the shore of the bay is covered with loose sand, with the exception of a few rocky points. The head of the bay is low, but the hills rise a short distance inland. The ranges become higher as they recede from the coast. Cerro Agudo is a

prominent sharp-topped hill, which lies about 3.8 miles E of Punta Francisco. The sides of the hill are covered with sand and there are two lower peaks near it. A conspicuous white tank is situated close to the root of the ore pier. A prominent white house stands about 795m WSW of the pier head; a church stands about 0.8 mile SE of the pier head.

A radio mast, with high intensity obstruction lights, stands about 1 mile SE of the ore pier head. An aeronautical radiobeacon is situated at the mast.

A set of range beacons leads to the oil berth at the NE side of the bay. A light is shown close S of the beacons and several tanks stand close NNE of them.

Pilotage.—Pilotage is compulsory for all foreign vessels and any Chilean vessels greater than 1,000 gt. The pilot boarding area is bounded by lines joining the following positions:

a. 27°02'12"S, 70°50'12"W.
b. 27°02'28"S, 70°49'54"W.
c. 27°02'31"S, 70°50'32"W.
d. 27°02'46"S, 70°50'14"W.

The center of the pilot boarding area can be seen on the chart.

Regulations.—Vessels should report ETA and request for pilots to their agents and the port 24 hours in advance of expected ETA, then reconfirm the ETA 12 hours ahead of arrival. The ETA message should include the following information:

1. Vessel name and call sign.
2. Vessel flag.
3. Length overall.
4. Mean draft.
5. Gross registered tons

Contact Information.—See table titled **Chanaral—Contact Information**.

Chanaral—Contact Information	
Port Operations	
VHF	VHF channels 8 and 16
Telephone	56-52-2315551
Facsimile	56-52-2315276
E-mail	servicioscpcld@directemar.cl

Anchorage.—Three designated anchorages, all within the harbor limits, are best seen on the chart. These anchorages range in depth from approximately 20m closest into the shore to a maximum of 45m close to the harbor limit.

The local authorities suggest that vessels intending to remain anchored for some time stream a kedge anchor, or secure the vessel's stern to a mooring buoy on a N heading, to bring the vessel bows on to a N or NW wind and accompanying swell.

Caution.—A local magnetic anomaly is reported to exist in the bay.

4.47 Puerto Calderilla (27°05'S., 70°52'W.) (World Port Index No. 14635), a subsidiary port of Caldera, is situated in Caleta Calderilla, about 2 miles S of Punta Caldera Light. The bay recedes about 1 mile SE between Punta Zorro and Punta Caldereta, about 0.4 mile SW. Rocks which extend up to 0.1 mile from each of these points narrow the entrance of the cove to about 0.3 mile. A beacon is situated on Punta Zorro and a light is shown from Punta Caldereta. Islotes Jorge are a group of small rocky islets located about 0.5 mile SW of Punta Caldereta.

Puerto Caldera—Berth Information						
Berth	Length	Maximum Vessel				Remarks
		LOA	Draft	Beam	Sixe	
Muelle						
Muelle Fiscal	32m	39m	5.3m	—	—	Transshipment and fishing vessels.
Muelle Mercanizado	20m	—	12.5m	—	—	Iron ore. Berthing length of 100m (including dolphins). Closed
Mulle Punta Caleta	113m	222m	11.18m	32.3m	50,000 dwt	Iron ore, containers, project/heavy cargo, breakbulk, reefer, and fruit
Punta Padrones Terminal						
Copper Berth	140m	240m	12.4m	32.26m	84,000 dwt	Mineral ore and copper concentrate. Berthing length of 380m (including dolphins),
Copec Terminal						
CBM	—	200m	11.88m	32.2m	47,000 dwt	Aviation fuel, CPP, and crude.

The E and S shores of the cove are bordered by shallow water and dangers, which lie up to 0.3 mile offshore. Peninsula Ester, formerly Islote Ester, is connected to shore by a causeway and lies about 0.2 mile offshore in the S part of the cove.

An ore terminal is situated on the NE side of Peninsula Ester, where a vessel with a maximum length of 230m and a draft of 14m can be accommodated. Ships make fast to seven mooring buoys.

A pontoon pier, used for the production of fish meal, lies 0.5 mile NE of Peninsula Ester.

Two white, triangular beacons, situated at the SE end of the bay, lead through the entrance into the bay. A conspicuous tank stands on the W side of Peninsula Ester.

Pilotage.—Pilotage is compulsory. Vessels bound for the port must first call at Caldera to obtain clearance and a pilot.

Anchorage.—Anchorage may be taken, in 13.7 to 18.3m, sand, about 0.2 mile NE of the ore terminal. Small vessels can proceed further SE, but should not pass S of a line joining Peninsula Ester and Punta Este.

Puerto Calderilla to Huasco

4.48 Bahia Inglesa (27°07'S., 70°54'W.), 2 miles SW of Caleta Calderilla, is deep throughout. Because it is exposed to N winds and the holding ground is poor, Bahia Inglesa is of no use to navigation. Extensive shellfish cultivation areas lie within the bay.

Punta Morro (27°06'S., 70°57'W.), the S entrance point of Bahia Inglesa, is rocky, steep, and has conspicuous white patches on its S side. It is the N end of a chain of mountains which extends SE from the point. Punta Morro is reported to give a good radar return. Morro Copiapo lies about 1 mile S of Punta Morro. It is nearly level at the top and has two small hummocks near its E extremity. The E side is very steep. Morro Copiapo can be seen 30 to 35 miles in clear weather.

Punta Medio (27°10'S., 71°00'W.), about 4.3 miles SSW of Punta Morro, is a small tongue of land, the SW side of which is furrowed by two prominent ravines. Several rocks and islets lie close off the point. Punta Huber lies about 2.3 miles SSE of Punta Medio, and is steep and rocky.

Caleta Turenne recedes about 0.5 mile E between Punta Totoral, about 2 miles SSE of Punta Huber, and Punta Vial, about 3 miles S of Punta Huber. The cove is easily entered and affords good anchorage inside the line joining the entrance points, in 14.6m, sand. This anchorage is protected from the prevailing winds.

Isla Grande lies with its W side nearly 1 mile W of Punta Vial. The island is very conspicuous, having a small nipple at each extremity; the one at the NE end being the larger. An islet lies at the extremity of a reef which extends about 0.2 mile NE from the NE end of Isla Grande. The channel between Isla Grande and Punta Vial is about 0.5 mile wide, deep, and clear of dangers. A heavy swell sets through the channel, and it is not recommended for any vessel.

4.49 Bahia Copiapo (27°19'S., 70°59'W.), formerly an ore shipping port, is no longer used as such because of the poor anchorage and landing facilities. The shore of the bay has an extensive sandy beach near its central part with rocky sections at is N and S ends.

Roca Janequeo, with less than 1.8m over it, lies about 4 miles NNW of Punta Dallas, the S entrance point of Bahia Copiapo, and is the N of a group of reefs which front the bay. Bajo Cumming, with rocks awash, lies about 1 mile WNW of Punta Dallas and is the S of these reefs. Roca Anacachi, about midway between the two above rocks, has less than 1.8m of water over it and, lying about 3.3 miles offshore, is the outermost of these dangers. Between Roca Janequeo and Bajo Cumming are a number of detached reefs with general depths of 0.9 to 1.8m. An above-water rock lies about 2.5 miles NW of Punta Dallas. The sea breaks violently over these reefs whenever a heavy swell sets in.

Anchorage.—Anchorage in the bay is unprotected and generally bad. A long scope of chain should always be used, and as rollers often set in with little warning, it is prudent to drop another anchor. The holding ground is poor, consisting mainly of hard yellow sand with occasional patches of yellow sandstone.

The anchorage for small vessels is inshore, close N of Punta Copiapo, in a depth of about 9m, sand.

Landing on any part of the shore of the bay is difficult and dangerous.

Punta Dallas (27°23'S., 70°59'W.) is composed of black rock with a hummock on its W extremity. When seen from S, it appears as an island. Eastward of the point the land rises to a range of low sandy hills with rocky summits.

4.50 Caleta Barranquillas (27°31'S., 70°54'W.) recedes a little over 0.3 mile S between Punta Dominguez and Punta Barranquillas, about 0.4 mile WSW. Punta Barranquillas is steep and rocky. Cerro Doble Pico, about 1.3 miles ESE of the point, shows a double point when viewed from S. Shallow water and rocks extend from 91 to 274m from the shore.

Anchorage.—Anchorage may be taken about midway between the entrance points, in 12m. Small vessels can anchor about 0.3 mile E of Punta Barranquillas, in 8m. The bottom is rocky in both anchorages, and neither anchorage is very secure. Strong winds send a heavy sea into the cove.

Punta Salado, about 4 miles S of Punta Barranquilla, is rocky and steep. A group of islets, the largest named Isla Ruky, extends up to 0.8 mile SW from the point. Sandy hills extend SE, then SW from Punta Salado, and back the shore of Bahia Salado.

The coast, for 3 miles S of Isla Ruky, is foul, and there are depths of 8.9m and 11m, about 2.5 and 3 miles SW of the islet.

Bahia Salado recedes about 3 miles SE between Punta Salado and Punta Cachos, about 7.5 miles SW. The shores of the cove are generally fringed with rocks, most of which are above water. There are several coves and inlets in the bay.

4.51 Caleta del Medio (27°41'S., 70°57'W.) recedes nearly 0.5 mile S, between Punta Bell and Punta Weevil, a little over 1 mile farther E. A shoal, with a depth of 10.4m, lies 0.6 mile NNW of Punta Weevil. Close within the head of the cove there are sandy slopes with some outcrops of rocks. Small vessels can anchor about 0.5 mile ENE of Punta Bell, in 18.3 to 21.9m. Caleta del Medio is protected from SW winds. The cove is exposed to N winds and vessels are advised not to anchor here during such times. There is a small iron pier on the N side of Punta Slade, on the W side of Caleta del Medio.

Caleta Chascos, E of Punta Cachos, is shallow and foul. There is a depth of only 5.5m about 1 mile from the head of the cove, and the shores are fronted by above and below-water rocks. Two above-water rocks lie off the E entrance point of Caleta Chascos.

4.52 Punta Cachos (27°40'S., 71°02'W.), the SW entrance point of Bahia Salado, has an islet and some rocks off its W side. Isla Cima Cuadrada lies close offshore, about 1.5 miles S of Punta Cachos. A square-topped hill stands near the center of the islet. Vessels should give this islet a berth of at least 0.5

mile.

Caleta Pajonal, about 4 miles S of Punta Cachos, is a little over 0.5 mile wide at the entrance and recedes nearly 0.8 mile SE. Isla Cima Cuadrada, described above, is a useful landmark for recognizing the cove from the N. Punta Pena Blanca, described below, is a good landmark for recognizing the cove from the S. A range of hills, backed by others of greater height, rises directly from the N side of the cove. In a valley, about 1 mile from the cove, there is a range of small very steep hills which rise from the low ground.

Shoal water extends from the head of the cove for a distance of about 0.2 mile. Two small above-water rocks, with breakers close NW of them, lie about 0.1 mile W of the S entrance point of the cove. Dangerous submerged rocks lie about 0.8 mile SW of the same point. The sea breaks over these rocks whenever there is a heavy swell.

Small vessels can take anchorage in Caleta Pajonal, about 0.3 mile E of the S entrance point, in 9.1m, fine sand. The anchorage is well-protected from S winds.

Punta Pena Blanca (27°46'S., 71°05'W.) is rocky. A hill, with a small knoll at its W end, lies close E of the point. Rocks fringe the point to a distance of about 0.5 mile. Roca Pena Blanca, close NW of the point, is above-water and conspicuous. South of Punta Pena Blanca are low coastal hills which are covered with yellow sand, except near their summits where there are outcrops of rock.

Caleta Totoral Bajo, about 4 miles SSW of Punta Pena Blanca, lies at the foot of a valley in which there is a settlement. The cove is deep, but heavy seas are common here. Coastal vessels call here occasionally for ore.

Punta Totoral, about 2 miles SW of Caleta Totoral Bajo, is low and rocky.

Caleta Matamoros, about 2.5 miles S of Punta Totoral, is well-protected from S winds, but it is open to N winds. The shores of the cove are generally low, but backed a short distance inland by a high range of hills, some of which attain a height of 747m.

Anchorage.—Vessels of moderate size can take anchorage off the S entrance point of the cove, in 13.7 to 18.3m. Care must be taken not to anchor too close to the shore in depths less than 13.7m, as the bottom is rocky at these depths. North winds send a heavy swell throughout the cove.

Puerto de Carrizal lies about 11 miles S of Caleta Matamoros. The coast between is high and steep. Most of the points along this stretch of coast are fringed by rocks which lie up to 0.1 mile offshore. A high, rocky, point projects from the coast about 0.8 mile S of Caleta Matamoros. A small cove, about 1 mile S of this point, is sheltered from S winds and can accommodate a small vessel. A similar cove lies about 1.5 miles farther S. The S entrance point of the latter cove is high and has a rounded hummock on it. Several steep hills rise E of the point.

4.53 Puerto Carrizal Bajo (28°04'S., 71°10'W.) (World Port Index No. 14620) lies between Isla Carrizal and a point nearly 0.5 mile NE. It is well-protected from the prevailing winds by Isla Carrizal. During N winds, a rough sea enters the port. Fogs occur usually only during the winter season. Puerto Carrizal Bajo is a small port for the shipment of iron ore. The port is little used because of the lack of trade. An old wharf, of rails and slag, has a depth of 2.4m alongside and can be used as a landing. A government-owned fisherman's wharf was built in 1998 immediately to the NE of Escoria Point. The wharf has a length of 57m and a width of 7m. The depth alongside is 3m.

There are depths of 11 to 20.1m in the outer part of the harbor N of the entrance. Depths decrease gradually S toward the head of the harbor. There are depths of 7 to 7.9m in the center of the harbor abreast the N end of Isla Carrizal. The E and S shores of the harbor are fringed with shallow water and rocks to distances of 0.1 to 0.2 mile offshore. Shallow water extends up to 0.3 mile N from the S shore of the harbor.

A rock, with a depth of about 4.1m, has been reported a little over 0.3 mile NNW of the NW extremity of Isla Carrizal. Roca Arequipa, with 11m over it, lies about 0.3 mile N of Isla Carrizal. A 9.6m patch is charted nearly 0.3 mile NNE of the island. Submerged rocks lie up to 0.1 mile N of Isla Carrizal. Roca Conquest, with less than 1.8m over it, lies about 128m ENE of the NW extremity of Isla Carrizal.

Isla Carrizal is nearly round and about 6m high. It lies about 27m N of Punta Escoria, on the W side of the harbor. The island and the point are connected by an isthmus of sand, shingle, and mine waste. An islet, fringed by reefs, lies about 0.1 mile W of Punta Escoria. Punta Barruel lies nearly 0.8 mile NNE of Isla Carrizal. An islet lying close off this point has reefs off its W and S sides. These reefs lie up to 119m off the point.

The harbor can be divided into two parts. The outer harbor lies N of Isla Carrizal. The inner harbor recedes nearly 0.5 mile SSE between Isla Carrizal and a point on the mainland about 0.3 mile E. A church and warehouse near the wharf are prominent. Numerous fishing craft are found in the vicinity of the harbor. Local knowledge is required.

Anchorage.—The best anchorage for large vessels is a little over 0.3 mile NNE of Isla Carrizal, in 11.9 to 15.5m, sand.

Ships of deep draft should moor and unmoor at high water. Ships drawing more than 9.1m should not use the berth due to the proximity of the above-described 9.6m shoal.

Small vessels may take anchorage about 0.2 mile ENE of Isla Carrizal, in 7.3 to 9.1m, sand.

4.54 Caleta Herradura de Carrizal (28°06'S., 71°11'W.) recedes about 0.5 mile E between a point about 1.3 miles SW of Punta Escoria and Punta Herradura, about 0.5 mile SW. A deep valley, which extends inland from the head of the cove and separates two high ranges of mountains, is a good landmark for recognizing the cove. The range to the S of the valley has a hummock on its summit, it is the higher of the two ranges, and can be seen distinctly both from the N and S.

Islita Herradura lies about 0.2 mile S of the NE entrance point of the cove. Low rocks extend 0.2 mile NW from Punta Herradura, and to a vessel approaching from S they appear to extend across the entrance of the cove. Rocas Baja, two rocks with less than 1.8m over them, lie about 0.2 and 0.3 mile NW of Punta Herradura. A rocky shoal lies about 0.5 mile SW of Punta Herradura and about 0.3 mile offshore.

The entrance of Caleta Herradura de Carrizal, between the rocks which extend NW from Punta Herradura and Islita Herradura, is about 0.3 mile wide. Depths of 13.7 to 35m in the entrance decrease gradually toward the head of the cove. The head of the cove is bordered by shallow water which extends from 91 to 274m offshore.

Anchorage.—Large vessels may take anchorage in Caleta

Huasco

Herradura de Carrizal, about 0.2 mile S of the W end of Islita Herradura, in 18.3m. Small vessels can anchor about 0.3 mile SE of the E end of Islita Herradura, in 7.3m, fine sand. This latter anchorage is too narrow for large vessels. The anchorages are protected from N and S winds, but N winds send a swell into the cove.

4.55 **Punta Molle** (28°11'S., 71°11'W.) is low and rocky. Above and below-water rocks, the outer rock of which is high and detached from the others, extend 0.8 mile W from the point.

Punta Lobos, a conspicuous point about 7 miles S of Punta Molle, is rugged and has several hummocks on it. A short distance E of the point there are two low hills, and within them the land rises steeply to a height of about 305m. Punta Lobos is surrounded by submerged rocks.

A rocky shoal, which breaks, lies 2.5 miles SE of Punta Lobos and 0.8 mile offshore.

Cabo Norte, about 5 miles S of Punta Lobos, is low and rocky. Punta Negra, low and rocky, lies about 2 miles S of Cabo Norte. A beach extends about 3 miles SSW from Punta Negra. The Rio Huasco enters the sea through this beach; the river is subject to heavy freshets, but the water is kept low by numerous irrigation channels.

Huasco (28°28'S., 71°15'W.)

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4.56 Huasco, along with the neighboring terminals of Santa Barbara and Guacolda, lies at the SE end of a bight which recedes nearly 1.5 miles SE between Punta Negra and Peninsula Guacolda, about 4 miles SW. The town of Huasco is situated on the SE shore of the bight.

Winds—Weather.—The climate is mild with moderate temperatures and very occasional rains. Prevailing winds are SW, strong in summer, and there can be swells at any time. Fog is unusual. Generally, storms from the sea occur during the winter months of May through August, particularly at fall and the change of the moon, but they may also be experienced during the summer.

Depths—Limitations.—The Santa Barbara terminal is presently out of service (1992). It was used for loading ore, but has been out of operation for many years.

The Guacolda Terminal complex is located on the W side of the bay. Guacolda Terminal I is 183m long and can accommodate vessels with a maximum length of 240m, 40m in width, and a maximum draft of 13.5m. This terminal is used for coal, general cargo and oil products. Guacolda Terminal II is 100m in length and can accommodate vessels with maximum length of 315m, a beam of 55m, and a maximum draft of 22m. It is used for the loading of iron, ores in bulk, and oil products.

Aspect.—Peninsula Guacolda, dark in color, is connected to the mainland by a low causeway. Islotes Los Puentes, whitish in color and up to 26m in height, extend NW from the SW side of the peninsula. Rocks and breakers lie between these islets. Islote Blanco is the outermost of Islotes Los Puentes, lying about 1 mile WNW of the peninsula.

Punta Larga, 1.5 miles E of Peninsula Guacolda, is low, wide, and rocky. The shore in the vicinity of the point is covered with stones out of which project masses of craggy rocks. Islote Cayo, 3m high, is the outermost islet N of Punta Larga, lying 0.3 mile N of the point. A patch, with a least depth of 9.5m, lies about 0.4 mile SW of Islote Cayo.

Huasco—Berth Information

Berth	Length	Maximum Vessel				Remarks
		LOA	Draft	Beam	Size	
Las Losas Terminal						
No. 01	165m	225m	13m	32.26m	60,000 dwt	Coal, limestone, containers, and breakbulk.
No. 02	155m	154m	9m	21.0m	12,000 dwt	Coal, limestone, and beakbulk.
Guacolda Terminal						
Guacolda 1	183m	240m	13.5m	40.0m	106,666 dwt	CPP, DPP, coal, limestone, breakbulk, multipurpose, and bunkers.
Copec Terminal						

Huasco—Berth Information						
Berth	Length	Maximum Vessel				Remarks
		LOA	Draft	Beam	Size	
Guacolda 2	—	315m	22.6m	55.0m	300,000 dwt	CPP, iron ore, multipurpose, and bunkers. Berthing length of 100m (including dolphins).

Cordon el Espinazo is a chain of rugged hills which rises a little over 0.5 mile SE of Peninsula Guacolda and extends inland. These hills are prominent from the W and S. A power plant is situated on the slopes and is conspicuous. Tetas de Huasco lie about 1.8 miles ESE of Peninsula Guacolda. An anchor painted on their NW side is visible at a considerable distance. Cerro Colorado rises to an elevation of 268m, about 0.3 mile S of Tetas de Huasco.

Cerro Huasco, 576m high and the highest mountain in this area, lies about 3.5 miles SE of the town. Los Picachos Negros consist of three conspicuous peaks, the highest being 71m high, lying close SE of the town. A prominent tank stands 0.3 mile SW of Santa Barbara Terminal. A conspicuous tank, 49m high, is situated near the center of the peninsula, and a prominent loading tower stands at the Santa Barbara Terminal.

Lights are shown from Peninsula Guacolda and Islote Cayo. Islote Cayo Light is exhibited from a GRP tower, 3m high. Aeronautical obstruction lights are shown from a prominent radio mast standing on Cordon el Espinazo, about 0.8 mile SSE of the peninsula.

Several ranges are situated throughout the port and serve as leads to the piers or anchorage transits; they may best be seen on the chart.

Pilotage.—Pilotage is compulsory. The pilot boarding area is bounded by lines joining the following positions:

a. 28°27'18"S, 71°14'38"W.
b. 28°27'30"S, 71°14'38"W.
c. 28°27'30"S, 71°15'02"W.
d. 28°27'18"S, 71°15'02"W.

Two pilots are compulsory for ships over 220m in length.

The pilots should be contacted directly at least 2 hours prior to arrival.

Regulations.—Vessels should send their ETA to their agents 5 days prior to arrival, then reconfirm the ETA every day at 0800 until arrival. The ETA message should include the following information:

1. Confirmation that all cargo working gear is in proper working order.
2. If any cargo shifting is expected.
3. Identification of any dangerous cargo onboard whether it is to be discharged or stays onboard.
4. Expected arrival draft.

The use of a tug with a minimum of 2,500 hp is mandatory to assist in berthing and unberthing,

Berthing is not permitted when winds exceed Force 4 or there is heavy swell or visibility is 2 miles or less.

Contact Information.—For further information, see the table titled **Huasco—Contact Information**.

Anchorage.—Large vessels may take anchorage about 0.3 mile NNE of Cayo Island, in 23.8 to 25.6m. Small vessels can anchor, in 11.9 to 12.8m, sand, about 0.2 mile E of Islote Cayo.

The bay is generally deep with a good holding ground of sand. Shelter from SW winds is afforded vessels here, but the bay is exposed to N winds which may be experienced in winter. In the center of the bay there is good holding ground with a depth of 60m.

Vessels awaiting the pilot or berth may anchor a little over 0.5 mile E of Peninsula Guacolda, in 51 to 59m, mud.

Caution.—An outfall extends 0.3 mile WNW from the coastline on the SSW side of Panulcillo island. The seaward end of the outfall is marked by a lighted buoy.

Huasco to Coquimbo

4.57 Punta Mariposa (28°29'S., 71°16'W.), with islets lying up to 0.2 mile off it, lies about 0.8 mile SW of Peninsula Guacolda. There are a number of hummocks on the point. The land S of Punta Mariposa, as far as Punta Alcalde, consists of bare rocky mountains which rise abruptly from a stony slope to a height of nearly 610m. An iron ore installation is situated in Caleta Garcia, a cove lying about 0.8 mile SE of Punta Mariposa. The lights on the installation can be seen for over 20 miles. Punta Huasco Sur, about 1.5 miles SSW of Punta Mariposa, is low and is marked by a light.

Huasco—Contact Information					
	Pilots	Port Radio Station	Harbormaster	Guacolda Terminal I	Guacolda Terminal II
Call sign	—	Huasco Radio (CBA24)	—	—	—
VHF	VHF channels 8, 16, 74, 75, 76	VHF channels 9, 14, and 16	—	VHF channels 11, 16, 67, 68, and 69	VHF channels 11, 16, 67, 68, and 69
RT frequency	—	2182 kHz and 2738 kHz	—	—	—

Huasco—Contact Information					
	Pilots	**Port Radio Station**	**Harbormaster**	**Guacolda Terminal I**	**Guacolda Terminal II**
Telephone	56-51-5231487	56-51-2531487	56-51-2531487	56-51-2531577 (extension 4116)	56-51-2208908
Facsimile	56-51-2531011	56-51-2531011	56-51-2531011	56-51-2531577 (extension 4105)	56-51-2208902
E-mail	—	—	cpchuasco@directemar.cl	—	—

Punta Alcalde (28°34'S., 71°20'W.) projects about 2.8 miles W from the general trend of the coast and terminates in a small promontory. The point is the W end of a chain of mountains and is conspicuous. Foul ground extends up to 1 mile NW through N to NE from the point.

Caution.—A line of breakers has been reported to exist up to 1.8 miles off the coast between a position 2.3 miles SE of Punta Alcalde, to a position 2 miles NW of the S headland defining Caleta Playa Tontado. Vessels are advised to give the area a wide berth.

Caleta Playa Tontado, about 4 miles SSE of Punta Alcalde, has a sandy beach at its head. The land rises gradually E from the head of the cove and consists of sand with several rocky outcrops. One of these is a sharp pinnacle, higher than the rest and conspicuous.

4.58 Caleta Pena Blanca (28°42'S., 71°22'W.) lies about 7.5 miles S of Punta Alcalde. The shores of the cove are generally low. Hills close E of the cove have sandy sides and rocky summits. To a vessel approaching from the W, Caleta Pena Blanca appears as a small bay with a sandy beach.

Depths of 25.6 to 27.4m, about 0.3 mile N of the head of Caleta Pena Blanca, decrease gradually toward the shore. The E and S shores of the cove are bordered by shallow water and rocks to a distance of nearly 0.1 mile. A rock, 0.9m high, lies on the E side of the cove a little over 0.3 mile ENE of the W entrance point. A rock, 1.5m high, lies on the SE side of the cove about 0.3 mile E of the W entrance point.

Anchorage.—Vessels can take anchorage in Caleta Pena Blanca, about 0.1 mile ENE of the W entrance to the cove, in 18.3m. It is advisable to use two anchors, keeping the vessel on a W heading.

Punta Mogote Negro (28°45'S., 71°23'W.), about 4 miles SW of Caleta Pena Blanca, is low and rocky. Rocks lie up to 0.3 mile off the point. This point is the W end of a high range of hills, among which there is a sharp, prominent, black peak. Punta Honda lies about 2.8 miles SW of Punta Mogote Negro.

Bahia Quebrada Honda recedes about 0.8 mile SE between Punta Honda and Punta Islote, about 2 miles SW. The bay affords some shelter from S winds. Quebrada Honda, a deep ravine, extends inland from the SE corner of the bay. Anchorage may be taken about 0.3 mile off the mouth of the ravine, in 14.6 to 21.9m. Caleta Sarco del Sur, at which there is a village and a copper smelter, lies at the inner part of Bahia Quebrada Honda.

4.59 Punta Islote (28°50'S., 71°27'W.) is low and rocky. A small conical islet, 7.9m high and with a black summit, lies close off the point. A small bluff, about 10 to 15.2m high and composed of rocks of a yellowish-white color, rises close E of Punta Islote.

Bahia Sarco lies between Punta Islote and Punta Baja, about 2.5 miles SW. The bay is open to the N, but is comparatively well-sheltered from S winds which may blow with some force from May to September. Two prominent sandy beaches, each of which lies at the foot of a ravine, are on the SW shore of Bahia Sarco. The NE shore of the bay is formed by a number of smooth rocks which are interspersed by sandy beaches.

Cabo Bascunan (28°51'S., 71°30'W.), about 3.5 miles SW of Punta Islote, is radar prominent. The land rises gradually E of the point and forms a chain of low hills 0.5 mile E of the point. A chain of higher hills rises a little farther E. A rocky islet, surrounded by foul ground, lies about 0.2 mile W of Cabo Bascunan. About 0.5 mile S of the cape is a submerged rock which lies about 0.2 mile offshore.

Caution.—The waters S of Cabo Bascunan are reported to contain shoal patches which break, lying up to 1 mile off the coast.

A rock is reported to lie about 2.5 miles SW of Cabo Bascunan. The rock is reported to lie under a cover of seaweed, but the existence of the rock is uncertain.

Punta Pajaros, about 4 miles SSW of Cabo Bascunan, is low and rocky. Cabo Leones, about 5 miles S of Punta Pajaros, extends about 1 mile SW from the general trend of the coast. The point is low, yet somewhat prominent, and is the most salient projection on this part of the coast. Rocks extend more than 0.5 mile from all sides of Cabo Leones, and the cape should be given a wide berth.

Punta Gorda, about 3.5 miles SSE of Cabo Leones, is low, steep, and backed to the E by several low hills. Rocks lie up to 1 mile W and N of the point.

4.60 Isla Chanaral (29°02'S., 71°36'W.), about 4 miles W of Punta Gorda, is almost flat except at its S end where there is a hill, 158m high, which is surmounted by a hillock. Rocks extend about 0.5 mile S from the island and about the same distance from the NW side of the island. Islotes Azocar consist of two islets which lie about 0.2 mile W of the SW end of Isla Chanaral. A cove on the N side of the island has an anchorage for small vessels close off its entrance. The cove can be identified by a flight of wooden steps, 60m high, from which a track leads to the light tower. There is a derrick near the steps. A smaller cove, Caleta Buena Pesca, lies close W of the above cove.

A light is shown from Isla Chanaral; the island is reported to be radar prominent.

Caution.—Isla Chanaral is reported to lie about 1 mile NE of its charted position. Caleta Chanaral, Ensenada Gaviota, and

the adjacent coast, described below, are reported to lie about 1.8 miles E of their charted positions.

Caleta Chanaral recedes nearly 0.5 mile SE between an unnamed point 1.5 miles SE of Punta Gorda and Punta Sur, nearly 1 mile SW of the unnamed point. The land around the cove is low with ridges of low hills rising from the points. The tops of the ridges are rugged and rocky, and the land is sandy and barren. A range of high hills lies several miles E of the cove.

Caleta Chanaral is well protected from N and S winds, but a heavy swell sometimes sets into the cove from the SW.

The N headland has rocks extending up to 0.1 mile S, and 0.2 mile W of it. The S headland is rock-fringed for a distance of 0.3 mile W, while 0.4 mile WNW of it exist breakers. The coast of the cove is fringed by rocks and foul patches up to 0.1 mile off its E shore, and 0.2 mile off its S shore. Depths of 23 to 25m in the outer part of the cove decrease to 9.1 to 11m, about 0.1 mile offshore.

Ensenada Gaviota (29°05'S., 71°31'W.) recedes about 1 mile SE between Punta Sur and Punta Rancagua, nearly 1.5 miles SW. Submerged rocks lie up to 0.1 mile off the E shore of the inlet, and above-water rocks lie up to 0.1 mile off the S shore of the inlet. Both entrance points of the inlet are low and rocky. Punta Rancagua is surrounded on all sides by foul water to a distance of 0.3 mile. Heavy swells set into the inlet.

Depths of 13.7 to 28.7m in the outer part of the inlet decrease gradually toward the head of Ensenada Gaviota.

Small vessels load ore at a small pier situated on the SE shore of the inlet. There is a depth of 1.5m at the pier.

Anchorage.—Small vessels may take anchorage in the inlet about 0.5 mile ENE of the N extremity of Punta Rancagua, in about 20m, sand. Care must be taken to avoid dangers which extend 0.3 mile NW and N from this point.

4.61 Bahia Carrizal (29°06'S., 71°29'W.) recedes about 2 miles E between Punta Rancagua and Cabo Carrizal, about 3.5 miles S. Cabo Carrizal is low and rocky with a remarkable round summit on it. The point is backed by high land. Bahia Carrizal is not suitable for vessels. Rocks and reefs fringe the shore of the bay at about 0.5 mile off. Rocks extend about 1 mile from the SE shore of the bay and about 1.5 miles S from Punta Rancagua. A rock, awash, lies in the middle of the entrance to the bay.

Caleta Apolillado recedes about 0.5 mile E between a point about 0.8 mile SE of Cabo Carrizal and Punta Zorros, nearly 1 mile SSW. Punta Zorros is low and rocky. A rock, awash, lies about 55m W of Carrizal. Depths of 18.3 to 21.9m in the outer part of the cove decrease gradually toward the shore, but caution is advised as the E shore of the bay is reported to be silting. The best anchorage is about 0.3 mile NNE of Punta Zorros, in 18.3m, sand. The anchorage cannot be recommended as it is completely open to the W and affords little shelter from the N or S. A constant swell prevails in the cove, and the sea breaks on the beach.

Roca Beta and Roca Lambda are two low, rocky islets which lie about 0.8 mile WSW and a little over 0.5 mile SW, respectively, of Punta Zorros. A small above-water rock lies about midway between these two rocks. The passage between Roca Lambda and the shore has not been carefully examined, but it is foul. A wreck lies about midway between Roca Lambda and the shore.

4.62 Bahia Choros (29°13'S., 71°30'W.) lies between Punta Zorros and Cabo Choros, about 5 miles SSE. Isla Damas, Isla Choros, and Isla Gaviota, which lie W and SW of Cabo Choros, protect the bay.

Isla Damas, the smallest and N of these islands, lies with its NW extremity nearly 3.5 miles SSW of Punta Zorros and is radar prominent. Three hills; Morro Norte, 46m high, Pico Singular, and Morro Sur, 31m high, lie on the N, central, and S parts of the island, respectively. A small peninsula extends about 0.2 mile W from about the center of the island. A light is shown from the N extremity of the island.

The W shores of Isla Damas are generally rocky and fronted by breakers. Caleta Lynch is a well-sheltered cove near the center of the E side of the island. A reef, on which stands conspicuous Roca Cutter, extends about 0.3 mile S from the S extremity of the island. Rocas Falso Cutter, two high rocks, lie at the outer end of a reef which extends about 0.2 mile E from the E side of the island and forms the S limits of Caleta Lynch.

Paso Damas, about 0.8 mile wide, separates Isla Damas from Isla Choros to the S. Roca Beta, above water, lies nearly in mid-channel, about 0.5 mile W of the peninsula which extends W from Isla Damas. A rocky patch of 9.1 to 10.1m lies in about the center of this channel, about 0.5 mile S of the S extremity of Isla Damas. Because of these two dangers and the shallow water which extends S from Isla Damas and NE from Isla Choros, Paso Damas is not recommended.

4.63 Isla Choros (29°16'S., 71°33'W.) largest of the three islands fronting Bahia Choros, lies farther S and W than either of the other two. Isla Choros is hilly, irregular in outline, and rises to a height of 110m. The shores are cliffy and rugged; there is no anchorage. The SW end of the island resembles a castle.

A pyramidal rock lies off the S end of Isla Choros. This rock should be given a berth of at least 0.5 mile to avoid the reef which extends S from it. Roca Alfa, 1.8m high, lies about 0.4 mile S of the S end of Isla Choros and is the outermost of the dangers extending S from the island. Roca Gamma, 0.9m high, lies a little over 0.5 mile WNW of the S end of the island, and is the outermost of the dangers off the W side of the island. Dangers surround Isla Choros on all sides to a maximum distance of about 0.2 mile.

Paso Choros is about 2.5 miles wide between Isla Choros and Isla Gaviota to the E. This channel is deep and clear, but a wide berth must be given Isla Gaviota to avoid the reef extending SW from it.

Isla Gaviota lies with its NE end about 0.2 mile SW of Punta Bernard, a point a little over 0.5 mile NW of Cabo Choros. The SW end of the island lies a little over 1.5 miles SW of Cabo Choros. The island is low, and rises gradually from its E side toward its SW end, where it attains a height of 37m.

Isla Gaviota is surrounded on all sides by above and below-water rocks which lie as much as 0.3 mile offshore. Roca Chata lies on the outer edge of shoal water that extends about 0.3 mile E from the E point of the island. Roca Saliente lies about 0.2 mile S of the S end of the island. Shoal depths have been reported to lie about 1 mile SW of the S end of Isla Gaviota.

Passage should not be attempted between Isla Gaviota and the mainland. There are numerous submerged rocks in this passage.

The prevailing current in Bahia Choros sets N at velocities of 0.5 to 2 knots. The current sets toward the dangers which ex-

tend S from Isla Damas. Rollers, common on the coast farther N, are experienced here.

Anchorage.—Surgidero Norte, situated N of Isla Gaviota, is suitable for large vessels. It is sheltered from S winds by Isla Gaviota. The sea, which enters through Paso Choros, is not heavy enough to be dangerous. The best berth is about 0.5 mile NNW of the N extremity of Isla Gaviota, in 12.8m, sand.

Caleta Lynch, on the E side of Isla Damas, is the best anchorage in Bahia Choros, being well-protected from W winds and suitable for large vessels. Anchorage can be taken about 0.2 mile offshore, in 14.6 to 16.5m, sand. Rocas Falso Cutter, mentioned above, should be given a berth of at least 0.2 mile.

4.64 Cabo Choros (29°15'S., 71°28'W.) is rocky and about 31m high. Numerous submerged dangers lie off the cape. Arrecife Toro lies about 6.5 miles SSW of Cabo Choros, and about 9 miles W of Punta Mar Brava. The reef consists of several above-water rocks and a submerged rock over which the sea breaks. The breakers are nearly always visible.

Playa Choros, a sandy beach on which there is always a heavy surf, extends about 9 miles SE from Cabo Choros. Punta Mar Brava, at the SE end of Playa Choros, is low and rocky with submerged rocks close off it. Near the point is a large white patch of sand which is prominent from the W.

Punta Chungungo, low and rocky, lies about 2.5 miles S of Punta Mar Brava, the coast between being low and rocky. A remarkable saddle-topped hill, with a hummock in the middle, rises close E of Punta Chungungo. When seen from the S, the hill appears as the N end of a high range that extends from E of Caleta Totoralillo and is from 610 to 914m high.

Isla Chungungo, about 1 mile SW of Punta Chungungo, is low and rocky. Submerged rocks lie off the N side of the island, and there is foul ground between the island and the point.

Punta Barrancones (29°25'S., 71°21'W.) is steep and rocky. An islet and rocks lie within 91m of the point. Caleta Tinajas recedes a little over 0.5 mile NE between Punta Barrancones, and Punta Tinajas, about 1 mile SE. Punta Tinajas is fronted by islets and rocks, is steep and rocky, and rises to a hill 33m high.

There are depths of 11 to 23.8m in the outer and central parts of Caleta Tinajas. Above and below-water rocks line the entire shore of the cove and lie up to 0.1 mile offshore. Good anchorage can be taken in the cove by small vessels, about 0.4 mile NNW of Punta Tinajas, in 20.1m, sand.

Punta Medamtos lies about 1.3 miles S of Punta Tinajas. A 28m hill, close E of the point, is surmounted by a beacon, which consists of a concrete monolith. Punta Mostacilla lies nearly 0.8 mile SW of Punta Medamtos. Foul ground extends about 183m W and about 46m N from the point. A light is shown from the point.

4.65 Cruz Grande (29°27'S., 71°20'W.) lies on the S shore of Caleta Cruz Grande, which recedes a little over 0.5 mile SE between Punta Medamtos and Punta Mostacilla. A breakwater, about 92m long, extends E from a position about 0.1 mile SE of Punta Mostacilla. The harbor can be divided into two anchorages; the outer anchorage ENE of Punta Mostacilla, and the inner anchorage for tankers. A basin, about 220m long and 70m wide, is situated about 0.3 mile SE of Punta Mostacilla. Tankers anchor or moor to buoys. Vessels discharge cargo at anchor.

Winds—Weather.—Southwest winds prevail in all seasons. A N breeze sometimes occurs in the early morning.

Morning fogs are most frequent from March to November, lasting almost to midday. Most days, low clouds cover the hills, completely obscuring the valleys.

Depths—Limitations.—Depths of 33 to 42m in the entrance decrease gradually toward the head of the cove. There are depths of 21.9 to 23.8m at the anchorage. There is a least depth of about 8.8m at the tanker berth. Foul ground extends about 0.1 mile N and W of Punta Mostacilla.

Aspect.—The most conspicuous objects in Caleta Cruz Grande are the disused chimney of a power station, 0.6 mile E of Punta Mostacilla, and three silver tanks situated 0.1 to 0.2 W of the chimney.

A depth of 6.1m was reported (1992) about 7.5 miles W of Punta Mostacilla.

Pilotage.—Pilotage is compulsory. The pilot boards about 0.5 mile W of the entrance. Pilots should be requested from Coquimbo 7 days in advance.

Anchorage.—The best anchorage during SW winds is under Punta Mostacilla, where the shore is steep-to. A vessel can anchor, in 32.9 to 40.2m about 0.3 mile W of Punta Medamtos. During NW winds vessels should anchor about 0.3 mile ENE of Punta Mostacilla, in 21.9 to 23.8m.

Vessels should not anchor in the inner part of the cove during winter, as during this time the sea breaks violently in this area.

The explosives anchorage lies about 0.8 mile SSW of Punta Tinajas.

Note.—It was reported that the harbor basin was out of service and the port closed.

Caution.—Magnetic disturbances have been observed in Caleta Cruz Grande. These are ascribed to the proximity of masses of iron ore.

4.66 Caleta Temblador (29°28'S., 71°20'W.) and Caleta Totoralillo are two coves which recede nearly 1 mile SE between Punta Mostacilla and Punta Totoralillo, about 1.8 miles SSW. Punta Totoralillo is steep and the land rises abruptly, forming a conspicuous hill, 112m high. On the shore of Caleta Totoralillo is a pile of slag which stands out conspicuously from the white sand.

Los Farallones (29°28'S., 71°21'W.) consist of a group of islets and rocks which extends nearly 0.8 mile N from Punta Totoralillo. The largest islet, about 0.2 mile N of Punta Totoralillo, is 33.5m high. The N islet is 10.9m high, and the S islet is 14.6m high.

An above-water rock lies about 43m N of Punta Totoralillo, and a rock with 2.4m over it lies about 50m E of the above-water rock.

Isla Tilgo lies about 3 miles S of Punta Totoralitto and about 0.1 mile offshore. Except from a short distance off it, the island appears to be a projecting point.

Bajo Zoraida, a shoal with two rocky heads, lies about 0.3 mile NE of the N islet of the Los Farallones. The N rock has about 3.9m of water over it and the S rock has about 3.1m over it. Roca Valentine, existence doubtful, is charted as having less than 1.8m over it in a position about 0.5 mile NE of the N islet of Los Farallones.

There are depths of 11 to 20m in the outer part of Caleta Totoralillo.

Anchorage.—The best anchorage is in the entrance of the

cove, about 0.3 mile E of the summit of the largest of the Los Farallones, in 16.5m. Farther E, the bottom is very rocky, and vessels are liable to lose their anchors. Inside the 10m curve the depths are very irregular, particularly in the S part of the cove.

Islotes Pajaros (29°35'S., 71°33'W.), about 10 miles W of Isla Tilgo, are two islets which are steep and rocky, 30 to 46m high, and completely devoid of vegetation. They are separated by a channel about 1.3 miles wide. Reefs extend about 0.5 mile W and SE from the N islet. A reef, on which the sea breaks, extends about 1 mile SW from the S and largest islet. A light is shown from the S islet.

Roca Negra (29°36'S., 71°19'W.), about 3.3 miles SSE of Isla Tilgo, lies on foul ground about 91m offshore. An unnamed point E of Roca Negra forms the N entrance point of Caleta Los Hornos.

Caleta Los Hornos recedes nearly 0.8 mile E between the above unnamed point and Punta Blanca, about 1.8 miles S. Roca Blanca, above-water and low, with submerged rocks close W of it, lies about 91m W of Punta Blanca. Quebrada Honda, a deep straight ravine extending inland from the S shore of the cove, is a good mark for recognizing Caleta Los Hornos. Foul ground, with rocks awash, extends about 0.1 mile offshore near the center of the cove. A small pier, used by fishing craft, is situated at the mouth of Quebrada Honda.

Anchorage.—Vessels may take anchorage close to the S shore of Caleta Los Hornos somewhat sheltered from S winds. The best anchorage is about 0.3 mile off the S shore of the cove, in 18.3m. Small vessels can anchor about 0.2 mile off the S shore, in 11 to 14.6m.

Caution.—Severe magnetic disturbances have been reported near the coast in this vicinity, particularly in the vicinity of Caleta Los Hornos.

4.67 **Punta Hornos** (29°38'S., 71°20'W.) is high, steep, and rocky. Cerro Juan Soldado, about 3.5 miles SE of Punta Hornos, is conspicuous. The N side of this hill is steep, but its S side descends gradually towards the SSW.

Caleta El Arrayan, about 3 miles S of Punta Hornos, affords some shelter to small vessels from S winds. A rocky point forms the S entrance point of the cove.

Punta Poroto (29°45'S., 71°22'W.) is low, steep, and rocky. A rock, with about 2.3m over it, lies almost 0.5 mile S of the point. The sea breaks over this rock when a strong wind is blowing. A depth of 27.4m lies 2.25 miles SW of Punta Poroto. Punta Falso Poroto is about 1 mile SSE, and similar in appearance to Punta Poroto. Three islets lie from 0.25 to 0.5 mile, respectively, SSE of Punta Falso Poroto. Cerros del Cobre rises to a height of about 1,951m, about 2.5 miles NE of Punta Poroto.

Punta Teatinos, about 4.5 miles SSE of Punta Poroto, is steep and rocky. The land behind the point rises in ridges, which gradually become higher as they recede from the coast. It is reported that the coast between Punta Poroto and Punta Teatinos recedes farther E than is indicated on the charts.

Coquimbo (29°57'S., 71°21'W.)

World Port Index No. 14570

4.68 The port of Coquimbo occupies the S end of Bahia de Coquimbo, which recedes nearly 3 miles E between Punta Teatinos and Punta Tortuga about 7 miles S. The city of Coquimbo is situated on the SW shore of Bahia de Coquimbo.

The roadstead affords good shelter in all seasons. La Serena, an important city, is situated about 1 mile inland and about 5 miles NE of Coquimbo.

Coquimbo Home Page
http://www.puertocoquimbo.cl

Winds—Weather.—Southerly and SW winds blow strongly outside the bay during the greater part of the year, but they are usually moderate inside the bay. Northwesterly winds occur during the winter months, but are usually of short duration and seldom blow with such force as to produce much sea. Easterly winds off the land are extremely dangerous and occur on rare occasions during the winter. Temperatures are moderate and there is very little rain.

Tides—Currents.—There are practically no tidal currents in Bahia de Coquimbo, but in the vicinity of the Farallones de Coquimbo the currents may attain velocities of 1.5 to 3 knots. The tidal current sets NE with a rising tide and SW with a falling tide, the former being the stronger.

Fogs occur in Bahia de Coquimbo and are most frequent during the winter, when they may be very dense.

Tides rise about 1.1m at HW and 0.7m at LW, although tidal differences of up to 4.6m have been reported (1991) between mean low water and mean high water.

Currents sometimes enter Bahia de Coquimbo from various directions, causing ships at anchor to swing in diverse directions.

Depths—Limitations.—A single quay, 378m long and situated on the E side of the peninsula has two berths for handling container, general, and bulk cargo. Vessels up to 220m in length with maximum drafts of 9.3m can be accommodated at these berths. This port also has good cranes and storage area. Vessels awaiting berths should anchor at the roadstead.

Vessels should expect small craft to be anchored N and S of the pier area.

Aspect.—Punta Tortuga is the N extremity of Peninsula Coquimbo. The W side of the peninsula is high and steep, especially at N end.

Farallones de Coquimbo consist of two groups of rocky islets and submerged rocks lying NW of Peninsula Coquimbo, which forms the SW side of Bahia de Coquimbo. Islotes Pajaros de Afuera, the outer group, lie with the largest islet, about 1 mile NW of Punta Tortuga. A rocky shoal patch, with a least depth of 5.9m, lies 0.8 mile NNE of the largest islet.

Depths of 11.2m and 17.4m lie 2.5 miles and 4.5 miles NW, respectively, of Islotes Pajaros de Afuera.

Islotes Pajaros Ninos lie about 0.5 mile WNW of Punta Tortuga.

Rocas Pilcachos, consisting of three above-water rocks and a rock with less than 1.8m over it, lie from 0.1 to 0.3 mile WSW of Islotes Pajaros Ninos. The central and NW rock is 5.5m high.

Paso de Afuera, the passage separating these two groups, is about 0.4 mile wide, but is not recommended for vessels of any kind. A wreck lies in this passage in a position about 0.7 mile

Coquimbo with Cerro La Cruz (Cross of the 3rd Millennium)

NNW of Punta Tortuga.

Paso Interior separates Rocas Pilcachos and Islotes Pajaros Ninos from Peninsula de Coquimbo. The channel has a least width of about 0.4 mile and is suitable for small vessels. There are general depths of 28 to 42m in the channel, but a rock with 8.8m over it lies nearly in mid-channel about 0.7 mile WSW of Punta Tortuga. An 11.9m patch lies 0.2 mile NNW of the same point.

Roca Havannah, with 7.2m over it, lies about 0.5 mile ENE of Punta Tortuga. Roca Dorsetshire, a pinnacle rock with less than 2.8m over it, lies about 0.4 mile E of Punta Tortuga. Roca Pelicanos, 4.9m high and white, lies close offshore and S of Roca Dorsetshire.

Foul ground, consisting of the remains of a wreck with a depth of 9.1m, lies about 0.1 mile NE of the N corner of the quay. A dangerous sunken wreck, with 2.7m over it, lies about 0.5 mile SE of the N corner of the quay. Several above water and sunken wrecks lie up to 0.5 mile S of the quay, and may best be seen on the chart.

Peninsula de Coquimbo, with its rugged hills and ravines and yellowish color, is prominent. Farallones de Coquimbo are also good marks. A light is shown from Punta Tortuga. A radiobeacon is situated at the light structure. An unused lighthouse and the former lightkeeper's house stand about 137m SSE of the Punta Tortuga light structure and are conspicuous. A prominent church stands 1.5 miles S of the point.

A conspicuous cross stands on Cerro La Cruz, a 151m hill a little over 0.8 mile S of Punta Tortuga. There are lighted television towers in the vicinity of the cross. A conspicuous radio mast stands on the S shore of the bay, about 2 miles SE of Punta Tortuga. A conspicuous clump of trees stands at a farm about 3 miles SE of Punta Tortuga. A conspicuous water tower with obstruction lights is situated 3 miles SE of Punta Tortuga Light. A cement factory, the lights of which are visible to vessels approaching Bahia de Coquimbo at night, is situated on the N shore of the bay about 1.5 miles E of Punta Teatinos.

Five sets of range lights are exhibited from various positions on the bay's shores to assist vessels in entering, berthing, and anchoring. In addition to a light, the ranges show a white diamond daymark with red diagonal stripes.

Coquimbo—Contact Information

	Pilots	Port Radio (CBA4) (Coquimbo Radio)	Harbormaster	Port Authority
VHF	VHF channels 6, 8, 12, 14, and 16	VHF channels 9, 14, and 16	—	—
Radiotelephone frequency	—	2182 kHz and 2738 kHz	—	—
Telephone	—	56-51-2558100	56-51-2558105	56-51-2560813
			56-51-2558100	—
Facsimile	—	56-51-2558196	56-51-2558196	—

Coquimbo—Contact Information				
	Pilots	Port Radio (CBA4) (Coquimbo Radio)	Harbormaster	Port Authority
E-mail	—	—	cpcoquimbo@directemar.cl	ptocqq@entelchile.cl
Web site	—	—	—	http://www.puertocoquimbo.cl
MMSI	—	007250110	—	—

Pilotage.—Pilotage is compulsory and available any time during the day or night, including for Guayacan. The pilot boards in position 29°56'28"S, 71°19'52"W.

Contact Information.—Pilot and port contact information can be found in the table titled **Coquimbo—Contact Information**.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard for discharge.
4. Expected arrival draft.

Additionally messages can be sent via Playa Ancha Radio (CBV) Valparaiso, which maintains a constant watch on 500 kHz and works on 8522 kHz and 16663 kHz.

Anchorage.—Anchorage is prohibited just off the main berth, as shown on the chart. Another area prohibited for anchoring is off Playa El Faro, as shown on the chart.

Seven designated areas for anchoring E of the main berth across Bahia de Coquimbo, are centered on the following positions:

1. Area A—position 29°56'35"S, 71°19'23"W.
2. Area B—position 29°56'35"S, 71°19'00"W.
3. Area C—position 29°56'27"S, 71°18'42"W.
4. Area D—position 29°56'12"S, 71°18'22"W.
5. Area F—position 29°56'06"S, 71°18'56"W.
6. Area G—position 29°55'53"S, 71°18'29"W.
7. Area H—position 29°55'51"S, 71°19'02"W.

Small vessels can obtain good anchorage, in depths of 8m, sand and mud, 400m ESE of Muelle de Pasajeros. An explosives anchorage lies 1 mile N of Muelle de Pasajeros.

Caution.—A prohibited anchorage area, the limits of which are shown on the chart, lies off the quay.

When approaching the bay, vessels should guard against being set to the N by the prevailing swell, current, and wind, which always come from the S.

When approaching the bay from S, vessels should stay 3 miles from land, altering course to the E when well clear of the dangers N of Islotes Pajaros de Afuera.

A dangerous wreck, depth unknown, lies in position 29°56'25.9"S, 71°19'53.9"W.

Care must be taken when entering port during at night due to the numerous small fishing vessels that lay out lines and drift without lights.

Bahia Herradura de Guayacan

Ports of Guayacan and Coquimbo

(29°58'S., 71°22'W.)

World Port Index No. 14560

4.69 Bahia Herradura de Guayacan recedes about 1.3 miles SE. It is separated from Coquimbo by an isthmus, about 1 mile wide, that connects Peninsula de Coquimbo with the mainland. The villages of Aldea de Guayacan and Aldea de Herradura lie at the NE and SW corners, respectively, of the bay.

The approach to Herradura Bay is a fishing zone, so caution should be maintained during navigation into the port.

The harbor in the bay consists of two anchorages and a large pier for loading iron ore. There are several small piers on the S and W sides of the bay. An oil terminal berth is situated on the N side. The port is administered by Coquimbo.

Winds—Weather.—Southwest winds prevail although NE winds may be encountered in the early morning. Fog may be encountered at this time during the summer months.

Tides—Currents.—A NNE current has been observed setting across the entrance of the bay.

Depths—Limitations.—Muelle Mecanizado is a T-head

pier extending 280m from the shore, with a berth of 210m in length and a depth alongside of 17.2m. Vessels up to 215,000 dwt, with a maximum length of 315m and a maximum draft of 16.2m, can be accommodated.

Loading is from an elevator which can travel a length of 119m along the pier; the boom extends from 6.7 to 15.54m from the face of the pier.

Copec Oil Terminal, located offshore near the N shore, is used for the discharge of clean products and LPG. Vessels moor with both anchors down forward and lines to two stern buoys with the ship' head at 225°. Moorings are lit for berthing at night. The depth of water is 15.6m. Tankers up to 210m in length, with a draft up to 11.4m, can be accommodated at this terminal.

Several small craft piers exist on the NE and S sides of the bay, and are best seen on the chart.

Aspect.—Punta Miedo, steep and rocky, is located about 2.3 miles SW of Punta Tortuga Light. The bay is entered between Punta Miedo and Punta Herradura, a little over 0.5 mile WSW. It is about 0.4 mile wide at the entrance and broadens to over 1 mile inside. Depths of 42 to 66m in the entrance decrease gradually toward the shore. Islita Mews, a small islet, lies about 0.2 mile NW of Punta Miedo. Roca Knowsley, with a depth of 1.1m, lies about 0.1 mile offshore, about 0.4 mile SE of Punta Miedo. Rocks, with less than 1.8m over them, lie between Roca Knowsley and the shore.

At night, when making a landfall from W, the lights of Guayacan will be sighted before the lighted aids.

The bright lights at a fish factory situated close E of Punta Miedo are conspicuous.

Cerro Alegre, a prominent hill, 38m high, stands about 0.5 mile E of Punta Miedo.

Lights are shown from Punta Herradura and Isleta Mews. Several sets of ranges situated within the bay assist vessels in entering and berthing.

Pilotage.—Pilotage is compulsory for all vessels. Vessels must anchor in Coquimbo Bay to board the pilot, as the pilot will not board outside Herradura Bay.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard for discharge.
4. Expected arrival draft.

See paragraph 4.68 for additional details and contact information.

Anchorage.—Anchorage can be taken in the S part of the bay, leaving room for movements to and from the pier. The holding ground is good with sand. The anchorages are protected from all winds, but strong NW winds send a heavy swell into the bay which causes vessels to roll considerably. This occurs more often during the winter than at other times.

Caution.—Numerous fishing craft are found in the bay and in the approaches.

Magnetic disturbances have been reported about 1 mile NW of the bay entrance.

Bahia Herradura de Guayacan to Punta Lengua de Vaca

4.70 Punta Saliente (30°01'S., 71°26'W.), about 4 miles SW of the entrance to Bahia Herradura de Guayacan, is low and rocky. The land behind the point rises gradually until it joins a chain of high hills to the E. Foul ground surrounds the point, particularly on its S side. Two submerged rocks, on which breakers have been seen, lie about 0.3 mile off the point. Caution must be taken in foggy weather not to mistake Punta Saliente for Punta Tortuga, on the NW side of Peninsula de Coquimbo.

Punta Lagunillas (30°06'S., 71°23'W.), about 6 miles SSE of Punta Saliente, is about 9.1m high and rugged. It rises gradually toward the interior and joins a chain of high hills to the E. Many guano-covered stones lie on the point. From a distance, Punta Lagunillas has the appearance of a ship under sail. Foul ground surrounds the point to distances varying between 0.1 mile and 0.2 mile. Two drying rocks lie NW of the point, the outer lying about 0.3 mile offshore.

Bahia Guanaquero recedes about 3 miles SE between Punta Lagunillas and Punta Guanaquero, about 5 miles SW. The SW shore of the bay is formed of large rocks and cliffs, except for a small cove with a sandy beach at its head. The S and E shores of the bay are sandy, except Punta Morrillos, 3.5 miles E of Punta Guanaquero, which is formed of several small bluffs and is of a dark color.

Cerro Guanaquero, with three peaks, lies about 3 miles S of Punta Guanaquero. Cumbre Norte, 404m high, lies about 0.5 mile N of Cerro Guanaquero. Cerro Jotate, about 2 miles SSE of Punta Morrillos, is 417m high. Hills of less elevation lie N of Cerro Jotate.

The sea breaks violently on Playa de la Hacienda, the sandy beach between Punta Lagunillas and Punta Morrillos. The sand behind the beach shifts constantly and forms dunes of considerable size. Cerro La Parva, a low hill of yellow sand, lies about 1.5 miles NNE of Punta Morrillos.

Anchorage.—Anchorage can be taken in the SW corner of Bahia Guanaquero, in 20.1m, sand and mud. The anchorage is well-sheltered against SW winds. Northwesterly winds are rare and of little strength. Care must be taken to avoid a number of marine farms situated in the SW part of the bay.

4.71 Punta Guanaquero (30°10'S., 71°27'W.), the SW entrance point of Bahia Guanaquero, is high and steep. The point may be recognized by a hill, about 61m high, which rises over its extremity and can be seen a long distance. A rocky ledge, terminating in a high rock, extends about 0.2 mile NW from the point.

A concrete tower stands about 0.2 mile SSE of the above point.

Punta Barnes (30°12'S., 71°29'W.), about 2.5 miles SW of Punta Guanaquero, is rocky and fronted by above and below-water rocks to a distance of about 0.2 mile. Monte Barnes, about 1 mile S of Punta Barnes, is steep, rounded, and rises to a conical hillock.

Bahia Barnes recedes a little over 0.5 mile SE between a point, about 1.5 miles S of Punta Barnes, and the N extremity of Peninsula de Tongoy, about 1.5 miles SW. The bay has depths of 7.3 to 14.6m, sand, and is sheltered from S and SW winds.

Peninsula de Tongoy extends nearly 1 mile W from the general trend of the coast and is steep and rocky. Nine rounded hills, varying in height from 48 to 74m, stand on the peninsula. The peninsula is joined to the coast by a low sandy isthmus and appears as an island when seen from the N or W. Punta Errazuriz is the W extremity of Peninsula de Tongoy. Roca Cousino, with less than 3.2m over it, lies about 137m SW of Punta Errazuriz. Roca Morgan, which covers at high water, lies 137m WSW of the S extremity of the peninsula. A prominent white house with a television mast stands on the highest summit of the peninsula.

An aeronautical radiobeacon is situated about 1.3 miles SE of the peninsula.

4.72 Bahia Tongoy (30°16'S., 71°34'W.) lies between Peninsula de Tongoy and Punta Lengua de Vaca, about 6.3 miles W. Puerto Aldea occupies the S part of the bay, and Puerto Tongoy occupies the E part of the bay, S of Peninsula de Tongoy. Punta Lengua de Vaca, the W entrance point of Bahia Tongoy, is described in paragraph 5.2.

The W shore of Bahia Tongoy, for a distance of about 2.5 miles SSE of Punta Lengua de Vaca, is rocky with low cliffs. Then the coast trends about 2.3 miles farther SSE and is low and stony. Islote Morro Grande, a small promontory, 14.9m high, lies a little over 0.5 mile SE of Punta Lengua de Vaca. Rocas Megal, a rocky outcrop 115m high and painted white, lie about 1.8 miles S of Punta Lengua de Vaca. A conspicuous beacon, consisting of a black iron cross, 7m high and surmounted by a black triangle, stands on the highest part of Rocas Megal. A beacon (red framework, radar reflector; 3m in height) is situated on the end of a small pier at Caleta Hornilla (30°17.5'S., 71°37.2'W.). Two lighted beacons are shown in the SW part of the bay and may be seen on the chart.

The S and E shores of Bahia Tongoy consist of sandy beaches, the E shore being backed by sand dunes 12.2 to 15.2m high. Monte Notable, 3 miles S of Punta Errazuriz, is conspicuous. Cerros Barrancos Blancos, two hills, lie a little over 1 mile from the beach on the SE side of the bay; white patches on these hills make good landmarks.

Anchorage.—Anchorage can be taken in Puerto Aldea, in the SW part of Bahia Tongoy, about 1 mile off the S and W shores of the bay, in 9 to 12m. Vessels may also anchor closer inshore, in 8.2 to 11m. The bottom is of soft muddy sand in some places, but in others it is hard.

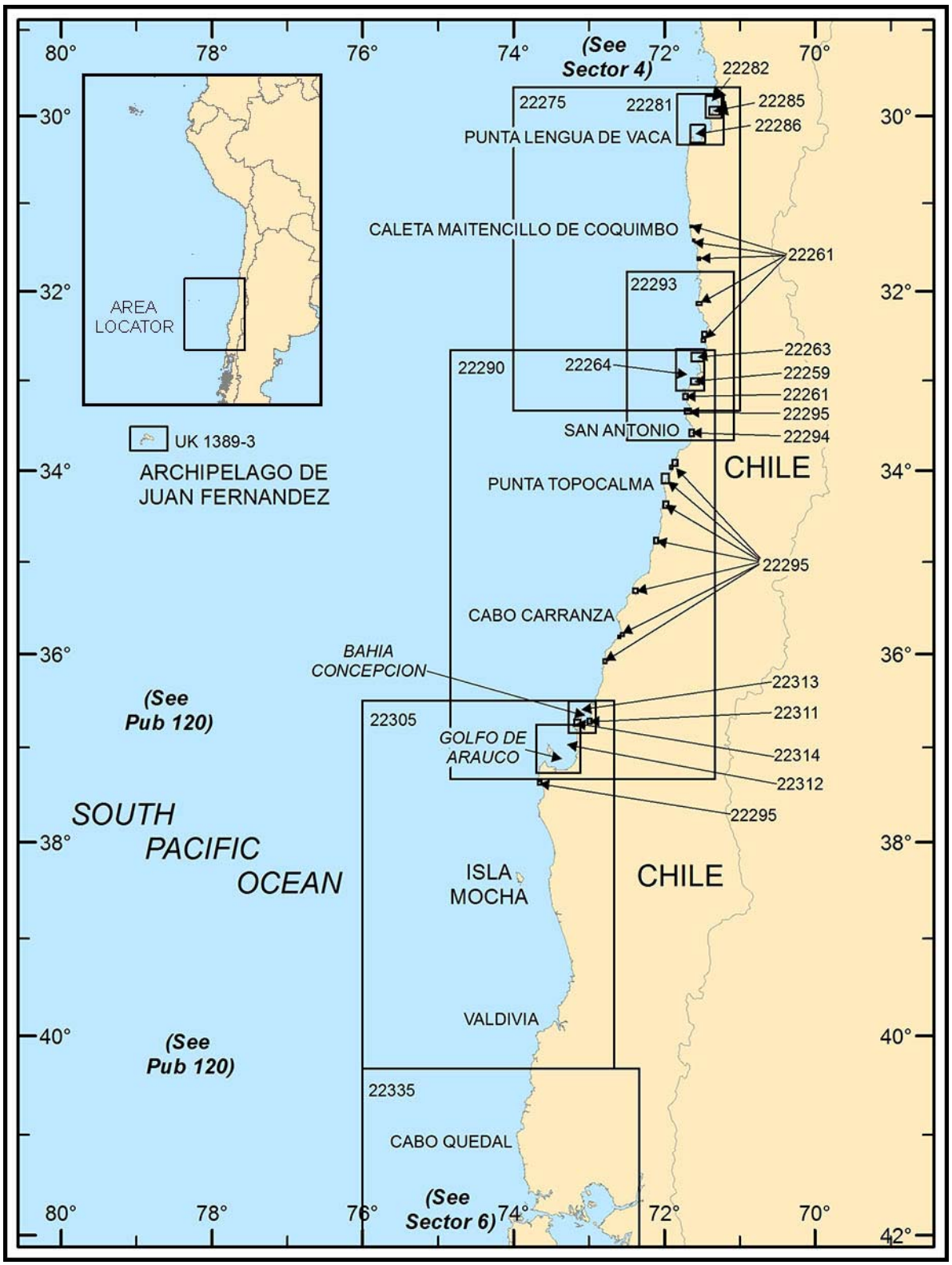
During S winds, Puerto Aldea is calm, but a heavy sea sets in with strong N winds.

Anchorage can be taken anywhere on the E and SE sides of Bahia Tongoy, about 0.5 to 1 mile offshore, in 11 to 18.3m, sand.

The best anchorage in Puerto Tongoy is about 0.4 mile S of the S extremity of Peninsula de Tongoy in 12.8m. During N winds, there is good anchorage for small vessels about 0.3 mile SSE of the S extremity of the peninsula, in 7.3m, sand and clay.

With strong SW winds, anchorage in Puerto Tongoy becomes untenable. During such times, vessels can anchor in Bahia Barnes, N of Peninsula de Tongoy, which is well-protected from S and SW winds.

Caution.—Abnormal magnetic variations have been reported in the vicinity of Bahia Tongoy. Cultivated shellfish beds are situated in an area close SW of Peninsula de Tongoy.



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

SECTOR **5** — CHART INFORMATION

SECTOR 5

CHILE—PUNTA LENGUA DE VACA TO CABO QUEDAL

Plan.—This sector describes the coast of Chile from Punta Lengua de Vaca to Cabo Quedal (40°59'S., 73°57'W.). The sequence of the description is from N to S.

General Remarks

5.1 A number of bays and bights indent the coast and numerous rivers empty from it. The coast is high and level with a steep-to shore. It has few natural harbors with the exception of Valparaiso and several minor ports. The ports are mostly roadstead anchorages off the cliffy shore. A mountain range, with heights of up to almost 1,372m follows the general trend of the coast from about 2 to almost 20 miles inland. The Chilean Andes, with heights of up to about 7,620m, roughly parallel the coast about 65 miles inland.

In general, the coast is steep-to, but above and below-water dangers fringe many parts of the shore. Isolated soundings, some of which are doubtful, are charted up to 30 miles off the coast between the parallels of 35°10'S, and 36°25'S. These depths, which vary between 13 and 29m, may best be seen on the chart.

Archipelago de Juan Fernandez lies about 350 miles off this coast and is described in beginning in paragraph 1.20.

Visibility may be reduced by fog which occurs about 1 or 2 days each month from January to August. Clouds hide the higher mountain peaks of the Andes and many of the coastal hills during much of the year.

Winds—Weather.—Close to Peru and northern Chile, winds are predominantly S to SW throughout the year. Because of the strong pressure gradient between the coast and oceanic high located some distance at sea, these winds are persistent, becoming the SE Trades when they turn NW around the periphery of the South Pacific High. The strongest of these winds occur during the spring and early summer, when the contrast in temperature between the rapidly warming land and the still cool sea is the greatest. These winds often take on the characteristics of the sea breeze of marked intensity. Known locally as the "virazon," they may be of such strength as to halt loading or unloading of ships.

Along the Chilean coast, just S of Concepcion, there is an area where winter winds are frequently N. This zone separates the winds of N Chile, which are predominantly from the S quadrants, and the westerlies of S Chile. At Isla Mocha West, which is in this transition zone and a short distance off the coast near latitude 38.5°S, the wind is S in 60 per cent of the observations and N in only 10; however, these leading marks should not be used during a fog or during a severe wind.during January, while in the month of July, the percentages are 26 per cent from the S and 32 per cent from the N. South of this latitude, winds are from a W quadrant in more than half of the observations. Although winds from an E direction are not common, when they do occur with rising pressure, they bring fine weather over coastal waters. The extremely rugged nature of the S coast of Chile contributes to a variability of winds in many locations.

A climatic control factor along the central portion of the coast, in the section between 3°S and 33°S, is the cool water of the Humboldt Current, or Peru Current, which sets NE to the coast of Chile where it is deflected to the N by the South American continent. Upwelling is a conspicuous feature of this current and results from the prevalent SE winds along the coasts of Chile and Peru which, over certain regions, carry the warm surface waters away from the coast and bring to the surface the cool waters from below. Between the areas of intense upwelling are warm tongues which carry water of higher temperatures onto the coast. However, the marked cooling over the regions of upwelling more than compensates for the warm tongues, and the net result is lower temperatures over adjoining coastal areas than would be otherwise normal for the latitude. Southward beyond the effect of the Humboldt Current, temperatures are actually higher than average for the latitude.

The S portion of the W coast of South America is under the influence of the oceanic westerlies and climate in the area is more maritime in nature than that experienced on the E coast at the same latitudes. This region is subject to strong and persistent W winds, the result of a strong pressure gradient existing between the semi-permanent Pacific High and the region of low pressure stretching from the general latitude of the South Orkney Islands and the South Shetland Islands, S into the Antarctic.

Tides—Currents.—The currents off the coast of Chile are influenced by the Peru Current, which sets to the NE southward of Isla Mocha. This NE current S of Isla Mocha sets vessels toward the coast, and caution should be exercised by vessels a short distance off the coast as the current has caused several shipwrecks. From Isla Mocha northward, the Peru Current follows the trend of the coast, setting between N and NNE. The direction of the current is influenced by the winds.

The current stream has a width of about 120 miles off Valparaiso and widens gradually to the N. The current velocity varies greatly along the coast of Chile. From Valparaiso N to Cobija, it has an average velocity of 15 miles per day, but may attain a velocity of 26 miles per day. However, it may be altogether arrested and sometimes reversed.

Strong onshore currents have been reported to exist between the parallels of 34°30'S, and 35°35'S, and should be guarded against.

Currents of a local nature are described in the various parts of this sector with the features off which they occur. Tidal currents are similarly described.

Caution.—Caution must be exercised because of the lack of sufficient soundings along many parts of this coast and the possibility of uncharted dangers. It has been reported that the charts do not conform with the actual coastal configurations in a number of places. In addition, coordinate values of charted positions may change due to the various differences of chart datum used within this sector.

Submarine exercise areas, extending up to 35 miles offshore,

lie in waters within this sector and may be seen on the chart.

Punta Lengua de Vaca to Bahia Quintero

5.2 Punta Lengua de Vaca (30°14'S., 71°38'W.) is low and rocky. It rises to a height of 70m about 0.8 mile S of its N extremity. A series of hills extends 1.5 miles farther S from the point to Monte Centinela Norte, about 211m high. A 10.1m patch lies a little over 0.3 mile NNE of the point. Roca Negra, a drying rock, lies almost 0.3 mile NW of Punta Lengua de Vaca. Another rock, which dries and is marked by kelp, lies about 0.3 mile W of the point. Vessels should stay at least 0.8 mile from the point.

A light is shown from a white GRP tower with a red band, 4m high, standing on the point. A prominent radio mast stands close SE of the light tower.

Punta Aldea, about 2.3 miles SSW of Punta Lengua de Vaca, is low, rocky, and has a mound at its extremity.

Punta Farallones, about 4.8 miles SSW of Punta Aldea, is a small rocky peninsula with a high and pointed rock rising from its center.

Caleta Totoral de Lengua de Vaca indents the coast on the S side of Punta Farallones. It has a sandy beach on its NE shore and can easily be identified by a prominent peaked islet close N. The entrance is blocked by above and below-water rocks, and may be passed only by small boats in good weather.

Punta Villa Senor, about 13 miles SSW of Punta Lengua de Vaca, is wide, rocky, and fronted by above-water rocks. The mountains, about 3 miles E of the point, attain a height of 823m.

Punta Talinay (30°37'S., 71°44'W.) is low and rocky. The coast between Punta Talinay and the Rio Limari is backed by Altos de Talinay, of which the highest peak of 573m, lies about 5.5 miles NE of Punta Limari Norte. The summits of this range are covered with vegetation.

The Rio Limari, an inaccessible river, empties about 5 miles S of Punta Talinay. A dangerous reef extends about 0.8 mile NW from Punta Limari Norte, the low and rocky N entrance point. A below-water rock lies about 1 mile SE of Punta Limari Norte in the entrance of the river. Punta Limari Sur, the S entrance point, is low. There is a prominent white sandy patch on the latter point, and the land rises steeply farther inland.

5.3 Punta Piedra Lobos (30°48'S., 71°43'W.) is low and steep. Arrecife Piedra Lobos extends about 1 mile NNW from Punta Piedra Lobos. Piedra Lobos, some above-water rocks, lie on the outer extremity of Arrecife Piedra Lobos. Roca Pilcomayo (30°50'S., 71°43'W.), with a depth of 1.8m, lies about 0.5 mile offshore and 3 miles S of the point.

Punta Talquilla, about 5 miles S of Punta Piedra Lobos, is low and rocky and has a prominent white sandy patch on the point. Punta Talca, about 3 miles farther S, is also low and rocky.

Bahia Teniente recedes about 2 miles E between Punta Talca and Punta Gruesa, about 6 miles S. There is a sandy beach at the head of the bay and a sandy valley, Valle del Arenal, extends E from it. A sandhill is on the N side of the valley near the coast. A wreck lies stranded at the head of the bay.

Punta Gruesa (31°02'S., 71°41'W.), marked by a light, is steep, rocky, and fronted by submerged rocks.

Caleta Morritos occupies a small bight between Punta Morritos Norte, about 3 miles S of Punta Gruesa, and Punta Morritos Sur, about 1 mile S. The entrance points of Caleta Morritos are steep and rocky.

Caleta Sierra, a small cove, indents the coast between a point about 3 miles SSW of Punta Morritos Sur and Punta Sierra, almost 0.3 mile SW. A line of serrated peaks are located on Punta Sierra. Caleta Sierra can be recognized from the N by a large ravine at the head of the cove, which is visible up to 2 miles offshore. A group of above-water rocks lies close N of Punta Sierra.

5.4 Punta Vana (31°10'S., 71°41'W.) is fringed with rocks at its extremity and marked by a light. Caleta Derrumbe, a small cove with a sandy beach, lies 2.5 miles SSE of Punta Vana and may be identified by a large whitish patch on the hills near the S end of the cove.

Caleta Maitencillo de Coquimbo lies about 6 miles S of Punta Vana. The coast between consists of blue rocky cliffs, about 46m high. The land backing the cliffs rises to heights of between 91 and 122m. The mountain range backing the coast lies about 3 miles inland and reaches heights of 914 to 1,524m. Caleta Maitencillo de Coquimbo is a small cove about 0.2 mile wide in the entrance, but its shores are bordered by foul ground, leaving a very narrow channel, with a depth of 7.3m, which leads up the middle of the cove to within 68m of the beach at its head. The cove is suitable only for boats.

The cove can be identified by a large triangular patch of white sand on the slope of the hills on the N side of the cove.

Punta Burro (31°25'S., 71°37'W.) is the N entrance point of Caleta Oscuro. Foul ground extends about 0.1 mile SSW from Punta Burro. Two below-water rocks, which break, lie on this foul ground.

Caleta Oscuro occupies a bight between Punta Burro and a small unnamed point about 0.2 mile SE. The shores of the cove are rocky except at a sandy beach at its head. There is a small settlement in the cove. A dark-colored house is situated at the head of the cove. A pier, with a depth of 4.9m at its head, is situated on the N side of the head of the cove. Anchorage may be taken, in 20.1m, sand, by small vessels in the center of Caleta Oscuro. The anchorage is sheltered from NW winds and the holding ground is good.

A prominent hill, having a white apex, stands about 3 miles SE of Caleta Oscuro.

Punta Amolanos (31°35'S., 71°35'W.) is low and rocky, but there is a sandy beach N and S of it. From Punta Amolanos to Punta Ventana, the coast is fringed by foul ground which extends up to 0.5 mile offshore.

Punta Ventana, about 2 miles S of Punta Amolanos, is fringed by rocks which extend up to 0.5 mile SW. From Punta Ventana to the mouth of the Rio Choapa, the coast consists of a low sandy beach.

The Rio Choapa, close S of Punta Ventana, has sandbanks close off its entrance and is not navigable. Punta Pozo, the S entrance point of the Rio Choapa, is precipitous with a barren and smooth summit.

Caleta Huentelauquen (31°38'S., 71°32'W.) occupies a bight between Punta Poza and Punta Huentelauquen, about 1 mile S.

5.5 Punta Loberia (31°45'S., 71°34'W.) lies about 6 miles S of Caleta Huentelauquen. The coast between is steep-to and backed by a range of mountains about 3 miles inland, which attains a height of 800m. The point is rocky and has a conical hillock at its extremity. An above-water rock lies close off the point and submerged rocks and breakers extend about 0.4 mile seaward from the point.

The coast for 7 miles S of Punta Loberia recedes about 3 miles E to form a large bight. Within this bight are several smaller bights and anchorages. This section of the coast is steep-to and fringed by numerous below-water rocks and rocks awash. The coast is backed by a chain of mountains about 3 miles inland. Lower hills are located in the N part of this chain. Depths off this part of the coast vary from about 27.4 to 34.7m, sand and stones, about 0.5 mile offshore.

Rada Chigualoco is entered between Punta Loberia and Punta Panguecito, about 3.3 miles SSE. From Punta Loberia to the NW end of Caleta Chigualoco, about 1.8 miles ESE, the coast is generally low and rocky. Below-water rocks fringe the coast between Punta Loberia and Caleta Chigualoco from 0.3 to nearly 0.8 mile offshore. Bajos de Chigualoco lie about 1.5 miles SE of Punta Loberia. Rocas Conchas, two rocks awash, lie about 1 mile SE of Punta Loberia.

Caleta Chigualoco (31°46'S., 71°32'W.) occupies a bight between an unnamed point and Punta Rinconada, about 0.8 mile SE. The shore of the cove is a sandy beach. From Punta Rinconada to Punta Panguecito, about 1.8 miles SSW, the coast is low and rocky, except for the head of a small cove, Caleta Boca del Barco, which is sandy. An above-water rock, three drying rocks, and some below-water rocks lie in the center of the cove.

Punta Pechonas (31°50'S., 71°33'W.) is steep-to, rocky, and attains a height of 76m. Below-water rocks, which break, extend about 0.2 mile W from the point.

Isla Lilenes, about 1 mile NW of Punta Pechonas, has a greenish color. The channel between Isla Lilenes and Punta Pechonas has a navigable width of 0.2 mile and has depths of 14.6 to 20.1m, rock and sand. Roca Cebollin, awash, lies about 0.5 mile WNW of Isla Lilenes. There are depths of 29.3m less than 0.1 mile off the rock.

Rada Tablas (31°51'S., 71°34'W.) occupies a bight between Punta Pechonas and the NW extremity of Cabo Tablas, about 1.3 miles SW.

Anchorage.—Anchorage can be taken, in 21.9m, sand, with the E extremity of Isla Lilenes bearing 013° and the extremity of Cabo Tablas bearing 257°. This anchorage is well-sheltered during S winds, but it is exposed to winds between N and W.

5.6 Cabo Tablas (31°51'S., 71°34'W.) is a prominent headland marked by perpendicular cliffs, 84m high. The cape projects about 0.5 mile W from the coast and is about 0.5 mile wide. Cabo Tablas is fringed by foul ground to 0.5 mile offshore. A drying rock lies almost 0.3 mile W of the SW extremity of the cape. Roca Tablas, above-water, lies about 0.3 mile SW of the SW extremity of Cabo Tablas. A drying rock lies almost 0.5 mile SSE of the SW extremity of Cabo Tablas, while a second drying rock lies 0.6 mile SE of the same position. A light is shown from the SW extremity of the cape.

Bahia Conchali recedes about 2 miles NE between Cabo Tablas and Punta Los Vilos, 4 miles SE. It is a large bay with several small bights. Bahia Conchali has general depths of about 36.6m about 1.5 miles offshore, decreasing gradually to 9.1m about 0.2 mile offshore. Several dangers and wrecks lie in the bay. Numerous rocks fringe the prominent points in the bay.

Isla Penitente, rocky and about 9.1m high, lies about 1.5 miles SW of the SW extremity of Cabo Tablas. Two rocks, awash, lie close off the W side of the islet. A light is shown from the island.

Isla Verde, about 18.3m high and steep-to, lies about 1.8 miles ENE of Isla Penitente. Rocks and foul ground fringe Isla Verde for about 137m. Rocas Verdes, one of which is above water, lie about 0.3 mile S of the W extremity of Isla Verde.

Islotes Blancos, a group of steep-to islets and rocks, lie about 0.5 mile SE of Rocas Verdes. The largest is about 14.3m high. Islote El Fantasma, NE and 5.2m high, is prominent due to its blackish color.

Caleta Nague occupies a small bight between Punta Conchas, about 1.5 miles E of the SW extremity of Cabo Tablas, and Punta Penitente, about 0.7 mile SE. The cove has depths of 7.3 to 18.3m in the entrance, decreasing gradually toward the N shore. It is the only place in Bahia Conchali where vessels find shelter from NW winds. A wreck, the boiler of which is visible, lies in Caleta Nague.

Punta Penitente is steep-to and attains a height of 35m. It has a remarkable rock at its extremity. A hill, 130m high, stands back of the point.

Ensenada Agua Amarilla recedes about 0.5 mile NW between Punta Penitente and Punta Chungo, about 1.5 miles SE. The shore is a yellow sandy beach, on which the sea breaks heavily. It provides no shelter and is not recommended for anchorage. Punta Chungo is sandy, whitish in color, and rocky at its extremity.

Punta Los Vilos (31°55'S., 71°32'W.) is low and rocky. Islita Chungungo, 3.3m high, rocky and closely fringed by rocks, lies about 0.1 mile offshore SW of the SW extremity of the point.

Isla Huevos, about 0.5 mile WNW of Punta Los Vilos, is rocky, barren, and yellowish. It is about 43m high at its SW end. A light is shown from the island. A reef on which the sea breaks connects the island to Punta Los Vilos.

5.7 Puerto Los Vilos (31°55'S., 71°31'W.) (World Port Index No. 14540) indents the coast about 0.7 mile SE between Punta Chungo and Punta Los Vilos, about 1.5 miles SSW. The small port lies at the S end of the bay.

Winds—Weather.—Westerly winds during the winter cause a heavy swell in Puerto Los Vilos. The sea breaks between Isla Huevos and Isla Blanca and between Isla Huevos and Punta Los Vilos, where it makes a foam which drifts into the bay and gives the appearance of breakers when a large swell is running. Vessels can find shelter in Caleta Nague during NW gales.

Fogs are most frequent in the months of October and November, but may also occur in May.

Depths—Limitations.—The port consists of a single mechanized wharf used for loading copper concentrate. This wharf is also referred to as Terminal Punta Chungo. The maximum size vessel handled at this berth has been up to 60,000 dwt, with a length of 220m, a beam of 35m, a draft of 12.3m, and an air draft of 16.5m at LW.

Punta Los Vilos—Terminal Punta Chungo and Isla Huevos

Pilotage.—Pilotage is compulsory. The pilot boards within 1,000m of position 31°53'34"S, 71°32'02"W. Pilots and port can be contacted through the details found in the table titled Los Vilos—Contact Information.

Aspect.—A conspicuous white tank stands in the port. Two lights at the railroad station in the port are reported to be visible at a distance of about 10 miles seaward.

There are depths of from 18.3 to 27.4m in the entrance, decreasing gradually toward the shore. Bajo Chacabuco, a 10m patch, lies almost 0.7 mile NE of the N extremity of Isla Huevos. Bajo Baquedano, an 8.7m patch, lies about 0.2 mile N of Isla Huevos. Bajo O'Higgins, a 10.1m patch, lies almost 0.3 mile NE of Isla Huevos. Bajo Abtao, a 5m patch, lies about 0.3 mile offshore, about 0.8 mile ENE of Isla Huevos. Bajo Castro, another 5m patch, lies almost 0.3 mile N of the town of Los Vilos and about 0.7 mile E of Isla Huevos. Roca Desempeno, a drying rock, and Bajo Lynch, with a depth of 2m, lie 0.6 and 0.5 mile E of the island.

Anchorage.—Anchoring is not permitted in the area due to numerous rocks and shoals within 1 to 1.2 miles of the coast and Isla Huevos lying only 0.65 mile NW of the terminal.

5.8 The coast for 20 miles S of Punta Los Vilos is indented by numerous small bights. It is generally steep-to, with intermittent sandy beaches, and fringed by rocks and foul ground to almost 1 mile offshore. The coast is backed by a chain of mountains which lie up to 10 miles inland.

Ensenada Quereo is a small unimportant bight about midway between Punta Los Vilos and Punta Lobos, about 2.3 miles SSW. The coast between Punta Los Vilos and Punta Lobos is fringed with foul ground which breaks to a distance of about 0.2 mile offshore.

Los Vilos—Contact Information

Port	VHF	RT Frequency	MMSI	Telephone	Facsimile	E-mail
Port Radio (call sign: CBA26)	VHF channels 9, 14, and 16	2182 kHz and 2738 kHz	007250120	56-53-2541104	56-53-2541104	—
Harbormaster	—	—	—	56-53-2541104 56-53-2541417	—	cplosvilos@directemar.cl

Los Vilos—Contact Information						
Port	VHF	RT Frequency	MMSI	Telephone	Facsimile	E-mail
Terminal Punta Chungo	—	—	—	56-2-4452058	56-2-4452058	—

Punta Lobos (31°57'S., 71°33'W.), about 23m high, is fringed by foul ground to about 0.5 mile offshore. Islote Lobos, about 4.2m high, lies about 0.1 mile offshore W of the point. A reef, on which the sea breaks in bad weather, lies almost 0.3 mile WNW of Punta Lobos. Islote Negra, a little over 0.5 mile offshore S of the point, is closely fringed by dangerous rocks, and between it and Punta Lobos, there are dangerous rocks.

From Punta Lobos to Punta Purgatorio, about 1.5 miles ESE, the coast is fringed by numerous rocks and foul ground which breaks to a distance of 0.5 mile offshore. This part of the coast is exposed to the constant SW swell and is dangerous to approach.

Punta Changos, low and rocky with some above-water rocks close off it, lies about 3.5 miles S of Punta Lobos.

5.9 Ensenada Totoralillo (32°01'S., 71°32'W.) indents the coast between Punta Changos and Punta Totoralillo, about 1.5 miles S. An islet and numerous below-water rocks lie in the center of the bay. There is a sandy beach at the head of the bay. A prominent iron bridge, about 43m high, spans a ravine at the head of the bay. Punta Totoralillo is low and rocky with numerous rocks which extend about 0.3 mile SW from the point.

Punta Quelen, about 5 miles S of Punta Totoralillo, is low and rocky. Roca Negra, an above-water rock, lies almost 0.5 mile offshore about 2 miles NNW of Punta Quelen. Bajo Tapado, which dries about 0.9m, lies about 0.8 mile offshore about 2 miles NNW of Punta Quelen. The passage between Bajo Tapado and the mainland is foul.

Puerto Pichidangui (32°09'S., 71°33'W.) recedes about 1 mile E between Punta Quelen and Punta Salinas, about 1.5 miles SSW. The bight affords a completely sheltered anchorage from the SW, but is exposed to the sea during NW winds. The holding is poor and large vessels should use the bay as a temporary anchorage only. The Rio Quilimari, which flows into the head of the bay, is spanned by two prominent bridges about 125m apart which lie about 0.5 mile above the mouth of the river. A wreck lies in about 4.6m of water, near the NE shore of the harbor off the mouth of the Rio Quilimari.

Pichidangui, on the SW shore, is a summer resort which is used by fishing craft.

Roca Casualidad, with a depth of 1.8m or less, lies about 0.2 mile NE of the N extremity of Isla Locos, located close N of the S entrance point of the bay. The rock is about 183m long, E to W, and breaks with a heavy swell.

Anchorage.—The best anchorage, in about 16.5m, lies about 0.2 mile E of Isla Locos. The anchorage area is shaped like a horseshoe. It is protected from NE winds, but not from SE winds, which cause a swell to enter the anchorage area.

Punta Salinas, the S entrance point of Puerto Pichidangui, is low, rocky, and dark. Cerro La Silla del Gobernador (Santa Ines), saddle-peaked and about 695m high, stands 2.5 miles SE of the point. The coast for about 5 miles S of the point is irregular, dark-colored, and rocky. It is fringed by foul ground to about 0.5 mile offshore.

A prominent tank stands 0.3 mile SE of Punta Salinas. A parabolic aerial is situated 500m NW of the tank.

Punta Huesos (32°10'S., 71°33'W.), about 2 miles S of Punta Salinas, is low and rocky. Rocks extend about 0.3 mile W from Punta Huesos. Punta Ventana, about 1 mile S of Punta Huesos, is also low and rocky. Below-water rocks extend up to 0.3 mile off Punta Ventana.

Punta Puquen, about 5 miles SSE of Punta Salinas, is about 40m high and steep-to. A blow hole, which pierces it, can be heard for a considerable distance. A small prominent islet lies about 0.2 mile SW of Punta Puquen.

5.10 Punta Molles (32°14'S., 71°32'W.), about 3.8 miles SSE of Punta Huesos, is low, dark-colored, and rocky. Foul ground extends about 0.4 mile S from it. The coast for 30 miles S of the point is indented by several large bays. It is steep-to, rocky in places, and interspersed with long sandy beaches. The prominent points are fringed with above and below-water rocks. The coast is backed by a chain of mountains which lie up to about 10 miles inland.

A conspicuous concrete railway bridge is situated in position 32°07'S, 71°32'W. A road bridge is situated 125m away from, and parallel to, the railway bridge.

Caleta Molles (32°16'S., 71°29'W.) occupies a cove about 3 miles SE of Punta Molles. There is a sandy beach at the head of the cove. Small vessels should anchor in this cove only in case of necessity.

Punta Pichicui, about 4 miles S of Caleta Molles, is steep-to and rocky. The point has a white cross, painted on a green background, which are visible from the S. Caleta de Pichicui occupies a bight between Punta Pichicui and Punta Guallarauco, about 2.5 miles SE. The shore of the bight is a sandy beach. Anchorage may be taken by small vessels, in 14m, sand, about 0.2 mile SW of a large storage building on the shore.

Roca Bogata, with less than 1.8m over it and depths of from 21.9 to 25.6m close around, lies about 1.5 miles SSW of Punta Pichicui. Caution is advised, and the coast in the vicinity of Roca Bogata should not be approached within 2 miles.

Caleta Ligua recedes about 1 mile E between Punta Guallarauco and Punta Ligua, about 2 miles SSE. The NE shore of the cove is fringed by reefs for almost 0.8 mile and the E shore is fringed by reefs and foul ground to about 0.4 mile offshore. The cove is constantly beaten by surf. Anchorage may be taken by small vessels, in about 13.9m, about 0.5 mile NE of Punta Ligua. The Rio Ligua flows into the SE corner of the cove. Local knowledge is required to enter. A dangerous below-water

rock, over which the sea occasionally breaks, lies about 0.2 mile NW of Punta Ligua.

Caution.—Bajo Dayot (32°24'S., 72°16'W.), with a least reported depth of 30m, lies about 43 miles W of Punta Ligua.

Punta Canas, about 2.5 miles S of Punta Ligua, is rocky. Isla Lobos, about 1 mile S of Punta Canas, is low and rocky. It is prominent due to its whitish color.

Puerto Papudo (32°30'S., 71°28'W.) lies between Isla Lobos and Punta Pite, about 2 miles SW. The town of Papudo, a summer resort, is situated at the S end of the bay about 1 mile SE of Punta Pite.

Monte Papudo, a conical mountain about 457m high, is located about 1.3 miles SSE of Punta Pite and is a good landmark. Cerro El Gobernador about 692m high, stands 0.5 mile S of Monte Papudo.

From Punta Lilen, about 1 mile SSE of Isla Lobos, to an unnamed point about 0.3 mile S, the coast is low and rocky. From the unnamed point to a position about 1 mile SW, the coast consists of a sandy beach; thence to Punta Pite, almost 1 mile WNW, the coast is steep-to and rocky.

A pier, equipped with a small crane, is situated 0.8 mile ESE of Punta Pite. The port is mostly used by fishing vessels and pleasure craft.

Puerto Papudo is exposed to SE winds, which predominate in winter. Fog is most frequent in March, April, and October.

Anchorage.—The best anchorage is in the S part of the bay, in 20.1m, fine sand, about 0.3 mile N of the pier. It is unsafe during the three winter months.

5.11 **Punta Pite** (32°30'S., 71°29'W.) is low and rocky, but is reported to give a good radar return. It is fringed on its NW side by rocks and islets. Roca Baja, the largest, lies close NW of the point. Above-water rocks and foul ground extend about 0.1 mile N from Roca Baja. From Punta Pite to Punta Panulcillo, about 1.5 miles SSW, the coast is steep-to and rocky. Punta Panulcillo, low and rocky, is fringed by foul ground to a distance of about 0.2 mile.

Puerto Zapallar, a resort, lies about 3 miles S of Punta Pite. The bay indents the coast between Punta Isla Seca and Isla Liles, almost 0.5 mile SSW. The bight has general depths of about 27.4 to 50m across its entrance, which decrease gradually toward the shore. Zapallar, a small summer resort, is situated on the S shore of the bight. The shore of Puerto Zapallar is rocky except at its head, where there is a sandy beach. Anchorage can be taken, in 21.9m, sand, about 0.3 mile NE of the summit of Isla Liles.

Isla Liles is connected to the mainland by a sandy beach. Punta Zapallar consists of a drying reef which extends about 0.1 mile W from Isla Liles.

Punta Peumo lies about 2 miles SSE of Isla Liles. The coast between is steep-to and rocky. Punta Peumo, which provides a good radar return, is also bold and rocky. Islote Cachagua, about 26m high, lies about 0.1 mile SW of Punta Peumo. From Punta Peumo to Punta Maitencillo, about 3.5 miles S, the coast consists of a sandy beach, except for Punta Frutillar, about halfway between these two points, which is low and rocky.

Caleta Maitencillo de Valparaiso is a small cove between Punta Quiscos, about 0.2 mile NNE of Punta Maitencillo and Punta Chacarilla, about 0.3 mile NE. The cove is used only by boats, which can land at a small sandy beach at its head. Anchorage can be taken by larger vessels, in 16.5 to 18.3m, sand, off the mouth of the cove. Vessels must be prepared to put to sea during W winds.

Punta Maitencillo, at the S end of Caleta Maitencillo de Valparaiso, is steep-to and rocky. The point is reported to give a good radar return. Above and below-water rocks, which break, extend up to about 0.2 mile NW of the point.

Punta Horcon lies about 5 miles SW of Punta Maitencillo. The coast between recedes about 2 miles SW to form a large bight. Caleta Horcon lies in the S part of the bight about 1 mile E of Punta Horcon. Anchorage can be taken, in 20.1m, fine sand, about 0.3 mile N of the W entrance point of Caleta Horcon. Punta Horcon, dark in color, is cliffy and has a conspicuous hole in the extreme point of the cliff. The point serves as a good radar target. The coast, closely backing the cliffs, is level and from 88 to 101m high. The peaks farther inland reach greater heights and the Andes can be seen in the distance.

Farallones de Quintero, a group of low rocks of dark color, lie on a shoal bank located about 1 mile NW of Punta Horcon; a stranded wreck lies on the N part of the shoal bank. Roca Chandler, which breaks in bad weather and has 3.7m over it, lies about 0.8 mile SW of Farallones de Quintero.

Punta Ventanilla (32°45'S., 71°30'W.), the N entrance point of Bahia Quintero, lies about 2 miles SSE of Punta Horcon. The point is a small headland.

An aeronautical radiobeacon is situated close N of the point.

Bahia Quintero (32°46'S., 71°32'W.)

World Port Index No. 14510

5.12 Bahia Quintero lies between Punta Ventanilla and Punta Liles, about 2.3 miles SW. The bay is sheltered during S winds, but it is open to the NW. The bay is home to the privately owned port of Puerto Ventanas (32°45'S., 71°29'W.) and an oil terminal.

Puerto Ventanas Home Page
http://www.puertoventanas.cl

Winds—Weather.—In Summer, the winds in Bahia Quintero are mainly SW, blowing the strongest in December; in the winter, N winds prevail.

Fogs are most frequent in the months of April and May.

Tides—Currents.—The tidal range in the bay is 1.4m. The maximum strength of the tidal current can reach 2 knots.

Aspect.—A light is shown from a prominent tower 16m high, standing on Peninsula Los Molles. A prominent tank stands about 0.1 mile E of the light tower. A red and white banded chimney stands 0.9 mile SE of the light on Peninsula Los Molles. Two conspicuous white buildings stand about 1.3 miles E of the chimney, while a conspicuous group of tanks stand just E of a small craft pier lying 0.5 mile NNE of the buildings. A chimney, marked by white flashing obstruction lights, lies 0.7 mile NE of the pier. Two chimneys, marked by red flashing obstruction lights, stand at the root of the ore pier, while a radio tower, marked by obstruction lights, lies 0.9 mile N of the pier's head. The conspicuous sheds of the copper

factory stand about 0.6 mile NE of the ore pier.

Peninsula Los Molles, of which Punta Liles is the N extremity, attains an elevation of 68m and forms the SW side of the bay. The peninsula is fringed by foul ground extending up to 0.2 mile from its shores.

Bajo Las Malenas, a detached rocky patch with a least depth of 10.6m, lies about 0.5 mile WNW of Punta Liles. This patch should be avoided as it breaks heavily and may have a less depth over it. Bajo Zenteno, a rocky patch with a least depth of 14.6m, lies about 0.5 mile WSW of Punta Liles.

Depths—Limitations.—Puerto Ventanas is a privately-owned port that operates Muelle Mecanizado. Muelle Mecanizado, in the NE part of the bay, is 1,300m in length and has five berths for handling bulk ore, liquid chemicals, general cargo, and grain. Three berths (numbered 1, 3, and 5) are located on the N side of the pier, while two are on the S side. See table labeled Bahia Quintero and picture labeled Puerto Ventanas Pier to see the berth positionings.

Bahia Quintero—Berth Information

Berth	Maximum Vessel				Remarks
	LOA	Draft	Beam	Size	
Muelle Asimar					
East Side	115m	6.3m	17.04	6,199 dwt	Fast ferries, steel, project/heavy cargo, breakbulk, naval vessels, and bunkers,
West Side	126.5 m	5.4m	—	—	Fast ferries. project/heavy cargo, steel products, break-bulk, naval vessels, and bunkers. Closed.
TPS—Valparaiso					
No. 1	160m	8.0m		12,000 dwt	Chemicals, dirty products (DPP), and bunkers. Closed.
No. 2	200m	9.5m	32.2m	63,500 dwt	Chemicals, dirty products (DPP), coal, mineral ore, bunkers, multipurpose, solid and liquid bulk, sulphuric acid, mineral concentrates, and fuel oil.
No. 3	200m	11.7m	32.2m	63,581 dwt	Chemicals, dirty products (DPP), mineral ore, bunkers, multipurpose, sulphuric acid, mineral concentrates, and fuel oil.
No. 5	240m	14,3m	35.0m	184,860 dwt	Aviation fuel, dirty products (DPP), bauxite, cement, coal, grain, multipurpose, and bunkers.
Copec Import Products/Marine Terminal					
Copec MBM	289.5m	12.5m	32.3m	53,714 dwt	Aviation fuel, clean products (CPP), and dirty products (DPP).
GNL Quintero					
Quintero LNG Terminal Dock	345m	24.0m	55.0m	97,730 dwt	LNG, Berthing length of 356m (including dolphins). Pier with dolphin at end is 1.9km long.
Oxiquim Gasmar Terminal					
Oxiquim N	225m	12.2m	32.2m	53,714 dwt	Chemicals, clean products (CPP) and LPG.
Oxiquim S	230m	12.2m	37.2m	59,000 dwt	Chemicals, clean products (CPP) and LPG.
Quintero Bay STS Location					
Quintero Bay STS	274.5m	10.1m	48.0m	159,952 dwt	Crude.
Quintero Maritime Terminal (TMQ)					
LPG/ Chemicals MBM	183.3m	10.1m	32.2m	51,747 dwt	Aviation fuel, chemicals, clean products (CPP), and LPG.
Monobuoy	—	21.5m	62.0m	350,000 dwt	Crude. No loa restrictions.
Multibuoy	250m	12.9m	43.0m	113,032 dwt	Aviation fuel, clean products (CPP), crude, and dirty products (DPP).

Specific berthing facilities, as follows:

1. Berth No. 1—Handles sulphuric acid and can accommodate vessels up to 12,000 dwt, with a length of 160m and a maximum draft of 8.17m.
2. Berth No. 2—Handles sulphuric acid and mineral concentrates and can accommodate vessels up to 30,000 dwt, with a length of 200m and a maximum draft of 9.52m.
3. Berth No. 3—Handles sulphuric acid, asphalt, and general cargo and can accommodate vessels up to 45,000 dwt, with a length of 200m and a maximum draft of 11.5m.
4. Berth No. 4—Handles LNG and can accommodate vessels up to 70,000 dwt with a maximum draft of 14.5m.
5. Berth No. 5—Handles cement, bauxite, coal, and grain and can accommodate vessels up to 70,000 dwt, with a length of 240m and a maximum draft of 14.3m.

Mooring and unmooring are not permitted when the winds are stronger than Force 4 or the swells are higher than 1m.

Muelle Asimar is a small wharf in the S part of the bay used for general cargo and passenger vessels. This is the only place in the bay where embarking or disembarking passengers is permitted. Vessels up to 95m in length with a maximum draft of 5.4m can be accommodated at this berth.

Muelle Oxiquim lies almost 0.9 mile S of Muelle Ventanas. This pier is very narrow, constructed as a metal catwalk, and only 4m wide. It extends from the shore in a NW direction for 832m, then bends slightly more WNW for another 180m for a total length of 1,012m. Muelle Oxiquim handles bulk chemical and liquid gas cargo. Vessels may berth on either side of the jetty, but due to the constant heavy swell in the bay, surging and ranging is commonly experienced when berthed alongside. Vessels up to 42,000 dwt, with a length of 225m and a maximum draft of 12.4m can be accommodated at either berth.

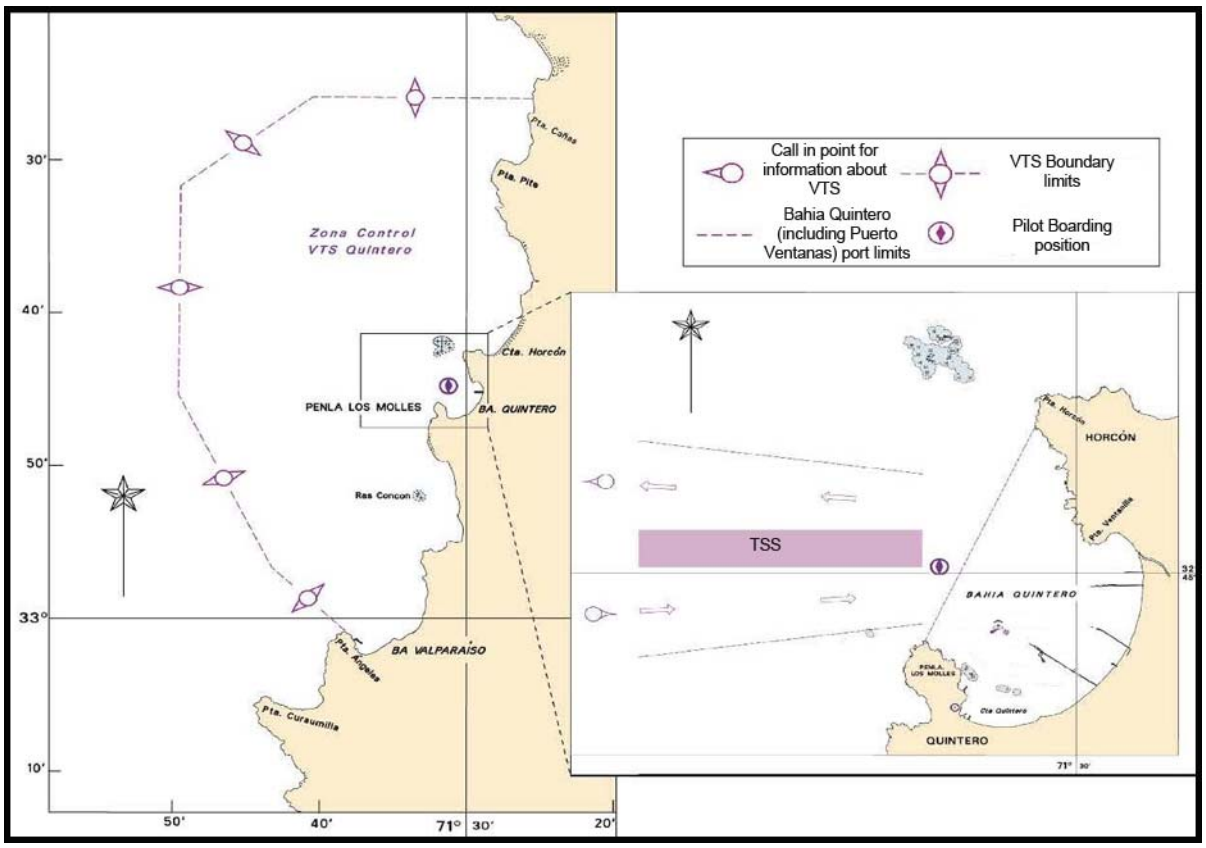
Empresa Nacional de Petroleo (ENAP) Pier, on the E side of the bay, is 200m long and used by service craft.

Muelle GNL (Quintero LNG Terminal) is located close SW of ENAP Pier. It is 1,870m long and is designed to handle tankers between 120,000 and 180,000m3 in capacity.

ENAP Oil and Gas Terminals are located W and S of ENAP Pier, and consists of vessels are accommodated at mooring buoys. The oil terminal is a CBM arrangement with three buoys available, and can accept vessels up to 100,000 dwt, with a maximum length of 250m and a maximum draft of 12.9m. The gas (LPG) terminal is also a CBM arrangement and can accept vessels up to 40,000 dwt, with a maximum length of 182m and a maximum draft of 10.18m.

An SBM is located about 0.9 mile ENE of Punta Liles marked by a lighted buoy. This berth is capable of handling tankers up to 350,000 dwt with no restrictions on length or draft.

Pilotage.—Pilotage is compulsory. The pilot boards in the waiting area located 1.4 miles NNE of the light on Peninsula Los Molles, in the center of the pilot waiting area, best seen on the chart.



VTS Quintero

Peninsula Los Molles Light

Pilots must be ordered via the ship's agents at least 2 hours prior to arrival while advising the vessel's position, course, and speed.

Pilots can be contacted on VHF channels 8, 13, 16, 68, 69, and 76 and by e-mail (praccpqtr@directemar.cl).

Regulations.—For Bahia Quintero, the vessel's ETA should be sent to the agent 72 hours before arrival, with confirmation sent 24 hours before arrival.

The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

The harbormaster should be contacted 1 hour before arrival on VHF channel 16.

An IMO-adopted Traffic Separation Scheme (TSS) lies in the approaches to Bahia Quintero and may best be seen on the chart. The inbound traffic lane is situated S of the separation zone.

For Puerto Ventana, the vessel's ETA should be sent 24 hours before arrival, including the following information:

1. Last port of call.
2. Next port of call.
3. Vessel speed at time of report.

The use of tugs is required for all maneuvers associated with berthing and unberthing.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) operates 24 hours. This VTS is in effect for the waters of Bahia Quintero, including Puerto Ventanas and the area bounded by the following positions:

a. 32°25'57"S, 71°25'38"W.
b. 32°25'51"S, 71°40'32"W.
c. 32°31'43"S, 71°49'30"W.
d. 32°45'32"S, 71°49'39"W.
e. 32°56'55"S, 71°43'20"W.
f. 33°01'05"S, 71°38'21"W.

Participation in the VTS is mandatory for all vessels entering, departing, or heading towards Bahia Quintero, including Puerto Ventanas, or vessels anchoring within the port limits. Voluntary participation is allowed for vessels passing through the area but not stopping. All vessels must keep their Automatic Identification System (AIS) on at all times while in the VTS area.

Vessels must contact the VTS on Quintero Radio 1 hour prior to entering the VTS area to confirm the following information if proceeding to port or anchoring:

1. Vessel name.
2. Vessel call sign.
3. ETA at the pilot boarding station.

If the vessel is only proceeding through the VTS area without stopping, the following information shall be provided:

1. Vessel name.
2. Departure time from last port.
3. Destination port and ETA at that port.

VTS Quintero can be contacted, as follows:

VTS Quintero—Contact Information	
Call sign	Quintero Radio (CBV21)
VHF	VHF channels 14, and 16
Telephone	56-32-2930057
	56-32-2931559
	56-32-2934126
Facsimile	56-32-2934296
E-mail	capuertoqui@directemar.cl
	sctmquintero@directemar.cl
MMSI	007250125
Notes: 1. VHF channel 16 should be monitored at all times. 2. VHF channel 14 is used for coordination with VTS Valparaiso upon entering the VTS operational area. 3. VHF channels 68 and 69 are used exclusively for piloting maneuvers.	

Contact Information.—See the table titled **Bahia Quintero—Contact Information**.

Bahia Quintero—Contact Information	
Port Operations	
Call sign	Quintero Radio (CBV21)
VHF	VHF channels 9, 14, and 16
E-mail	praccpqtr@directemar.cl
Harbormaster	
Call sign	Capuerto Quintero (CBV21)
VHF	VHF channel 16
Telephone	56-32-2930057
	56-32-2930886
Facsimile	56-32-2231043
E-mail	cpquintero@directemar.cl

Anchorage.—A prohibited anchorage area includes the entire inshore portion of the bay and the waters around the SBM. Vessels are advised to consult the local authorities and the pilot for information concerning the prohibited area before anchoring in the port.

Seventeen designated anchorages are listed in the table titled **Bahia Quintero—Anchorages**. Caution should be exercised when anchoring, however, as the bay is open to NW winds and possesses poor holding ground; vessels are liable to drag when the cable begins to work.

Bahia Quintero—Anchorages	
Area	**Center Position**
A	32°44'04"S, 71°31'05"W
B	32°44'19"S, 71°30'50"W
C	32°44'45"S, 71°30'36"W
D	32°44'54"S, 71°30'31"W
E	32°45'23"S, 71°31'49"W
F	32°45'43"S, 71°31'38"W
G	32°45'59"S, 71°31'22"W
H	32°46'12"S, 71°31'10"W
I	32°46'15"S, 71°30'56"W
J	32°45'26"S, 71°29'43"W
K	32°45'08"S, 71°30'16"W
L	32°44'31"S, 71°31'19"W
M	32°44'54"S, 71°31'32"W
N	32°44'49"S, 71°31'02"W
O	32°45'15"S, 71°31'10"W
Q1	32°45'27"S, 71°30'36"W
Q2	32°45'27"S, 71°30'07"W

Caution.—Vessels moored at the offshore pipeline berths are advised to exercise caution as bad weather, particularly that associated with NW winds, may disrupt cargo operations.

A lighted buoy with a radar reflector marks the shoal area at Bajo Cochrane (32°46'36"S., 71°30'47"W.). Overhead pipelines extend from the coast in the vicinity of position 32°44.9'S, 71°29.2'W, about 0.2 mile N of Puerto Ventanas Pier.

Bahia Quintero to Valparaiso

5.13 Punta Artesas (32°47'S., 71°33'W.) lies about 1 mile SSW of Punta Liles. Foul ground fronts the point. Cerro Centinela, about 0.4 mile SSE of Punta Artesas, marked on its summit by a conspicuous white wooden cross with a water tank standing close S of it. See paragraph 5.16 for more information.

Punta Ritoque lies about 6 miles S of Punta Artesas. The coast between is generally of a moderate elevation, backed by smooth rolling hills which have a barren and weather-beaten aspect. Playa Ritoque, a sandy beach, extends for about 3.5 miles SSE of Punta Ritoque and is closely backed by sand dunes of a whitish color.

Rocas Concon, a group of above and below-water rocks, lie about 2.5 miles SSW of Punta Ritoque. Caution should be exercised in approaching Rocas Concon, as a current sets toward them from S and there is usually a swell.

Islote La Isla, 8m high, is the largest of several above-water rocks which lie on a reef extending up to 0.8 mile from the shore about 3.5 miles SSE of Punta Ritoque. The Rio Aconcagua flows into the sea about 1.5 miles S of the islet.

Punta Concon (32°56'S., 71°34'W.) lies about 6.3 miles S of Punta Ritoque and is the NE entrance point of Bahia de Valparaiso. The point is steep-to and radar prominent. Foul ground extends up to 0.2 mile on the N side of the point.

Anchorage.—Anchorage, sheltered from SW winds, but exposed to N winds, is available in Caleta Higuerilla E of Punta Concon. Vessels can anchor with the head of a marina breakwater bearing 220°, 0.4 mile distant, in a depth of 15m, sandy bottom.

Valparaiso (33°02'S., 71°37'W.)

World Port Index No. 14500

5.14 Bahia de Valparaiso, entered between Punta Concon and Punta Angeles, 7 miles SW, is the most important harbor in Chile. Valparaiso is home to the largest naval base in Chile and is also the largest commercial port in the country. Valparaiso lies along the S shore of the bay. Bahia de Valparaiso is well-sheltered except from N and NW winds during the winter season, which leave shipping exposed, although the breakwater provides shelter for the wharves and for the small anchorage area. Winds from the SW can cause problems in the afternoons for vessels berthing or sailing.

Valparaiso Home Page
http://www.portvalparaiso.cl

Winds—Weather.—A "Norther" frequently passes over Valparaiso without doing damage, but occasionally its effects are disastrous. Vessels poorly situated or anchored have been driven ashore by the wind. One anchor with a long scope of chain, a spare anchor ready, and the ship ready for sea are advisable precautions to take in riding out a "Norther." Vessels sometimes prefer riding near the shore due to the undertow, but there is more risk of being fouled by other vessels and the sea is felt considerably.

During the summer, S gales blow in squalls off the heights. However, the sea breeze has been reported to blow so strongly on summer afternoons that people seek shelter, and communication between vessels in the bay and the shore becomes difficult.

Clear weather and a high barometer precede strong S winds. Cloudy weather and a low barometer, accompanied by the remarkable visibility of such distant land as the heights near Puerto Papudo or Puerto Pichidangui, indicates N winds. At any time, but especially during the months of June, July, and August, strong N winds which reach gale force and last from 24 to 36 hours may close the port to shipping. However, an average of only one or two such storms strike Valparaiso each year. The climate at Valparaiso is mild.

Fog occurs more frequently during March through May than the other months of the year. The fog may be so dense that it impedes navigation. Under these conditions, vessels making landfall may be guided by radar. During the spring and summer months from September to March, the surf at Bahia de Valparaiso is appreciable, but not great enough to seriously hamper any operation. There is a steady swell resulting in breakers of 0.9 to 1.5m all along the shore, except in the area within the breakwater.

During the fall the surf becomes heavier, but small boats may be launched on all except the windiest days. During the winter from June through August, there are heavy swells, except on rare calm days, which prohibit normal small boat operations. Breakers usually average 2.1 to 2.4m during the winter or may be greater for 3 or 4 days after each occasional heavy storm.

Tides—Currents.—The mean tidal range here is 0.9m, while the spring range is 1.2m. Currents in the area are imperceptible once within approximately 5 miles from the port unless in inclement weather.

During N winds there is a set toward the W shore of the bay. During S winds, no set is perceptible.

Depths—Limitations.—The harbor is protected by a breakwater which extends from Duprat Point for 300m on a bearing of 080°, then for 600m on a bearing of 140°, and then for 100m on a bearing of 135°. The breakwater elbow and the SE extremity of the breakwater are marked by lights. Three berths located on the inboard side of the breakwater are used by the Chilean Navy and by visiting military vessels. Berth E is located furthest N, with Berth D in the middle and Berth C at the S end closest to the bay.

Berth E is located at the end of the Navy Pier, which acts as the breakwater. Consequently, it is vulnerable to inclement weather

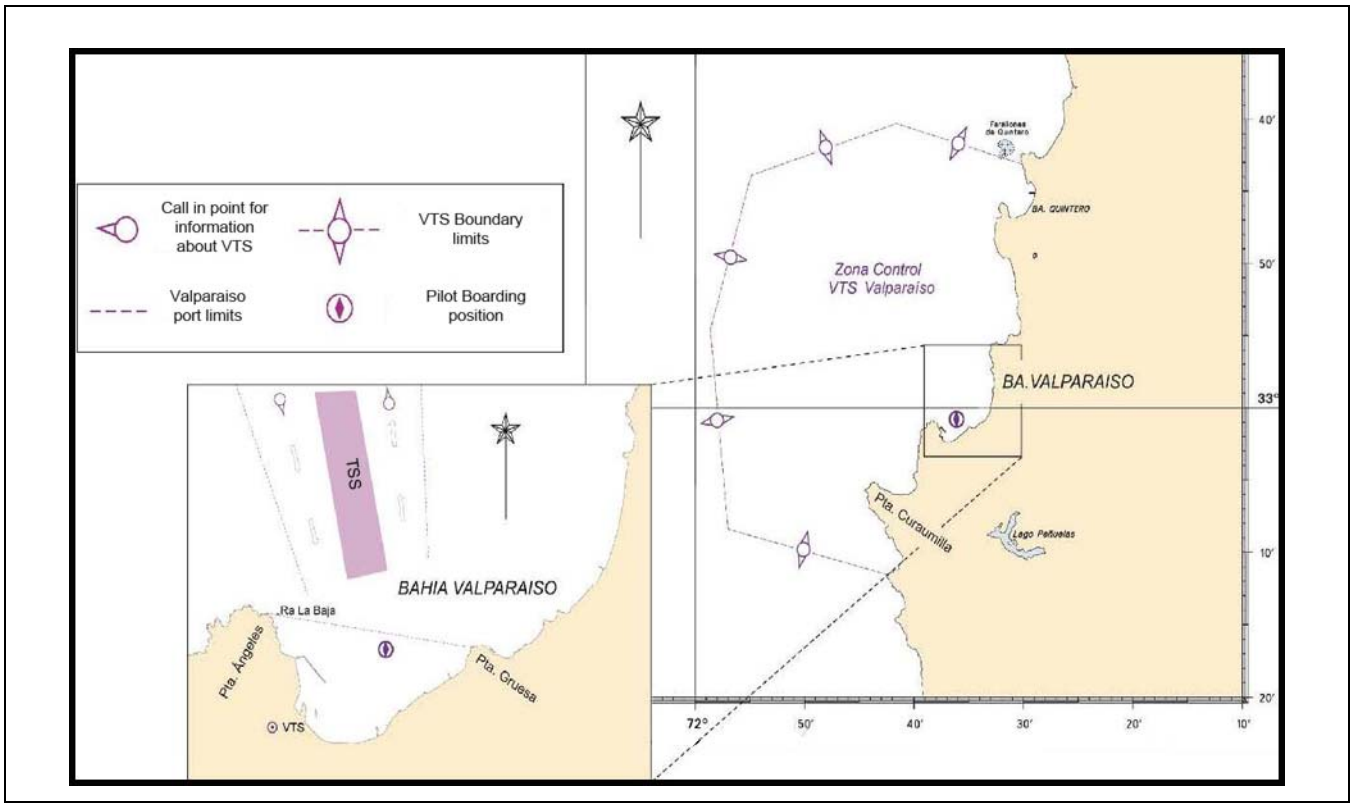
Ten numbered berths in the port area, spread out over one main quay area and two separate piers, handle containers, liquid, and bulk cargo. The main Terminal 1, the main quay on the W side of the harbor, consists of Berth No. 1 through Berth No. 5, numbered N to S and is operated by Terminal Pacifico Valparaiso (TPSV).

Espigon de Atraque, located close S of Berth No. 5, extends about 250m N into the bay. Terminal 2, consisting of Berth No. 6 through Berth No. 8, is situated around this pier and is operated by Empressa Portuaria Valparaiso (EPV).

Valparaiso—Berth Information

Berth	Maximum Vessel				Remarks
	LOA	Draft	Beam	Size	
Muelle Baron					
Pier (E)	170m	—	—	—	Breakbulk. Closed.
Pier (W)	170m	—	—	—	Breakbulk. Closed.
TPS - Valparaiso					
No. 1	330m	13.8m	48.2m	134,869 dwt	Containers, breakbulk, bunkers, and reefer. Continuous berthing length of 740m.
No. 2	347m	13.8m	48.2m	123,777 dwt	
No. 3	366m	13.8m	48.5m	141,334 dwt	
No. 4	154.3m	9.4m	24.0m	16,950 dwt	Containers, breakbulk, bunkers, reefer, and ro-ro passengers/ vehicles/rail. Continuous berthing length of 266m.
No. 5	133m	9.4m	25.4m	13,390 dwt	
Terminal 2					
No. 6	185m	—	32.2m	50,806 dwt	Containers, breakbulk, bunkers, and reefer.
No. 7	125m	—	—	—	Containers and breakbulk.
No. 8	235m	—	36.0m	73,296 dwt	Cruise vessels, containers, breakbulk, bunkers, and reefer.

A floating drydock, 167m in length, capable of docking vessels up to 30,000 dwt with a maximum draft of 7.5m, is



VTS Valparaiso

located about 200m E of Espigon de Atraque.

Muelle Baron, 0.8 mile ESE of Espigon de Atraque, extends about 215m NNW from the S shore of the bay and is presently under development.

Terminal 1 and Terminal 2 handle containers and general cargo, while breakbulk and general cargo are handled at Muelle Baron.

A tanker and bulk liquid cargo terminal, consisting of three offshore multi-point moorings connected to submarine pipelines, lies at Las Salinas, about 3.8 miles NE of the breakwater head. The maximum tanker length allowed is 190m at all three berths. The ESSO terminal is located farthest to the N, with the COPEC terminal in the center, and the COMARSA terminal farthest to the S. The ESSO and COPEC terminals both have depths of 14.9m at the berths and can accommodate tankers as large as 45,000 dwt with a maximum draft of 12.9m. The COMARSA terminal has a depth of 12.9m at the berth and will accommodate tankers as large as 50,000 dwt with a maximum draft of 12m.

Mooring buoys are situated in areas close NNE of Muelle Baron and Espigon de Atraque.

The port has repair facilities and a floating drydock is situated E of Espigon de Atraque.

Aspect.—Punta Angeles, the SW entrance point of the bay, is high and rocky. Rocas Buey, two dangerous rocks, lie on foul ground which extends about 0.3 mile NW, N, and E of the point.

The city of Valparaiso sits on the hills surrounding the bay in the shape of an almost perfect amphitheater.

Punta Gruesa, where a light is shown, lies about 2.8 miles

Punta Angeles Light

ESE of Punta Angeles and is prominent. Bajo Ester, a shoal patch with a least depth of 6.6m, lies about 0.6 mile WSW of the point. Isolated depths of 2.6 and 3.5m lie 0.2 mile SSW of Bajo Ester.

Numerous dangerous wrecks lie within the waters of the port and can best be seen on the chart.

From the N the buildings of the city are reported to be visible for a great distance in clear weather, while the city lights can be

Aerial view of Valparaiso Harbor

seen up to 40 miles away.

A light is shown from a conspicuous tower, 18m high, standing at the NW side of Punta Angeles. A radiobeacon is situated at the light tower.

The Presidential Palace and several governmental buildings standing about 3.8 miles E of Punta Angeles on Cerro Castillo are conspicuous, as is a university campus, 0.8 mile SW of Punta Gruesa. A group of conspicuous buildings, which form the Naval School, stands on Punta Angeles and the conspicuous building of the Naval War Academy stands on the top of a cliff about 0.5 mile W of the breakwater head. From the S, the cemetery at the W side of Punta Angeles is conspicuous.

A light is shown from a prominent tower, 15m high, standing on the elbow of the breakwater. Lights are shown from the breakwater head and Punta Gruesa.

Numerous other prominent buildings and masts with obstruction lights stand on the surrounding hills.

Pilotage.—Pilotage is compulsory. The pilot boarding area is in an area about 0.8 mile ENE of the breakwater head and can best be seen on the chart.

Two sets of visual ranges, utilizing the light on the breakwater elbow as a common front beacon, are available for compass adjustment within Bahia de Valparaiso.

Pilots are also available at Valparaiso for vessels intending to navigate the coast and channels S of 41°S, including Estrecho de Magallanes.

Regulations.—The vessel's ETA should be initially sent 72 hours prior to arrival and confirmed 24 hours and 4 hours prior arrival. The initial ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

During heavy SW swells, vessels may be required to put to sea to avoid damage to docks and ships.

An IMO-adopted Traffic Separation Scheme lies in the approaches to the port and can best be seen on the chart. The inbound traffic lane is situated W of the separation zone. Caution should be taken since tankers approaching or leaving the terminals at Las Salinas are not required to use the traffic lanes. It has also been reported (2010) that the Traffic Separation Scheme is not always followed closely by all ships.

Vessel Traffic Service.—A Vessel Traffic Management System (VTM-STM) operates 24 hours in the harbor limits E of a line between Ra La Baja (Punta Angeles) and Punta Gruesa (2.8 miles ESE) and outward to the boundary depicted in the diagram titled **VTS Valparaiso**. The VTS center is located in the city center.

Participation in VTS Valparaiso is mandatory for all vessels operating within the boundary limits of the VTS and at anchor. Participation is voluntary for vessels passing through the VTS limits without stopping. Vessels entering the VTS Valparaiso operational limits should advise their name, call sign, and ETA

at the VTS limits 1 hour in advance through both VHF channel 16 and Valparaiso Capuerto Radio (CBV20). Vessels departing the VTS operational area must contact VTS Valparaiso with their name. departure time from the port, port destination, and the ETA at that destination.

The vessel's Automatic Identification System (AIS) equipment must be working and turned on while vessel is within the bay and for any other vessels transiting through the VTS operational area.

Additional communication with VTS Valparaiso is to be carried out in accordance with the information in the table titled **VTS Valparaiso—Contact Information**.

Signals.—Weather signals are shown from a signal mast located on the Port Captain's building situated close SSW of the S extremity of the W side of Espignon de Atraque, as follows:

1. A blue pennant, with a white circle or a green light—Indicates variable weather.
2. One black sphere, or a red light.—Indicates bad weather with N winds of force 4 to 7.
3. Two black spheres, or two red lights—Indicates stormy weather.

Valparaiso—Contact Information	
VTS Valparaiso	
Call sign	Valparaiso Capuerto Radio (CBV20)
VHF	VHF channels 14 and 16
Telephone	56-32-2208505
	56-32-2208586
Facsimile	56-32-2208548
E-mail	vtsvalparaiso@directemar.cl
Notes: 1. VHF channel 16 should be monitored at all times. 2. VHF channel 14 is used for coordination with VTS Valparaiso upon entering the VTS operational area. 3. VHF channels 8, 68, and 69 are used exclusively for piloting maneuvers.	
Harbormaster	
Call sign	Valparaiso Radio (CBV20)
VHF	VHF channels 9, 14, and 16
Telephone	56-32-2208505
Facsimile	56-32-2208596
E-mail	cpvalparaiso@directemar.cl
Port Authority	
Telephone	56-32-2448800
Facsimile	56-32-2444190
E-mail	puertovalparaiso@puertovalparaiso.cl

Contact Information.—See table titled **Valparaiso—Contact Information**:

Additionally messages can be sent via Playa Ancha Radio (CBV) Valparaiso which maintains a constant watch on 500 kHz and works on 8522 and 16663 kHz.

In fog, radar guidance can be provided on request by VHF to the harbormaster.

Anchorage.—Anchoring is prohibited in the harbor area and around the breakwater except for an area designated for small vessels, with a bottom of mud and shells, between Espigon de Atraque and Muelle Baron, as shown on the chart. However, caution needs to be exercised if using the small vessel anchorage as there are numerous wrecks, also charted, located within this area.

Twenty-two designated anchorage areas are located outside the harbor in Bahia de Valparaiso, with the center positions of these anchorages, as follows:

1. Area A—33°02'03"S, 71°36'22"W.
2. Area B—33°01'51"S, 71°36'11"W.
3. Area C—33°01'24"S, 71°35'58"W.
4. Area D—33°01'07"S, 71°35'04"W.
5. Area E—33°01'08"S, 71°34'44"W.
6. Area F—33°00'56"S, 71°34'30"W.
7. Area G—33°00'44"S, 71°34'13"W.
8. Area H—33°00'32"S, 71°34'27"W.
9. Area I—33°00'44"S, 71°34'55"W.
10. Area J—33°00'44"S, 71°35'30"W.
11. Area K—33°00'13"S, 71°35'29"W.
12. Area L—33°00'13"S, 71°34'53"W.
13. Area M—33°00'01"S, 71°34'20"W.
14. Area N—32°59'42"S, 71°35'31"W.
15. Area O—32°59'42"S, 71°34'55"W.
16. Area P—32°59'30"S, 71°34'20"W.
17. Area Q—32°59'31"S, 71°33'44"W.
18. Area R—32°59'01"S, 71°34'02"W.
19. Area S—32°59'09"S, 71°34'53"W.
20. Area T—32°59'09"S, 71°35'32"W.
21. Area U—32°58'40"S, 71°35'11"W.
22. Area V—32°58'40"S, 71°34'29"W.

Caution.—Submarine cables extend SW from the floating drydock to the root of Espigon de Atraque.

Numerous wrecks and obstructions, best seen on the chart, lie within the vicinity of the port and wreck lies at the end of the TSS in location 33°01'52"N, 71°36'03"W.

Vessels using the Inshore Traffic Zone are recommended to stay well clear of the dangers fronting Punta Angeles.

Numerous fishing vessels may be encountered in the approaches to the port.

Winds from the N may render the berths alongside Muelle Baron unusable.

Bahia de Valparaiso to Puerto San Antonio

5.15 Between Punta Angeles and Puerto San Antonio, about 33.3 miles S, the irregular coast is indented by numerous bays and bights. It is rugged and steep-to in places, and interspersed with sandy beaches. Most of the coast is backed by low hills. Above and below-water rocks fringe the prominent headlands to a distance of about 2.5 miles offshore.

Bahia Laguna Verde (33°06'S., 71°42'W.) lies between the

W side of Punta Angeles and Punta Curaumilla, about 6.5 miles SW. The bay is bordered by cliffs, except at its head, where there is a sandy beach. There are depths of about 91m across the entrance, decreasing gradually toward shore. A strong current has been observed to flow into the bay. A pier, belonging to a conspicuous power station, extends about 30m into the bay from a position about 3.3 miles E of Punta Curaumilla. Mooring buoys in 13.7m, about 0.2 mile NNE of the pier. There is also a mooring buoy 0.2 mile NNW of the head of the pier. Anchorage can be taken in the bay, in an emergency, in about 50m, about 0.5 mile offshore. The bay is protected from S winds, but is completely exposed to N winds.

Punta Curaumilla (33°06'S., 71°45'W.) is steep-to and rocky. A light is shown from the W extremity of the point. Islote Lobos, rocky and of yellowish-white color, lies about 0.1 mile offshore, about 0.2 mile W of the above-mentioned promontory. Punta Curaumilla is reported to provide a good radar return.

Cerro la Campana de Quillota, about 1,890m high, lies about 26 miles ENE of Punta Curaumilla and can be seen in clear weather. With exceptionally good weather, the Andes Mountains are visible and Volcan Aconcagua may be identified easily because of its great height. It is 6,949m high and lies about 90 miles ENE of Punta Curaumilla.

Monte Curauma, about 5 miles SE of Punta Curaumilla, lies about 0.5 mile inland and attains an elevation of about 457m. This summit is generally the first land which can be made out distinctly when approaching Bahia de Valparaiso from the S.

Rada de Quintay occupies a bight between Punta Curaumilla and Punta Loros, about 6 miles SSE. The shore of the bay is cliffy, except at its head where there is a sandy beach. Anchorage, with poor holding ground, may be taken about 0.8 mile NNE of Punta Loros. A small pier, with some mooring buoys, is situated at an abandoned whaling station in the S part of the bight and is used by local fishing craft. Lights are occasionally shown from the shore to assist vessels entering the cove.

Punta Loros (33°12'S., 71°42'W.), which is reported to give a good radar return, is steep-to, rocky, and about 50m high. Roca Fraile, a small rocky islet, lies off Rada de Quintay, about 0.8 mile offshore NNW of Punta Loros. Punta Gallo, located about 3 miles S of Punta Loros, is a dark steep-to headland, about 69m high.

Rada El Algarrobo is entered between Punta Rincon (33°19'S., 71°40'W.) and Punta Pena Blanca, about 3.5 miles farther SW. The village of Algarrobo stands on the S shore of the roadstead and is a pleasure resort. A light is shown from Islote Pajaros Ninos, located about 0.5 mile NE of Punta Rena Blanca. Numerous rocks, shoals, and islets lie in the approaches to the roadstead and can best be seen on the chart. Los Farallones, a group of above and below-water rocks, are the outermost danger and lie about 1 mile N of Punta Pena Blanca.

Anchorage.—Anchorage can be taken in the S part of Rada El Algarrobo, in 20.1 to 22m, sand and rock, about 0.5 mile offshore. Local knowledge is advised.

5.16 Punta Pena Blanca (33°21'S., 71°42'W.), the S entrance point of Rada El Algarrobo, is a flat-topped rock about 15.2m high. It is a good landmark. The sides of the rock are precipitous and of a whitish-gray color, which is prominent against the darker background. The rock is joined to the mainland by a spit which covers only during unusually high tides. Care must be taken not to confuse Punta Pena Blanca with Punta Talca, about 4 miles S.

Breakers extend 0.5 mile offshore, about 0.4 mile S of Punta Pena Blanca, and there are breakers to the W and NE of the point.

Punta Talca (33°25'S., 71°43'W.), a conspicuous mass of rocks about 33m high, appears to be a castle. It has a light appearance when seen from the N and a dark appearance when seen from S. The point is fringed by below-water rocks. Punta Cordorba, about 2.5 miles SE, is also low and rocky. A sandy beach extends about 2.5 miles SSE of Punta Cordorba.

Punta Lacho, a low and rocky point, lies about 5.5 miles SE of Punta Talca and is the N entrance point of Bahia Cartagena.

Bahia Cartagena indents the coast about 1.5 miles between Punta Lacho and Punta Vera, about 3 miles S. Anchorage may be taken in the SE part of the bay, in 16.5 to 23.8m, sand, about 0.3 mile offshore with Punta Vera bearing 247°. Roca Canova, which dries, lies close to the S shore about 0.5 mile ENE of Punta Vera.

Punta Vera is the NW extremity of Fronton de San Antonio, a promontory which projects about 1 mile W from the general trend of the coast and about 1.8 miles S. Cerro Norte 141m in elevation, rises about 1 mile SE of Punta Vera and is prominent.

Punta Panul is located 1.3 miles S of Punta Vera. The point is rocky, steep, and fronted by ridges of stone over which the sea breaks. A light is shown from a prominent tower, 9m high, standing close SE of the point. A shoal, with a depth of 16.9m, lies 2.5 miles WNW of Punta Panul.

Cerro Centinela, the summit of Fronton de San Antonio, rises to an elevation of 170m about 0.5 mile E of Punta Panul. A conspicuous white statue on a conical pedestal stands at the summit, and a radio mast stands close by it. It has been reported that the statue is not visible from the N.

Puerto San Antonio—Berth Descriptions

			Maximum Vessel				
Berth	**Length**	**Depth**	**LOA**	**Draft**	**Beam**	**Size**	**Remarks**
San Antonio Terminal Internacional (ST1)—Terminal Molo Sur							
Extension	130m	—	—	—	—	—	Containers, breakbulk, multipurpose, bunkers, and reefer. Closed.

Puerto San Antonio—Berth Descriptions							
			Maximum Vessel				
Berth	Length	Depth	LOA	Draft	Beam	Size	Remarks
No. 01	—	15.0m	366.4m	13.9m	48.4m	15,792 dwt	Containers, chenicals, CPP, vegetable oils, bunkers, reefer, and ro-ro/lo-lo. Continuous berthing length of 930m.
No. 02	—	15.0m	346.9m	13.6m	45.8m	110,387 dwt	
No. 03	—	11.3m	365.7m	11.2m	48.1m	157,792 dwt	
DP World - San Antonio							
C1	350m	—	333.2m	15.0m	48.2m	123,587 dwt	DPP, PCC, cruise vessels, Containers, breakbulk, multipurpose, and bunkers. Continuous berthing length of 700m.
C2	350m	—	333.2m	15.0m	48.2m	123,587 dwt	
No. 04/05	—	—	112m	10.4m	38.0m	69,990 dwt	PCC, breakbulk, and bunkers. Continuous berthing length of 237m. Berthing is restricted in bad weather.
No. 06/07	—	—	163m	7.1m	36.0m	73,296 dwt	
Puerto Panul Terminal							
No. 08	38m	11.6m	230.0m	10.9m	32.2m	64, 049 dwt	Aggregates, grain, and bunkers, Berthing length of 185m (including dolphins).
QC Terminals Chile							
No. 09	68m	—	190.0m	10.2m	32.2m	35,000 dwt	Chemicals, vegetable oils, and bunkers.

Punta San Antonio, the SW end of Fronton de San Antonio and the N entrance point of Puerto San Antonio, lies about 0.5 mile SSE of Punta Panul. The point is high and steep. Several conspicuous tanks stand close NW of the point.

Puerto San Antonio (33°35'S., 71°38'W.)

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5.17 Puerto San Antonio occupies a small bight between Punta San Antonio and a position about 0.8 mile SSE. The port has facilities for handling general, bulk, container, ro-ro, and tanker traffic. It is well-sheltered from SW winds, but heavy swells cause vessels to range alongside. Changes are being made to the infrastructure of Puerto San Antonio to include breakwater and a jetty. The Puerto Exterior project (PGE) consists of the construction and operation of two new ports Terminal 1 (TS1) and Terminal 2 (TS2). Construction is scheduled to start in 2022 and projected to end in 2031. The construction is in phases which could last approximately 12 years.

San Antonio Home Page
http://www.saiport.cl

Winds—Weather.—The prevailing winds are S from October to March, with strong breezes blowing in the afternoon and dying down at sundown. Severe storms usually come from the N, but the port is protected from them by the hills in the vicinity. A strong swell, which causes vessels to range heavily, occurs frequently in the port.

Tides—Currents.—The mean spring range is 1.1m while the mean neap rise is 0.7m.

With fresh S or SW winds, a N set has been observed across the harbor entrance, at a rate of 2 to 3 knots. With strong N, NW, S, or SW winds, strong currents have been observed within the harbor itself, hampering cargo operations.

Depths—Limitations.—The harbor is divided into the N basin and the S basin by Espigon de Atraque, which extends NW from the middle of the E shore.

The N basin contains the Vopak Terminal for chemical tankers, with three mooring bollards and two buoys at Muelle Policarpo Toro Panul, at the extreme NW part of the basin. Close E of the Vopak Terminal is one berth for bulk cargo at the head of a T-shaped pier at Muelle Panul. Two mooring dolphins are situated 56m E and 40m W of the pier head.

The S basin contains a dedicated container terminal with three berths located along the E side of the S breakwater. Espigon de Atraque, also called Espigon Terminal, has four additional berths. See the table titled **Puerto San Antonio—Berth Descriptions** for detailed descriptions of these berths.

Aspect.—The port is protected by two breakwaters. The N breakwater (Molo Norte) extends S for about 100m from a point on the shore close SE of Punta San Antonio. The S breakwater (Molo Sur) extends NNW for about 1,000m, forming the harbor entrance which is about 400m wide. A light is shown at the N end of this breakwater. A line of breakers extends S from a point on the seaward side of the S breakwater about 300m from the head. There is not much room for maneuvering for vessels over 130m long. Numerous V-AIS buoys have been established.

A three-story hotel, with a lighted sign, and a gray hospital building are conspicuous. Lights are shown from the breakwater heads and ranges indicate the entrances into the harbor basins.

The Calbu Hills rise to an elevation of 1,100m about 13 miles E of the bay.

Pilotage.—Pilotage is compulsory. Vessels awaiting a pilot

boarding should remain in a position approximately 1 mile SW of the light shown at the N end of Molo Sur. Pilots board vessels within 300m of position 33°35'00"S, 71°38'48"W.

San Antonio—Contact Information	
Pilots	
VHF	VHF channels 9, 14, and 16
Telephone	56-35-2584852
Facsimile	56-35-2584852
Port Radio	
Call sign	CBV22
VHF	VHF channels 9, 14, and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	56-35-2211761
Facsimile	56-35-2231043
Harbormaster	
Telephone	56-35-2584800
Facsimile	56-35-2231043
E-mail	cpsanantonio@directemar.cl
Port Authority	
Telephone	56-35-2586000
Facsimile	56-35-2586015
Muelle Panul Terminal	
Telephone	56-35-2355900
Facsimile	56-35-2335930
Email	info@.puertopanul.cl
Web site	http://www.puertopanul.cl
San Antonio Terminal Internacional (ST1)	
Telephone	56-35-2201600
Facsimile	56-35-2201661
Web site	http://www.stiport.com

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until the final confirmation is sent 3 hours prior to arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

All vessels docking or operating within the port limits must have operable AIS and have it turned on for the duration of their stay. Vessels shifting in the port more than 50% of their length must employ the services of one or two Pilots as appropriate to the vessels length as well as utilizing the support of additional tugs and mooring boats depending upon berth and vessel type.

Contact Information.—Pilots and other places in the port can be contacted, as indicated in table titled **San Antonio—Contact Information**.

Anchorage.—Anchorage is available, in depths of 28m, sand and mud, about 1.3 miles W of the S breakwater head. Anchorage can also be obtained, in a depth of 18m, about 0.3 mile SW of the S breakwater head and, in a depth of 31m, about of 0.8 mile SW from the same breakwater head.

Caution.—Due to being narrow, caution is advised when maneuvering within the harbor, especially for vessels that exceed 130m in length.

A harbor limit which is also a restricted area, in which fishing and anchoring are prohibited, has been established W of Puerto San Antonio. The area is bounded by lines joining the following positions:

a. 33°34'44"S,71°37'35"W. (coast)
b. 33°35'10"S,71°37'27"W. (coast)
c. 33°35'10"S,71°39'00"W.
d. 33°34'29"S,71°39'00"W.
e. 33°34'29"S,71°37'40"W. (coast)

Puerto San Antonio to Bahia Concepcion

5.18 Punta Santo Domingo (33°37'S., 71°38'W.), low and rocky, lies about 2 miles S of Puerto San Antonio. The mouth is inaccessible. The Rio Maipo lies about 0.8 mile NE of Punta Santo Domingo. The sea always breaks along the coast between Puerto San Antonio and the Rio Maipo. During strong W winds, the breakers extend about 1 mile offshore.

An aeronautical radiobeacon is situated about 1 mile S of Punta Santo Domingo.

Caution.—A shoal, with a depth of 16.9m, is located in position 33°35.0'S, 71°40.5'W. Another shoal, with a depth of 16.9m, lies about 2 miles W of Punta Panul.

Punta Toro (33°46'S., 71°48'W.), about 13 miles SW of Punta Santo Domingo, is low and sandy. Above and below-water rocks lie up to 1 mile off the point. Bajo Intermedio, which breaks, lies almost 0.8 mile N of Punta Toro. Bajo Toro, a rocky patch on which the sea breaks, lies about 1.5 miles N of Punta Toro.

Roca Coronilla, a below-water rock, lies about 4.5 miles N of Punta Toro. It has been reported that it has a depth of 1.2m. The sea seldom breaks over it in fine weather. Its position and existence is doubtful.

Bajo Rapel (33°51'S., 71°53'W.), an extensive reef with its outer extremity about 3.3 miles offshore, 6 miles SW of Punta Toro, is the only charted offshore danger along this part of the coast. There are three rocks, awash, on this reef which always break.

Caution.—Vessels should not approach the land in the vicinity of this reef as they will be set toward the shore by the heavy SW swell and prevailing current which may run at a velocity of more than 1 knot around Punta Topocalma toward Bajo Rapel.

5.19 Punta Perro (33°55'S., 71°52'W.), about 8.5 miles SSW of Punta Toro, is a low sandy tongue. It is the S entrance point of the Rio Rapel. Unsheltered anchorage may be taken, in 14.6m, about 0.5 mile offshore and about 0.5 mile NW of Punta Perro.

Caleta Matanza occupies a bight about 3 miles SE of Punta Perro. The bight can be identified by a ravine at its head

San Antonio

San Antonio Container Terminal Internacional

through which a stream flows. The hills N of the ravine are green, while those S of it are sandy. The village of Matanzas lies near the head of the cove.

Numerous reefs, rocks and islets, best seen on the chart, lie in the vicinity of Caleta Matanza.

Anchorage.—Vessels can take anchorage, in 12.8 to 16.5m, mud and sand, about 0.2 mile offshore and almost 0.3 mile NE of Punta Extremo, the S entrance point of Caleta Matanza. There is room for only one vessel at this anchorage and it is exposed from SW through N to NE.

Islotes Pupuya lie about 0.7 mile SW of Punta Extremo. The largest islet is a steep whitish-colored rock with a flat top which slopes WSW. The passage between the islets and the mainland can only be used by small craft.

Caleta Tuman lies between Punta Los Barrancos, about 5.5 miles SW of Punta Extremo, and Punta Tuman, about 2.3 miles farther SW. Farallon del Infiernillo, a dark islet in the form of a pyramid, lies about 0.1 mile offshore and about 0.5 mile NNE of Punta Los Barrancos.

Anchorage.—Anchorage can be taken in the S part of Caleta Tuman, in 21.9 to 25.6m, sand, about 0.3 mile offshore N of Punta Tuman. The anchorage is sheltered from S winds and swell.

Punta Domingo, 0.5 mile SSW of Punta Tuman, is a steep-to point and about 116m high. The point can be identified by yellow sand hills which begin here and extend S to Punta Topocalma. The sandhills are backed by higher tree-covered land.

Punta Topocalma (34°08'S., 72°01'W.), about 2.5 miles SW of Punta Domingo, is a bluff promontory about 122m high with a steep narrow valley which separates it from the mainland. A light is shown from the summit of the promontory.

Anchorage.—Anchorage can be taken, in 32 to 36m, sand and mud, about 0.5 mile N of the point, in Rada Topocalma. The anchorage is exposed from the N through W to S, and cannot be recommended for long periods or in unfavorable winds.

5.20 Punta Pichilemu (34°23'S., 72°01'W.), about 15 miles S of Punta Topocalma, is low, rocky, and fronted by rocks. Puerto Pichilemu, a small cove, lies about 1 mile NE of the point. La Puntilla, the SW entrance point of the cove, can be identified by a large square building on its summit. Above and below-water rocks extend up to almost 0.3 mile NNE of La Puntilla.

The E and S shores of Puerto Pichilemu are sandy, while the SW shore is rocky. Anchorage can be taken, in 14 to 15m, sand and mud, about 0.5 mile offshore NE of La Puntilla. The anchorage is sheltered from the S, but is exposed to the W. Pichilemu, a resort, is situated on the SE shore of the cove.

Several conspicuous lights, visible from seaward, are shown from a point on the coast about 6 miles N of Punta Pichilemu.

Punta Lobos, about 2.5 miles SSW of Punta Pichilemu, is an excellent landmark. There are two high and conspicuous rocks close off the N extremity of the point. A large white building with a red roof stands on the point.

Punta Sirena lies about 7 miles S of Punta Lobos. The coast between recedes about 1.5 miles E to form a bay. The N part of the bay consists of a sandy beach, while the S part is rugged and rocky. The entrance of Laguna de Cahuil lies at the head of the bay.

Rada Llico (34°46'S., 72°07'W.) can be identified from seaward by the brown sandy heights E of Llico. Punta Llico, at the S end of the bight, is the W entrance point of a channel which leads to Laguna de Vichuquen. The point rises to a height of about 111m. Cueva de Tricahue, about 250m high, lies about 1.5 miles S of Punta Llico. The village of Llico stands on the S shore of the channel. The bar at the mouth of the channel is navigable only by small craft with local knowledge.

Anchorage.—Vessels can take anchorage about 0.5 mile offshore NNW of Punta Llico, in about 35m, mud and shell. The anchorage is exposed to all winds from the NW to S. During strong N winds, it is advisable to put to sea although the holding ground is good.

Punta Cardonal lies about 5 miles SW of Punta Llico. The coast between is fronted by submerged rocks. A group of houses stands about 4 miles S of the point, and a prominent summit 335m in elevation, stands about 2 miles E of the point.

5.21 Punta Roncura (34°58'S., 72°11'W.), the S entrance point of the Rio Mataquito, lies about 10 miles SSW of Punta Cardonal. Roca el Penon, a prominent large rock, lies close N of the point and marks the N entrance point of the river.

Punta Arenas lies about 21 miles SW of Punta Roncura. The coast between is low and sandy. Hills rising to 390m back the coast about 3 miles inland.

Puerto Constitucion (35°19'S., 72°23'W.) about 3.5 miles S of Punta Arenas, is situated at the mouth of the Rio Maule. The river empties between Punta Quivolgo and Punta Ventanas, almost 0.3 mile W. The entrance to the river is easily identified. Northward is a long, low, sandy beach which extends beyond the range of vision while S of the entrance the land is high and the shore is rocky. There are two incomplete moles on the W side of Punta Ventanas. The area within the moles was intended to be a harbor, but is now filled with sand.

Piedra de La Iglesia, a prominent rock which resembles a church from the offing, is situated close offshore about 1 mile SW of Punta Ventanas. La Gaviota and Piedra de la Lobos are two whitish rocks that lie close W and N, respectively, of Punta Ventanas. Cerro Mutrun rises to an elevation of 87m, close SSE of Punta Ventanas. A monument and a prominent television mast stand on the summit.

The town of Constitucion, which is a summer tourist resort, is situated close within the mouth of the river on the S bank. A small quay fronts the town.

The bar is subject to frequent changes and is only crossed by small craft with local knowledge.

An aeronautical radiobeacon is situated about 2 miles NE of the river mouth.

A dangerous wreck lies about 0.8 mile W of Punta Ventanas.

Anchorage.—Anchorage can be taken off the mouth of the Rio Maule, as convenient. The anchorage is exposed and should only be used in emergency.

5.22 Cabo Humos, a bold and prominent headland is located 6 miles SW of Puerto Constitucion. It is fronted by submerged rocks and is radar prominent.

Depths of 14m and 13m have been reported to lie, respectively, about 18 miles NW and 16 miles WNW of the cape. The existence of these depths should be considered doubtful.

Ensenada Maguellin, a cove used by fishing craft for shelter, lies midway between the mouth of the Rio Maule and Cabo

Humos. There is a small pier in the cove with three prominent warehouses near the root. Ensenada Maguellin is only sheltered from winds between the E and S and there is always a running swell. With winds above 15 knots from any other direction, sea conditions can make anchoring unsafe.

Caution.—Strong E currents have been reported to exist between Punta Topocalna and Cabo Carranza, with many groundings between Cabo Humus and Cabo Carranza. Vessels are urged to exercise the appropriate caution in navigation here.

5.23 Cabo Carranza (35°35'S., 72°38'W.), about 12 miles SW of Cabo Humos, is formed by a wide and low spit of land. The cape lies between Punta Santa Ana, the NW extremity, and Punta La Vieja, a low tongue of land which forms the SW extremity about 3 miles SSW of Punta Santa Ana. The cape should be given a wide berth as the coast has not been examined and is frequently obscured by haze. Foul ground is reported to lie up to 1 mile off the cape, while a rock, position approximate, which breaks, lies 1.5 miles NW of it.

A light is shown from a tower, 19m high, standing on the cape. The keeper's house, painted white with a prominent red roof, is connected to the tower.

Cabo Carranza Light

Bahia Chanco recedes about 3.5 miles E between Punta La Vieja and Punta Puchepo, about 14 miles S. The shore of the bay is sandy. Rada Pelluhue, a cove at the S end of Bahia Chanco, provides anchorage, in 17m, sand and rock, about 0.3 to 0.5 mile offshore NW of the head of the cove. Rada Curanipe, another small cove, lies just NE of Punta Trarao, a rock on the extremity of a sandy point about 0.3 mile NE of Punta Puchepo. The cove affords little protection from S winds and the swell is always heavy.

Anchorage.—Vessels can take anchorage, in 14 to 20m, sand, about 0.5 mile N of Punta Trarao. Smaller vessels may anchor, in 10m, sand, about 0.3 mile N of Punta Trarao. Vessels should always be prepared to put to sea, as the holding ground is not good.

The village of Curanipe lies close within the combined mouths of the Rio Parron and the Rio Curanipe, which flow into Rada Curanipe about 0.2 mile E of Punta Trarao.

5.24 Punta Puchepo (35°49'S., 72°36'W.) is low and sandy with a central strip of rock. Montes Pelados are located about 3 miles E of Punta Puchepo. The summits of these hills are bare and dark and attain a height of 396m.

Punta Nugurne (35°59'S., 72°48'W.), about 11 miles SW of Punta Puchepo, is a prominent point with a mound on its extremity. Punta Nugurne is reported to give a good radar return up to 17 miles. A rock, on which the sea breaks, lies about 0.3 mile W of the point. A shoal, with a depth of 18m, lies about 9.5 miles WNW of the point.

Rada Buchupureo is a small cove which lies on the N side of Punta Maquis, about 6 miles S of Punta Nugurne. The cove can be identified by the sandy beach which forms the E side of the bay, and by the road which passes over Punta Maquis. The Rio Buchupureo empties into the cove about 0.4 mile E of Punta Maquis, and the town of Buchupureo lies about 0.5 mile within the mouth of the river on the N bank. Three bridges cross the river close within the mouth.

Anchorage.—Vessels can take anchorage, in 21.9m, sand, almost 0.5 mile offshore NNE of Punta Maquis. The holding ground is poor and the bottom is foul with lost anchors and cables. There is anchorage for smaller vessels in, 14.6m, sand, almost 0.3 mile offshore NE of Punta Maquis.

Landing is impossible, even in fine weather, and there is no maritime activity at Aldea de Buchupureo, at the S end of the bay.

5.25 Punta Maquis (36°05'S., 72°48'W.) is steep-to, rocky, and about 213m high. Punta Maquis is reported to give a good radar return up 25 miles. Farallon Iglesia de Piedra, a prominent rock, lies close off Punta Iglesia de Piedra, about 1 mile S of Punta Maquis. It was reported that Punta Maquis extends about 0.8 mile farther W than charted.

Bahia Cobquecura (36°08'S., 72°48'W.) lies between Punta Iglesia and Punta Achira, a high, steep-to, and rocky point about 5.5 miles S. Punta Achira is reported to give a good radar return up to 25 miles. Bajo Miramar, a reef with some above-water rocks, lies in the S part of Bahia Cobquecura and extends about 1 mile offshore from 1.5 to 2.5 miles N of Punta Achira. The shores of the bay are unapproachable except in the finest weather. The village of Cobquecura stands about 2.8 miles S of Punta Iglesia. Lights at the village may be seen up to 10 miles seaward.

Depths of 18m (existence doubtful) lie about 8.5 and 29 miles W of Punta Achira.

Punta Coicoi, the N entrance point of the unnavigable Rio Itata, lies 12.5 miles SSW of Punta Achira. Punta Coicoi is steep-to and rocky. A reef extends a little over 0.5 mile W from the point.

Bahia Coliumo (36°32'S., 72°56'W.), about 10 miles SSW of Punta Coicoi, is entered between Punta Lingueral and Punta Blanca, almost 1 mile W. The bay recedes S for about 1.5 miles. Punta Blanca is low and rocky, but rises steeply to Morro Necoche, which appears to be an islet from the N. Islote Hormiguita, a rocky islet, lies about 91m N of Punta Blanca. The bay is a tourist resort and the Marine Biology Headquarters of the University of Concepcion. Small vessels may anchor within the bay. A pier at the SE side of the bay is reported to be destroyed.

Morro Loberia (36°35'S., 73°00'W.), a high and dark bluff, stands about 4 miles SW of the W entrance point of Bay Coliu-

mo. The coast between is fronted in most places by submerged rocks. A light is shown from the point. Above and below-water rocks lie up to 0.1 mile offshore W of the point, and the sea breaks heavily on them during N winds. The point can be identified easily, even on dark nights.

Roca Concepcion, a pinnacle rock with 5.9m over it, lies about 0.3 mile W of Morro Loberia. The sea breaks over Roca Concepcion in bad weather.

Cerro Neuque, a prominent hill, rises to an elevation of 490m about 4.5 miles E of Morro Loberia.

Punta Tumbes (36°37'S., 73°07'W.) 6 miles WSW of Morro Loberia, is steep and rocky. A light is shown from the point which is the NW extremity of a peninsula. Foul ground and rocks extend up to 0.3 mile N of the N end of the peninsula. Roca Quiebra Olas, a rock 7m high and blackish in color, lies a little over 0.8 mile NW of Punta Tumbes. Vessels should not pass between the rock and the coast of the peninsula. Islote Pan de Azucar, an islet 35m high, lies on foul ground which extends 0.8 mile W from a point about 1.8 miles SSW of Punta Tumbes.

Punta Tumbes Light

5.26 Bahia Concepcion (36°41'S., 73°02'W.) is one of the best and most protected harbors on the coast. It is entered between Morro Loberia and Punta Tumbes and recedes S for about 9 miles. There are excellent anchorages and several small ports within the bay.

Isla Quiriquina lies on the W side of the entrance. Two channels, passing on either side of Isla Quiriquina, lead into the bay. Boca Grande, the E channel, is free of dangers, except for Roca Concepcion, which has already been described above in paragraph 5.25. Boca Chica, the W channel, is narrow and difficult to navigate.

Winds—Weather.—About 40 days of heavy seas are caused by N winds during the months from May to August; there is no swell.

Good weather prevails from September to April. During the winter months, about 10 to 15 days are unworkable due to heavy rains. Fogs are more frequent from January to April than in the other months.

Tides—Currents.—The tides are affected by seismographic disturbances along the coast. In the winter, after N winds and hard rains, there is an ebb current.

Strong currents are reported to run through Boca Chica at a spring tide.

Aspect.—Boca Chica, the W channel, is narrow. Vessels over 60m in length or 600 gt are prohibited from using this channel, with the exception of warships of the Chile Navy.

Rocas Buey, the outer end of a reef which extends about 0.5 mile E from the shore, lies about 2 miles ESE of Punta Tumbes and is marked by a lighted buoy. The channel E of Rocas Buey is reduced to a navigable width of about 0.4 mile and there are strong and irregular currents in the vicinity. There is a least depth of 12m in the fairway of the channel.

Boca Grande, the main entrance channel, lies E of Isla Quiriquina.

Vessels are limited to a speed of 20 knots when passing through either entrance channel.

Numerous fishing vessels may be encountered in the entrance channels.

Isla Quiriquina, home to a naval school, is 131m high and about 3 miles in length. Foul ground extends between 0.1 and 0.5 mile off the island's shores. Punta del Faro, the N extremity of the island, lies about 3.3 miles ENE of Punta Tumbes.

A light with AIS is shown from a tower, 6m high, standing about 0.4 mile S of Punta del Faro.

Punta Arenas, a low sandy spit, is the SE extremity of the island and lies 2.5 miles SSW of Punta del Faro. A light is shown from the point. Punta Fronton, the SW extremity of the island, lies about 0.8 mile WSW of Punta Arenas. Kelp is frequently found off the point.

Regulations.—An IMO-adopted Traffic Separation Scheme (TSS) is situated within Boca Grande and may best be seen on the chart. The inbound traffic lane lies to the W of the separation zone. Caution is advised since it has been reported (2011) that many vessels entering and exiting Bahia Concepcion do not follow this TSS.

The maximum speed in Boca Grande is 20 knots.

Anchorage.—During NW winds, vessels can anchor anywhere under the lee of Isla Quiriquina outside of the prohibited area.

Caution.—A submarine cable area extends WNW from the vicinity of Punta Fronton to the E coast of the Tumbes Peninsula.

A measured distance range on a course of 036.5°-216.5° is established SE of Punta Arenas. The NE limit is marked by a pair of beacons on Cerro Amarillo and the SW limit is marked by a pair of beacons, which stand about 0.5 mile SW of Punta Arenas. Each of the beacons consists of a quadrangular framework, orange tower, 11m high, surmounted by a triangle.

A dangerous wreck, in depths of 6.9m, is located N of Isla de Los Reyes in position 36°43'03"S, 73°02'51"W. A submerged obstruction at a depth of 8.9m has been identified close S of the wreck.

5.27 Tome (36°37'S., 72°57'W.) is situated in Tome Bay, in the NE part of Concepcion Bay. The bay measures about 2 miles across and recedes 0.7 mile, providing an excellent anchorage. The port consists of a single cargo pier. Cargo consists mainly of coastal trade and exports, imported cargo is few and far between.

Tome

Depths—Limitations.—The pier is about 152m long, with a depth of 2.4m at its head. No lighters are kept at this port, as vessel entries are sporadic. When they are needed, the lighters are brought across from Talchuano and discharged at Tome, with the 3-ton cranes at the pier.

Pilotage.—Pilotage is provided out of Lirquen, VHF channel 16 (calling only) is used.

Caution.—An outfall extends W from the shore in the SW part of Puerto Tomes. An anchoring and fishing prohibited area, best seen on the chart, surrounds the outfall.

5.28 Lirquen (36°43'S., 72°59'W.) (World Port Index No. 14425) is a small privately-owned port situated on the SE side of Bahia Concepción, 8 miles NNE of Concepción and 230 miles SSW of Santiago. The port facilitates the import of bulk cargo and fertilizer and the export of logs, sawn timber, wood pulp, and general cargo.

Lirquen Home Page
http://www.puertolirquen.cl

Depths—Limitations.—Lirquen Pier No. 1 is a 615m long concrete pier, with an access bridge, built into the bay, running from S to N. Four berths (Berth No. 1 through Berth No. 4) are situated on the pier. Berth No. 1 and Berth No. 3 are on the W side and have a conveyor for bulk cargo handling; Berth No. 2 and Berth No. 4 are on the E side. A light is shown from the pier head. There are no cranes; vessels must use their own equipment. Berth No. 4 is limited to daylight berthing and has the most restrictive draft restrictions (7.4m).

Lirquen Pier No. 2, a combination pier and access bridge 712m long, is located W of Lirquen Pier No. 1. Berth No. 5 and Berth No. 6 lie on either side of at this pier.

Lirquen—Berth Information				
Berth	Maximum Vessel			Remarks
	LOA	Beam	Draft	
Pier No. 1				
No. 1	220m	31.0m	12.8m	Grain and breakbulk carriers.
No. 2	220m	31.0m	11.4m	
No. 3	200m	31.0m	9.6m	
No. 4	160m	31.0m	7.4m	
Pier No. 2				
No. 5	294m	41.0m	15.7m	Containers and bulk.
No. 6	294m	41.0m	12.8m	
Note.—Pier. No. 1, access bridge width of 7.5m. B No. 3 can be used as one berth to accommodate a maximum loa of 400m.erth No. 1 and Berth				

Aspect.—Range marks situated on the roofs of the sheds at the root of the pier assist the pilot in berthing; however, these leading marks should not be used during a fog or during a severe wind. Berthing takes place only in daylight.

Pilotage.—Pilotage is compulsory for all vessels. The pilot boards in the following positions:

a. 36°34.0'S, 73°03.0'W
b. 36°39.0'S, 73°02.0'W
c. 36°41.5'S, 72°03.0'W
d. 36°42.2'S, 73°00.1'W

Pilots can be contacted on VHF channel 9.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Tugs are arranged through an agent. All vessel movements require a minimum of two tugs. The number of tugs will be determined by the pilot who must account for vessel particulars and weather conditions.

Lirquen—Contact Information				
Contact	VHF	Telephone	Facsimile	E-mail
Port Radio "Lirquen Radio" (call sign: CBT22)	VHF channels 9, 14, and 16	56-41-2384550	56-41-2384550	—
Harbormaster	—	56-41-2385136	56-41-2650351	cplirquen@directemar.cl
		56-41-2385137	56-41-2385136	

Lirquen—Contact Information				
Contact	**VHF**	**Telephone**	**Facsimile**	**E-mail**
Port Authority	—	56-41-2406000	56-41-2384656	lirquen@puerto.cl

Tugs are compulsory for use in berthing and unberthing ships at both piers.

Signals.—When signal for variable weather is displayed, vessels must vacate Berth No. 3, Berth No. 4, Berth No. 5, and Berth No. 6. The signals are, as follows:.

1. By day—A blue triangular flag.
2. By night—One green light.

Contact Information.—Port contact information can be found in the table titled **Lirquen—Contact Information**.

Penco (top) and Lirquen (bottom)

Anchorage.—A vessel waiting to berth should anchor 0.5 mile N of the pier head of Pier No. 2 (36°42.4S., 72°59.4'W.), in a depth of 18m, good holding ground, mud and sand. Other designated anchorages areas for vessels awaiting a berth available in the following positions:

1. Anchorage 1—36°41.9'S, 72°59.3'W
2. Anchorage 2—36°41.9'S, 73°00.3'W
3. Anchorage 3—36°41.9'S, 73°01.1'W
4. Anchorage A1—36°40.3'S, 73°01.0'W
5. Anchorage A2—36°40.3'S, 73°02.2'W
6. Anchorage A3—36°41.1'S, 73°01.5'W
7. Anchorage A4—36°38.5'S, 73°00.0'W

5.29 Penco (36°42'S., 73°00'W.) (World Port Index No. 14440) is situated slightly more than 1 mile S of Lirquen at the mouth of the Rio Andalien.

Depths—Limitations.—A conveyor pier extends about 1 mile N from the shore. A phosphate factory stands at the root of the pier. Lights along the pier are prominent.

Muelle de Penco is a private facility that handles bulk fertilizer and other products. This pier is capable of handling vessels up to 220m in length with drafts up to 10.4m.

Pilotage.—Pilotage is compulsory, and may be had at the boarding ground situated about 1 mile N of the pier head. The pilot and tugs are supplied from Talcahuano. Pilots are also compulsory for vessels proceeding to the anchorage.

Anchorage.—Large vessels should anchor about 0.4 mile ESE of the pier head, in a depth of 11m. Small vessels should anchor about 0.5 mile SE of the pier head, in a depth of 9m.

5.30 Talcahuano (36°42'S., 73°06'W.) (World Port Index No. 14420) is situated along the S part of the W shore of Bahia Concepcion, and serves as a naval base and a commercial port.

Talcahuano is one of the safest and best ports in Chile, being protected from all directions; however, considerable damage has been done to the port infrastructure by an earthquake in February, 2010.

Talcahuano Home Page
http://www.puertotalcahuano.cl

Tides—Currents.—The tidal range here is between 0.6 and 1.0m.

During the winter months, especially during wet weather, strong N winds will generate a current setting W along the head of Bahia Concepcion, then N across the entrance to Talcahuano.

Depths—Limitations.—Empressa Portuaria Talcahuano Commercial Port is a pier with two berths fronting the city of Talcahuano, located in the S part of Bahia Concepcion. Berth No. 1 has a length of 155m and can accommodate vessels up to 185m in length, with a maximum draft of 9.3m. Berth 2, with a length of 205m, and can accommodate vessels up to 180m in length with a draft of 6.7m. Reports indicate that the general cargo jetty infrastructure was mostly destroyed in the 2010 earthquake.

An important naval base and the ASMAR shipyard are located in the N part of Bahia Concepcion. The naval base operates two berths commercially along Molo Quinientos, which is 500m in length. Berth No. 1, at the S part of Molo Quinientos, is 250m long and can accommodate vessels with a maximum draft of 8.2m. Berth No. 2, located close S of the Repair Basin and associated with the ASMAR shipyard, is 175m long and can accommodate vessels with a maximum draft of 7.3m.

The ASMAR shipyard, located close N of Molo Quiniento and extending E of the Repair Basin across a peninsula, has two drydocks and a boat ramp. At the NE end of this peninsula Molo Marinao extends about 450m SE; a light is located on the mole. Vessels up to 90,000 dwt can be handled at the drydocks.

A CBM operated by the naval base is located E of Isla Quiriquina (36°38'S., 73°03'W.). Vessels up to 200m in length with a maximum draft of 14m at HW use two anchors to moor to three mooring buoys.

Aspect.—Banco Belen lies 3 miles SSW of the S extremity of Isla Quiriquina. The naval facilities, which include a repair basin and two drydocks, extend E from the W shore of the bay and are protected by a breakwater situated about 0.3 mile W of Banco Belen. The naval base extends along the W coast of the

bay about 1 mile S and 2.5 miles N of the repair basin. The commercial harbor is situated close S of the naval base.

A very conspicuous radio mast, the tallest of several masts, stands on the summit of Cerro Centinela, about 1 mile W of the commercial pier. Three prominent radio masts and then two other prominent radio masts stand about 0.3 mile W and 0.5 mile SSW, respectively, of the repair basin. Morro Talcahuano is prominent and rises on the E side of the entrance to Canal del Morro, about 0.5 mile SSE of the root of the commercial pier.

Berths in Port of San Vicente

A light, with a racon, is shown from a tower standing at the SE side of Banco Belen. Buoys are moored at the N and W ends of the shoal. Ranges indicate the approaches to the naval port facilities.

Pilotage.—Pilotage is compulsory for all foreign vessels for all occasions and for Chilean vessels in the case of berthing at the wharves or entering the drydocks. Pilots can be contacted directly on VHF channels 8, 9, and 16. Pilots will board in the area bounded by lines joining the following positions:

a. 36°34.0'S, 73°03.0'W.
b. 36°39.0'S, 73°02.0'W.
c. 36°41.5'S, 73°03.0'W.
d. 36°42.1'S, 73°05.0'W.

Confirm that all cargo gear is in proper working order.

The vessel's ETA should be sent 48 hours prior arrival and contain the following information:

1. If any cargo shifting is expected.
2. If there is dangerous cargo onboard.
3. Expected arrival draft.

Signals.—Weather signals are indicated on the Signal Station of the Port Authority Building. An information service is available on VHF channel 16 for the following items:

1. Shipping in the area.
2. Anchorage and safety area.
3. Recommended navigation route.
4. Meteorological conditions.
5. Local Notice to Mariners.

Contact Information.—The harbor can be contacted using the information listed in the table titled **Talcahuano—Contact Information**.

Talcahuano—Contact Information	
Harbormaster	
Call sign	Talcahuano Capuerto Radio (CBT28)
VHF	VHF channels 8, 9, and 16
Frequency	2182 and 2738 kHz
MMSI	007250170
Telephone	56-41-2266163
Facsimile	56-41-2542318
E-mail	cptalcahhuano@directemar.cl
Port Authority	
Telephone	56-41-2720300
Facsimile	56-41-2797626
E-mail	contacto@puertotalcahuano.cl

Anchorage.—The port is the best anchorage for large vessels within the bay as it is sheltered from the prevailing winds. Vessels anchor in the port area about 0.5 mile offshore, in depths of 7.5 to 9m. Vessels unable to anchor in the port area should do so S of a line extending in a 069° / 249° direction through a position 1,000m S of Banco Belen Light. Explosives, quarantine, and fumigation anchorage areas are located between 0.6 and 0.9 mile SSE of Banco Belen Light, in depths of 11.5m to 14m, and are best seen on the chart. A N cardinal buoy is moored S of the explosives and quarantine anchorage areas. Anchor berths, designated A to O, lie in the approaches to Puerto Talcahuano. An anchorage area is centered 0.8 miles

Caution.—A restricted area in which anchoring and fishing are prohibited fronts the naval base and facilities. Vessels, except those of the Chilean Navy and vessels entering the dockyard, are prohibited from entering an area which extends N and S from the naval dockyard. Entry is restricted into an area 1 mile SW of Banco Belen light, to avoid obstructing then harbor approach. Pier No. 3, SW of the restricted area, is reported to be destroyed. This area adjoins the prohibited area; the limits of which is shown on the chart. A dangerous wreck is located at 36°43'44"S, 73°07'44"W.

A wreck, with two masts showing and marked by a lighted beacon with a topmark, lies S of Banco Belen in position 36°42'00"S, 73°05'02"W.

Bahia San Vicente (36°44'S., 73°10'W.)

World Port Index No. 14415

5.31 Bahia San Vicente is situated close SW of Peninsula Tumbes. It is entered between Punta Lobos, about 6.3 miles SSW of Punta Tumbes, and Punta Gualpen, 2.5 miles SW. The town of San Vicente, situated along the NE shore of the bay, is

considered part of Talcahuano.

San Vicente Home Page
http://www.svti.cl

Winds—Weather.—Bahia San Vicente is open to winds from the NW, which raise a swell in its southern half. The port facilities, which are situated in the NE corner of the bay are well protected from the surf generated by these winds. During the summer, winds from the S and SW prevail here creating a non dangerous swell in the bay's N portion.

Tides—Currents.—The local authorities and the pilot should be consulted for data on tides and currents within the bay. The tidal rise here is reported to range from 0.6m to 1m.

Depths—Limitations.—The port of San Vicente is located in the E part of the bay and is protected by a breakwater, extending 525m SW from the shore at Punta Liles. Almost all of the port facilities are located within this area except for Terminal Abastile, which is located in the SW part of the bay. The port handles all kinds of bulk, general, and liquid cargo. Four sets of lighted range beacons provide navigation assistance to the berths.

Muelle Emporchi is a quay, 600m in length, located close SE of Punta Liles, on which the San Vicente Terminal International (SVTI) is located. The SVTI terminal has three berths that handle general cargo and containers, with berthing limitations, as follows:

The new SVTI pier extension is anti-seismic and can handle two container vessels on both sides simultaneously up to 350m in length with drafts up to 12m. The new expansion is 264m long and 38m wide, and has a depth of 14m. Nearly 500m of pier were added to the 600m old structure, now consisting of a berthing length of 1,100m.

The petroleum terminal is located close SE of the Muelle Emporchi and is comprised of three multi-point mooring berths, connected by submarine pipelines, accommodating tankers with the following limitations:

1. Terminal A handles tankers up to 150m in length, with drafts up to 7.9m. It has been reported (2011) that Terminal A is out of service.
2. Terminal B handles tankers up to 70,000 dwt and 250m in length, with drafts up to 12.8m. It is used for crude and fuel oil.
3. Terminal C handles tankers up to 30,000 dwt and 200m in length, with a maximum draft of 10.97m. It is used for clean products.

Muelle de la Compania de Acero del Pacifico (CAP) is located close W of the petroleum terminal. Muelle CAP is a mechanized pier extending 371m from the SE shore of the bay. Vessels can moor on the N and S sides of the pier. The N side of the pier, which handles bulk iron ore, limestone, and coal, accommodates vessels up to 240m in length, with a maximum draft of 11.15m. The S side of the pier handles steel products, logs, and general cargo and can accommodate vessels up to 200m in length, with a maximum draft of 8.5m.

Muelle Alimar is a small pier, 50m in length, with a depth of 11m at the head; it is used for fishing vessels.

Terminal Abastile is a LPG terminal located in the SW part of the bay away from the other port facilities This terminal is comprised of the Lenga Pier, extending 2,400m from the shore into the bay, with a dolphin berth capable of handling tankers up to 70,000 dwt, 230m in length, 32.2m in width, and a maximum draft of 12.1m. A prohibited area extends 200m from either side of Lenga Pier.

Port of San Vicente—Berth Information

Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Size	
CAP—Compania de Acero del Pacifico					
North	240m	205m	11.0m	46,500 dwt	General cargo, minerals, and bulk.
South	200m	190m	8.5m	27,000 dwt	General cargo, steel products, and bulk.
SVTI—San Vicente Terminal Internacional					
North	435m	334m	12.8m	59,500 dwt	General cargo, containers, and bulk. Continuous berthing length of 870m.
South	435m	240m	12.2m	65,000 dwt	
ENAP Refinery Bio Bio—San Vicente Maritime Terminal (Tankers)					
North	106m	274m	12.2m	139,000 dwt	Crude oil and refined products. Berthing length of 362m (including dolphins).
South	435m	243m	12.0m	80,000 dwt	Crude oil and refined products.
Hualpen Gas Plant					
LPG	30m	190m	13.4m	80,000 dwt	LPG and clean products. Berthing length of 255m (including dolphins).
MBM	Mooring Buoy	190m	13.4m	80,000 dwt	LPG and clean products.

Aspect.—The bay recedes about 2.3 miles SE. The N shore is high and rocky, curving around to Punta Gualpen, which is a rocky steep-sided promontory. The E portion of the bay is formed by a sandy beach. Islote Los Chanalles, 19m high, stands on foul ground extending up to 0.2 mile SW of Punta Lobos. Ras Lobos stand on foul ground extending up to 0.2 mile N of Punta Gualpen. Punta Liles lies about 1.5 miles SE of Punta Lobos. A breakwater extends 0.3 mile SW from Punta Liles.

The high hills of Tetas de Bio are the most conspicuous landmarks for making the bay; Teta Norte, 244m high, and Teta Sur, 247m high, stand about 1.3 miles SSE and 1.5 miles SSW, respectively, of Punta Gualpen. A radio mast stands on the summit of Teta Sur.

A light is shown from Punta Gualpen. Caution is advised as the light on the point may become obscured. The lights and flares of the steel mill at the E side of the bay may be seen from a considerable distance seaward.

Mooring Buoys—Location and Characteristics

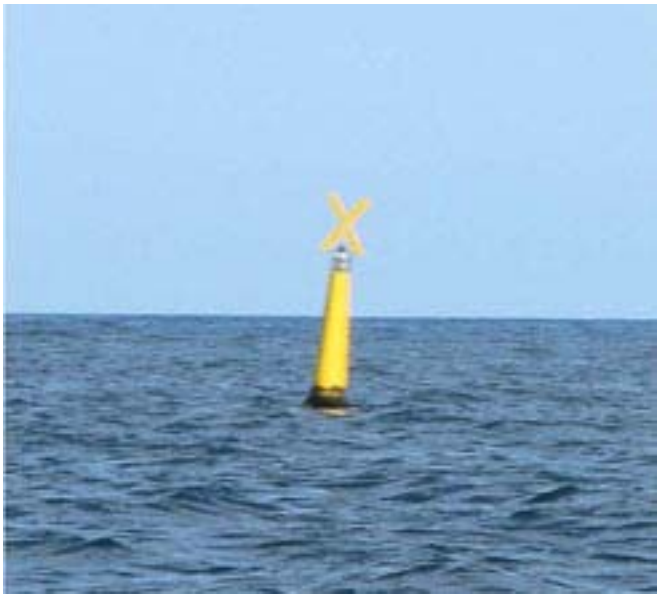
Characteristics	Approximate Position
Orange	36°43'46.4"S, 73°07'55.1"W
Orange with light	36°43'46.4"S, 73°07'49.7"W
Orange with light	36°43'50.8"S, 73°07'48.9"W
Triangle	36°43'52.1"S, 73°07'54.1"W
Small red	36°43'54.0"S, 73°07'56.4"W
—	36°43'54.7"S, 73°07'54.8"W
Small red	36°43'56.0"S, 73°08'02.1"W
Orange	36°43'56.7"S, 73°08'24.5"W
Small red	36°44'04.4"S, 73°08'03.3"W
Yellow X	36°44'37.0"S, 73°08'17.7"W
Yellow	36°44'57.8"S, 73°08'27.1"W
Orange with light	36°44'43.3"S, 73°09'47.5"W

Several mooring buoys have been placed in the port area of San Vicente and in the S part of Bahia San Vicente that are not yet charted. Further information on these mooring buoys can be found in the table titled **Mooring Buoys—Location and Characteristics.**

Pilotage.—Pilotage is compulsory. There are five pilots available. The vessel's ETA should be advised to the agents 24 hours prior to arrival and then confirmed directly to the pilots 1 hour prior to arrival on VHF channel 16.

Pilots will board in the following positions:

a. 36°44'12"S, 73°10'18"W.



Yellow X Mooring Buoy

b. 36°43'35"S, 73°11'04"W.

Regulations.—The vessel's initial ETA should be sent 24 hours prior arrival and contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Vessel should confirm their ETA to the pilot 1 hour before arrival on VHF channel 16.

Bahia San Vicente is considered an integral portion of Talcahuano, so no additional clearance is necessary if sailing between these ports.

Tankers are berthed and unberthed at the petroleum terminal (ENAP) during daylight hours only. Two tugs are required for berthing at this terminal.

For tankers proceeding to Terminal Abastile in the SW part of the bay, two tugs are required for vessels up to 180m in length while three tugs are required for vessels longer than 180m in length.

An IMO-adopted Traffic Separation Scheme lies in the approaches to the bay and may best be seen on the chart. The inbound traffic lane is situated SW of the Traffic Separation Zone.

Contact Information.—The harbor can be contacted using the information listed in the table titled **San Vicente—Contact Information**.

San Vicente—Contact Information

	Port Radio	Harbormaster	Port Authority	International Terminal (SVTI)
VHF	channels 9, 14, and 16	VHF channel 14	—	—
Frequency	2182 and 2738 kHz	—	—	—

San Vicente—Contact Information				
	Port Radio	Harbormaster	Port Authority	International Terminal (SVTI)
MMSI	007250172	—	—	—
Telephone	56-41-2541954	56-41-2541954 56-41-2547226	56-41-2720300	56-41-2503600
Facsimile	56-41-2541954	56-41-2541954	56-41-2797626	56-41-2503651
E-mail	—	cpsanvicente@directemar.cl	conbtacto@puertotalcahuano.cl	customer@svti.cl

Anchorage.—Anchorage, sheltered from all but NW winds, is available anywhere in the bay, in depths of less than 20m, sand and mud. Anchorage Area A is located in position 36°44.5'S, 73°10.9'W.

Anchoring is prohibited N of a line from Muelle Cap to Ra Villa de Burdeos Lighted Buoy then back to the end of the breakwater extending SW from Punta Liles. Another area prohibited for anchoring is N of the breakwater is bounded by lines joining the following positions:

a. 36°43'46"S, 73°08'39"W. (near shore)
b. 36°43'59"S, 73°10'02"W.
c. 36°43'48"S, 73°10'03"W.
d. 36°43'33"S, 73°08'37"W. (near shore)

Vessels anchored within the bay during bad weather should leave and heave-to at sea or proceed to Bahia Concepcion to anchor in the lee of Isla Quiriquina.

Caution.—A submerged pipeline located outside the breakwater extends about 2,500m WNW from the shore near position 36°43'26"S., 73°08'27"W (This position may be incorrect, falls on land). Anchoring and fishing are prohibited within 200m of the pipeline. Disused submarine pipelines lie in vicinity of position 36°43'49"S, 73°07'49"W and position 36°44'00"S, 73°07'50"W, 0.3 miles N of Pier No 7.

A prohibited anchorage area, the limits of which can be seen on the chart, lies in the NE part of the bay.

Numerous fishing vessels may be encountered in the approaches to the bay.

Roca Villa de Burdeos, a shoal patch with a least depth of 4.1m, lies about 0.4 mile WSW of the breakwater head and is marked by a lighted buoy moored close S. Roca Navia Chica, 4m high, and Roca Navia Grande, 14m high, lie off the SW shore of the bay about 0.8 mile ESE of Punta Gualpen.

In bad weather conditions, it is recommended that vessels making a landfall at Bahia San Vicente or anchored within the bay should leave and either heave-to at sea or head for Bahia Concepcion to anchor in the lee of Isla Quiriquina.

Information on additional hazards located in Bahia San Vicente can be found in the table titled **Bahia San Vicente Hazards—Location and Type**.

Bahia San Vicente Hazards—Location and Type		
Type	Approximate Position	Depth
Unknown	36°43'52.4"S, 73°08'10.9"W	15.1m
Wreck	36°44'52.0"S, 73°10'47.1"W	11.0m
Unknown	36°43'48.8"S, 73°08'08.0"W	14.4m

Bahia San Vicente Hazards—Location and Type		
Type	Approximate Position	Depth
Wreck	36°43'41.7"S, 73°08'00.2"W	12.4m
Wreck	36°43'41.4"S, 73°07'59.3"W	12.4m
Unknown	36°43'41.8"S, 73°07'57.2"W	11.9m
Unknown	36°43'45.5"S, 73°07'47.8"W	10.0m
Unknown	36°43'47.6"S, 73°07'45.4"W	8.3m
Unknown	36°43'47.8"S, 73°07'45.9"W	9.3m
Unknown	36°43'48.1"S, 73°07'46.5"W	8.9m
Unknown	36°43'47.4"S, 73°07'45.4"W	9.9m
Rock	36°44'09.5"S, 73°09'11.0"W	3.8m
Rock	36°43'53.5"S, 73°10'15.0"W	28.8m
Rock	36°43'09.5"S, 73°09'58.2"W	34.8m

Golfo de Arauco (37°05'S., 73°20'W.)

5.32 Golfo de Arauco is a large gulf entered between Punta Cullinto, 2.5 miles SW of Punta Gualpen, and Punta Lavapie about 28 miles SW. It recedes about 16 miles SE. The mouth of the Rio Bio Bio is situated in the NE part. Isla Santa Maria lies about 8 miles NNE of Punta Lavapie in the entrance of the gulf. The shores of the gulf consist mostly of sandy bays and beaches, interspersed with rocky points and cliffs.

Punta Cullinto is low and rocky. Islotes Los Lobos, a group of islets and rocks, front the point up to 0.3 mile SW.

Morro Pompon, formed by an islet connected to the mainland by a sandy isthmus, lies 2.8 miles SE of Punta Cullinto.

The Rio Bio Bio empties into the gulf between Morro Pompon and an unnamed point about 1 mile S. The river is inaccessible due to sand banks. The water is discolored up to about 4 miles NW and 14 miles S of the mouth by the discharge from the river.

An aeronautical light is situated about 5 miles ENE of the river mouth. A prominent radio mast stands about 3.5 miles ESE of Morro Pompon on the S bank of the river.

Punta Lavapie (37°09'S.,73°35'W.) is low and rocky. Islets and rocks, awash, front the point up to 0.5 mile N. A light is shown from the point. Emergency anchorage may be taken by small vessels in depths of 8m ESE of the point protected from S and W winds. Foul ground extends up to 1 mile from the shore SE of the point.

Isla Santa Maria, in the SW part of the gulf, is low and has numerous off-lying rocks and shoals surrounding it. Isla Santa Maria is undulating, treeless, and covered with grass and small shrubs.

The W coast of the island is mostly cliffy, except for a flat sandy area in the middle which extends ESE across the island and gives it the appearance of two islands from a distance. Morro Dolores, the W extremity, is a detached hill about 58m high, which stands on a small peninsula. The E side of the island is hilly at its N and S parts. The flat sandy area mentioned above forms a spit on the middle of the E side which terminates in Punta Delicada. Morro Cansado, the N extremity of the island, lies 6 miles NW of Punta Delicada. Punta Cochinos, the S extremity of the island, lies 3.3 miles SW of Punta Delicada. Above and below-water rocks lie up to 1.3 miles off the W coast of the island, and are not always marked by breakers. Dangerous ground, islets, and rocks lie up to 3 miles NNW of Morro Cansado.

A light is shown from a tower standing at an elevation of 210m, about 1 mile SSW of Morro Cansado. A light is shown from a tower standing about 1 mile NW of Punta Delicada.

Boca Chica, the passage between Punta Lavapie and Isla Santa Maria, is nearly 5 miles wide with a navigable width of 2.3 miles. A sandy ridge, with a least depth of 7.8m, extends S across Boca Chica between Punta Delicada and Punta Pichicui, 7 miles SE of Punta Lavapie.

A depth of 0.5m, existence doubtful, lies 2.5 miles N of Punta Pichicui. Roca Huemul, with a depth of 6m, and Roca Meteoro, with a depth of 6.8m, lie 1.8 miles SSE and 1 mile S, respectively, of Punta Cochinos; the sea breaks occasionally over both rocks.

Roca Hector, existence doubtful, is reported to lie about 1.8 miles N of Punta Lavapie. Roca Cockatrice, existence doubtful, is reported to lie about 3.3 miles W of Punta Cochinos. Several other dangers lie between Roca Cockatrice and Isla Santa Maria and may be seen on the chart.

Approaching Boca Chica from the W, an E set at about 0.5 knot may be felt. Within the channel entrance, the flood sets ENE, while the ebb sets WSW, both at a rate of 1 to 2 knots.

In heavy weather, the sand ridge across the channel becomes a mass of breakers.

There is a considerable amount of fog in the vicinity of the channel from January through July, but less frequent during the rest of the year.

Punta Coronel, 11.5 miles S of Morro Pompon, can be identified by a small village about 0.5 mile N, by a small house on the end of the point, and by an old mine shaft close S of it. A sandy beach extends for about 11 miles N of the point to the mouth of the Rio Bio Bio.

Punta Puchoco, about 1.5 miles S of Punta Coronel, is moderately high and has some trees and houses standing on it.

A prominent building, with a metal tower, 55m high, stands midway between the above points. Obstruction lights mark the tower. A light is shown from a tower, 6m high, standing on Punta Puchoco. A chimney, 40m high, stands at a power station about 0.5 mile NE of the light tower. A wreck is reported to lie approximately 1.5 miles NW of Punta Puchoco.

Roca Boca Maule, with a least depth of 7.1m, lies about 1 mile NW of Punta Puchoco.

Bahia de Coronel recedes about 1.5 miles E between Punta Puchoco and Punta Cuervos, about 2.8 miles SSE. The bay has depths of about 20.1m across its entrance, which decrease gradually toward the shore. Bajo Playa Negra, a reef on which the sea breaks heavily in ordinary weather, lies on the shore bank about 0.3 mile offshore near the middle of the E shore, about 2 miles NE of Punta Cuervos. Roca Playa Blanca, with 4.6m over it, lies about 0.8 mile offshore almost 1 mile NNE of Punta Cuervos. Playa Blanca, at the head of the SE part of the bay, consists of fine yellowish sand, on which a heavy surf always breaks. Bajo Puchoco, at the N end of the bay, extends up to 0.3 mile SE of Punta Puchoco.

Winds—Weather.—Strong S winds prevail in Bahia Coronel in the summer months from September to March, and sometimes cause a short choppy sea. These winds are not dangerous to shipping. Northerly gales prevail during the winter months. Fine drizzle and somewhat dense fog are frequent in Bahia Coronel. It has been reported that an E current set between 2 and 3 knots occurs between Punta Coronel and Punta Lota, about 6 miles S.

5.33 Coronel (37°02'S., 73°10'W.) (World Port Index No. 14400) lies about 1.3 miles E of Punta Puchoco, in the NE part of Bahia de Coronel. The port handles general cargo, containers, coal, and wood products. Bahia de Coronel provides no restriction to maximum vessel size permitted.

Tides—Currents.—It has been reported that a current sets E at a rate of 2 to 3 knots off the approach to the bay. The tidal range is 1.2m.

Port of Coronel—Berth Information

Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Size	
Terminal Coronel					
Puchoco Dock	170m	250m	12.6m	100,000 dwt	Wood chips and dry bulk.
Cholin Dock	330m	260m	12.5m	200,000 dwt	Coal and bulk
Jureles Dock	190m	230m	11.8m	100,000 dwt	Dry bulk.
North Pier Terminal					
No. 1	190m	—	11.4m	—	Timber, wood products, and general cargo.
No. 2	206m	—	13.0m	—	Timber, wood products, and general cargo.

Port of Coronel—Berth Information					
Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Size	
No. 3	206m	—	13.0m	—	Timber, wood products, and general cargo.
No. 4	167m	—	11.4m	—	Timber, wood products, and general cargo.
South Pier Terminal					
North Berth	400m	—	14.0m	—	Containers and dry bulk.
South Berth	400m	—	14.0m	—	Containers and dry bulk.
Bulk Pier Terminal					
North Berth	150m	—	14.5m	—	Dry bulk.
South Berth	150m	—	14.5m	—	Dry bulk.
Oxiquim Tanker Terminal					
MBM	Buoy	211m	12.2m	40,000 dwt	Chemicals, LPG, and oil pro

Depths—Limitations.—Muelle Mecanizado Puchoco Pier, located about 400m NE of Punta Puchoco, is a mechanized terminal for loading wood chips via conveyor belt and a fixed arm loader with maximum outreach of 36m. Vessels will have to warp along the pier to position hatches under loading arm. There are four mooring bollards at the head of the pier; three dolphins and a buoy also available for mooring. Vessels up to 71,000 dwt and 250m in length, with a maximum draft of 12.5m, can be accommodated.

Muelle Mecanizado Jureles Pier, located close E of the Muelle Mecanizado Puchoco Pier, is a mechanized terminal for loading wood chips or discharging bulk cargo, and has a total length of 750m, with a T-headed platform, 22m in length. Four dolphins and three buoys are available for mooring and shifting along the berth during loading. Vessels up to 230m in length and 36m in width, with a maximum draft of 11.2m, can be accommodated.

Puerto Coronel General Cargo Pier, located in the NE part of bay fronting the city of Coronel, is 400m in length and has two berths available on either side of the pier. Berth No. 1 and Berth No. 2, on the N side, are numbered from the shore seaward; Berths No. 3 and Berth No. 4, on the S side, are also numbered from shore seaward. Berthing limitations for this pier are listed in the table titled **Coronel—Berth Information**.

Vessels up to 70,000 dwt can be accommodated but there are no cargo handling facilities at this pier. Vessels must be self-sustaining in order to use this pier.

Coronel Container Terminal Pier, located close S of the Coronel General Cargo Pier, extends 1,500m from the shoreline with a total combined berth length of 400m. There are two berths designated on the N side of the pier with none on the S side. Each berth can accommodate variable length vessels depending on whether the other berth is occupied and will be up to the harbormaster to coordinate. Either berth can accommodate vessels up to 70,000 dwt, in a depths alongside of 13m.

Oxiquim Escuadron Terminal CBM (36°56'31"S., 73°10'20"W.), located N of Punta Coronel, can accommodate tankers between 5,000 and 40,000 dwt and up to 211m in length, with a maximum draft of 12.2m. Fuel oil, LPG, and methane are handled at this berth. Berthing at this terminal is available only during daylight hours but departure can be done at any time.

Pilotage.—Pilotage is compulsory. Pilots are supplied from San Vicente and area available 24 hours. Pilots can be contacted on VHF channel 9.

Agents who are responsible for transporting the pilots from San Vicente should be kept closely informed of any changes in ETA. Agents can be contacted on VHF channel 16.

Pilots will board in position 37°03'00"S, 73°10'36"W.

Aspect.—From Puchoco Point, the coast runs E, then S, and finally W, forming the Bay of Coronel. The port of Coronel is located in the NE corner of the bay.

A set of lighted ranges provides navigation assistance to all the berths except for the container terminal.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard for discharge.
4. Expected arrival draft.

Contact Information.—The harbor can be contacted using the information listed in the table titled **Coronel—Contact Information**.

Coronel—Contact Information				
	Coronel Radio (CBT24)	Harbormaster	Port Authority	Bio Bio Region
VHF	channels 9, 14, and 16	—	—	—

Coronel—Contact Information				
	Coronel Radio (CBT24)	Harbormaster	Port Authority	Bio Bio Region
RT frequency	2182 and 2738 kHz	—	—	—
Telephone	56-41-2711124	56-41-2711124	56-41-2727200	56-41-2182201
Facsimile	56-41-2711124	56-41-2711124	56-41-2727201	56-41-2711638
E-mail	—	cpcoronel@directemar.cl	info@puertodecoronel.cl	info@froward.cl

Anchorage.—Anchorage may be taken in 19 to 23m on a mud bottom among the following positions:

a. 37°02'54"S, 73°10'08"W.
b. 37°03'19"S, 73°10'08"W.
c. 37°03'44"S, 73°10'08"W.
d. 37°03'30"S, 73°10'36"W.
e. 37°04'00"S, 73°10'36"W.

An explosives anchorage is situated 1 mile SE of Punta Puchoco light.

The area S of Roca Playa Blanca in the S part of the bay is unsuitable for anchoring.

Caution.—It is reported that Bajo Puchoco is extending S.

Several dangerous wrecks and obstructions lie in the bay and may best be seen on the chart. There has also been a shoal depth of 6.3m reported SSE of Punta Puchoco in position 37°02'13"S, 73°01'11"W.

Vessels are prohibited from navigating in the vicinity of a submarine pipeline situated on the N side of the pier.

Punta Pique is located about 1 mile SE of Punta Cuervos and fringed by a reef. A conspicuous tower, 56m high, stands on the point.

Punta Lota (Lutrin) lies about 0.3 mile S of Punta Pique and is fringed by a reef. A light is shown from a prominent tower, 13m high, standing on the point.

The tall chimneys at a disused smelting works stand E of the point near the foot of the hills which dominate the shore. Caleta Chambique, a small cove entered between Punta Pique and Punta Lota, is used by small craft, but is exposed and SW winds cause a heavy sea.

Bahia de Lota recedes about 0.5 mile NE between Punta Lota and Punta Fuerte Viejo, about 0.8 mile SE. The bay has general depths of about 11m across its entrance between Punta Lota and Islote Lobos, about 0.1 mile W of Punta Fuerte Viejo. Depths within the bay decrease gradually toward the shore. Punta Escoria, formed by slag from an abandoned smelting works, is located a little over 0.5 mile ESE of Punta Lota. Bajo Punta Escoria extends about 0.1 mile S of the point and is marked by a lighted buoy. It is reported that the S part of the shoal breaks.

5.34 Lota (37°06'S., 73°09'W.) (World Port Index No. 14380) is situated along the NW shore of Bahia de Lota. Lota is the site of a mechanical coal loading pier, now operated by the National Coal Board. The port is currently closed for commercial operations.

Tides—Currents.—Tides rise here about 1.4m. During strong W or NW winds, a current has been observed to run E and S around the shores of the bay to Isla Lobos and then turn S.

Depths—Limitations.—The mechanical coal-loading pier, located in the extreme N part of Bahia de Lota, is 280m in length. There are four sets of range lights for laying out the two anchors, based on a vessel with a maximum length of 160m. One tug is required with one line launch for mooring to the four buoys. The pier has a berthing length of 149m on the E side. The depth at the head of the pier is 8.8m at the head of the pier, shoaling to 7m at the 149m mark. The W side is no longer used and there are no lighters.

A small fishing pier extends SW from the shore S of the coal loading pier E of Punta Escoria. This pier is not visible from the coal-loading pier but there will be numerous local fishing vessels found between the coal-loading pier and within the small bay between Punta Escoria and Punta Astorga.

Pilotage.—Pilotage is compulsory and pilots respond from Talcahuano. Pilots will board in position 37°06'14"S, 73°10'20"W. Pilots can be contacted through VHF channels 09, 14, or 16.

Regulations.—The vessel's ETA should be sent 5 days prior to arrival, then once every day at 0800 until arrival. The ETA message should contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Vessels can berth or sail only during daylight hours.

Contact Information.—The harbor can be contacted using the information listed in the table titled **Lota—Contact Information.**

Lota—Contact Information			
	Port Radio	Harbormaster	Port Authority
Call sign	Lota Radio (CBT33)	—	—
VHF	VHF channels 9, 14, and 16	—	—
Telephone	56-41-2876399	56-41-2876399	56-41-2876362
Facsimile	56-41-2876399	56-41-2711124	—

Lota—Contact Information			
	Port Radio	Harbormaster	Port Authority
E-mail	—	coronel@directemar.cl	—

Anchorage.—Anchorage can be taken between Punta Lota and Islote Lobos, in depths of 12m, mud. Smaller vessels may anchor between 200m and 400m farther towards the shore. Vessels with explosives must anchor in the designated explosives anchorage located 0.5 mile W of Islote Lobos.

Caution.—Winds from the W to NW cause swells which may suspend loading operations.

5.35 Caleta Colcura (37°07'S., 73°09'W.) occupies a bight between Punta Fuerte Viejo and a position about 0.8 mile S. The cove can be identified by a sandy beach at its head and Islote Lobos lying off the N entrance point. Several wrecks lie in the vicinity of the cove and may be seen on the chart.

Anchorage.—The bight affords good anchorage to small vessels, in 7.3 to 9.1m, sand, about 0.3 mile offshore S of Punta Fuerte Viejo.

Punta Laraquete is located about 4.3 miles SSW of Punta Lota. The Rio Laraquete empties into the gulf close S of the point. Caleta Laraquete lies off the river mouth, and Caleta Chivilingo lies about 1 mile NNE of the point. Both these bights offer anchorage, but they are exposed and not recommended.

Golfo de Arauco to Bahia de Corral

5.36 Punta Lavapie (37°09'S., 73°35'W.), previously described in paragraph 5.32, is the N extremity of Cabo Rumena, a hilly and wooded promontory about 335m high. The W side of Cabo Rumena, from Punta Lavapie to Punta Los Piures, about 4 miles SW, is fringed by above and below-water rocks to a distance of about 0.5 mile offshore. A rock, with a depth of 5m, lies 1.3 miles NNW of Punta Los Piures, while a rocky shoal, with a depth of 11m, lies close S of the rock.

Between Punta Los Piures and Morro Carnero, the N entrance point of Bahia Carnero about 11 miles SSW, the coast is steep-to and fringed by numerous dangers to a distance of almost 0.5 mile offshore.

Bahia Carnero is a large bay which recedes about 4 miles E between Morro Carnero and Punta Millomhue, about 14 miles S. Punta Arenas (37°22'S., 73°40'W.) is a low point about 0.8 mile E of Morro Carnero. Isla Uchaguapi and Isla Pichiguapi extend almost 1 mile S from the point and are almost contiguous with the point and with each other.

5.37 Puerto Yana (37°22'S., 73°39'W.) (World Port Index No. 14370), used by coastal vessels for shelter, indents the coast about 0.8 mile between the S extremity of Isla Pichiguapi and Punta Liles, about 1.3 miles ENE.

Anchorage.—Anchorage can be taken, in 11 to 15m, sand, good holding ground, about 0.3 mile E of Isla Uchaguapi. Large vessels anchor, in a depth of 18m, sand, 0.8 mile WSW of the hill on Punta Liles.

Caution.—When approaching these anchorages, take care to avoid the wrecks off the E coast of Isla Uchaguapi.

Puerto Yana is well-sheltered from N and W winds, but open to the S and SW. During southerly winds, rough seas penetrate the anchorage, making the vessels stay difficult.

Bajo Maule, a detached reef on which the sea breaks heavily during gales, lies about 3 miles offshore about 4 miles S of Morro Carnero and appears to extend E. Depths are sufficient for vessels to pass between it and the coast, but vessels are advised to pass well W of Bajo Maule.

Punta Millomhue (37°36'S., 73°39'W.) is rocky and about 41m high. Some above-water rocks extend about 0.1 mile N. From Punta Millomhue, the coast trends about 1.3 miles SSW to La Puntilla, the E entrance point of the Rio Lebu. This part of the coast consists of a sandy beach backed by dunes.

5.38 Lebu (37°38'S., 73°40'W.) (World Port Index No. 14360) lies in a bight between Punta Millomhue and Punta Tucapel, about 2.3 miles SW. The port facilities are situated at the W bank of the entrance to the Rio Lebu, and at the port of Lebu on the S bank of the Rio Lebu, about 0.7 mile within the entrance.

Winds—Weather.—In general, vessels may enter, anchor, and work cargo during the whole year. From January to April and from September to December, the predominant winds are N and allow an almost continuous working period, as do the predominant S winds from May to August. East and W winds are of short duration and occur during weather changes. Calms, although unusual, are distributed evenly throughout the year. During N storms, vessels change their anchorage to the harbor at Yana.

Tides—Currents.—An E current passes by Punta Tucapel, while a N current that may reach 5 knots flows N from the Rio Lebu. The two currents join, and flow NE. This NE current, coupled with a S wind, may severely strain the vessel's ground tackle. The tidal range at the port is 1.4m.

Depths—Limitations.—Muelle Fiscal, 0.3 mile SE of Punta Tucapel Light, is 120m long, with a depth of 3m at its head; it was reported out of use.

Contact Information.—The harbor can be contacted using the information listed in the table titled **Lebu—Contact Information.**

Lebu—Contact Information	
Telephone	56-41-2511158
Facsimile	56-41-2511158
E-mail	cplebu@directemar.cl

Anchorage.—Vessels can anchor anywhere according to their draft, as the bay is free of dangers. The port captain will designate the anchorage. Ships at anchor may roll heavily, unless they are moored on a NW heading, as the swell caused by a SW wind penetrates the anchorage.

The following are anchor berths, with bearings and distances

from Punta Tucapel Light:

1. Best berth—ENE, 0.5 mile, in depths of 14 to 16m, sand.
2. Recommended berth—083°, 0.5 mile, in a depth of about 11m, sand.
3. Recommended berth—078°, 0.4 mile.
4. Recommended berth—076°, 0.3 mile
5. Quarantine anchorage—032°, 0.6 mile.
6. Explosives anchorage—058°, 0.73 mile.
7. Unloading ballast—051°, 0.8 mile.

Caution.—It was reported that the river was silted up and could only be used by small craft with drafts up to 2m.

A dangerous wreck lies 100°, 0.5 mile from Punta Tucapel Light

5.39 Punta Tucapel (37°37'S., 73°41'W.) attains a height of about 145m. It is precipitous to the W, but slopes more gently to the S. Roca Guapi, with a height of about 3.9m, lies about 0.2 mile N of Punta Tucapel.

A light is shown from the point and a radio mast, marked by obstruction lights, stands about 0.3 mile SSE of Punta Tucapel Light. A conspicuous tower stands about 2 miles SE of the point and can be seen from a considerable distance seaward. The mast of a stranded vessel lies 0.8 mile ESE of the light tower.

Caution.—An ODAS buoy has been moored about 5 miles WNW of Punta Tucapel and is marked by a flashing light.

5.40 From Punta Tucapel to Punta Morguilla, about 8 miles S, the coast consists mostly of sandy beaches separated by projecting rocky points about 2 miles apart.

Punta Morguilla (37°44'S., 73°40'W.) is a small peninsula about 9.1m high. It is partly wooded and is joined to the coast by a sandy isthmus. Above-water rocks fringe the point on its N and S sides, and rocks, awash, extend up to 0.8 mile S of the point outside the above-water rocks. A light is shown from Punta Morguilla.

From Punta Morguilla to Punta Nena, about 31 miles S, the coast forms a bight that recedes about 5 miles E. The coast, from 8.5 to 10.5 miles SSE of Punta Morguilla, is fringed with submerged rocks which extend about 0.5 mile offshore. Bajo Hassler, on which a depth of 23m was reported, lies about 25 miles WSW of Punta Morguilla.

Caleta Quidico is a small bight which lies on the E side of Punta Nena. The bight is sheltered from the SW by Punta Nena and the rocks which break and extend about 0.8 mile N. The bight recedes about 1 mile S between Punta Nena and a position about 2 miles E. It is open to the N. Depths across the entrance are from 5 to 6m and decrease gradually toward the head of the bay. Small vessels may take anchorage, in 6m, off the E side of Punta Nena.

Between Punta Nena and Punta Nihue, about 63 miles SSE, the coast consists mainly of low sandy beaches, with intermittent cliffs. Higher land backs the coast about 5 or 6 miles inland. The summits of the Andes are visible when the weather is clear, and the active volcano of Villa Rica, about 30 miles E of Tolten, mentioned below, is visible about 60 miles.

Cabo Tirua (38°22'S., 73°31'W.), about 8 miles S of Punta Nena, is rocky. The Rio Tirua flows into an inlet about 2.5 miles NNE of the cape. A light is exhibited at the river entrance.

5.41 Isla Mocha (38°23'S., 73°55'W.) lies about 18 miles W of Cabo Tirua. The island is steep-to on its W side, but slopes more gradually to the E. It attains an elevation of about 335m near the SW side of a wooded plateau, which lies in the center of the island. There are three aircraft landing strips on the island.

Winds—Weather.—North winds are most frequent in the vicinity of the island from October to April. South winds prevail from May to July. Thick weather occasionally lasts for days.

Tides—Currents.—Tidal currents attain a velocity of 1.5 knots with the rising tide and set N. The tidal current accompanying the falling tide sets S. Sometimes there is no current accompanying the falling tide for days and the current accompanying the rising tide then has the effect and appearance of a continuous N current.

Punta Arvejas (38°19'S., 73°58'W.), the NW extremity of the island, is low and composed of yellowish sand. From Punta Arvejas to Punta Anegadiza, about 6 miles SE, the coast is nearly straight. There are two small piers in Caleta La Hacienda, about 2.5 miles SE of Punta Arvejas. It is reported that one of the piers is out of service. A 4.1m spot lies outside the 9.1m curve, about 0.8 mile ENE of Caleta La Hacienda. A light is shown from a framework tower standing about 1 mile SSE of Punta Arvejas on the W side of the island.

Punta Anegadiza, the E extremity of the island, is low and sandy and has an abandoned lighthouse situated 0.5 mile SW of it. The entire E coast of the island is fringed by above and below-water rocks and foul ground to a distance of about 0.5 mile offshore.

Anchorage.—Vessels can take anchorage off Caleta La Hacienda, in 12.8m, with the pier bearing 202°, Punta Anegadiza bearing 155°, and Cerro Los Chinos, a detached hill about 1 mile SE of Punta Arvejas, bearing 266°.

Caution.—Due to tide rips caused by the meeting of the tidal currents, it is reported that the waters off Punta Anegadiza are dangerous for small craft.

5.42 Punta Chales, about 2.3 miles SSW of Punta Anegadiza, is the SE extremity of the island. The point is rocky and low. A light is shown from a tower, 8m high, standing about 0.2 mile NNE of the point.

Punta de las Islas, about 2.3 miles W of Punta Chales, is the SW extremity of the island. The point consists of a strip of sand covered with vegetation, which terminates in Isla de las Docas. Numerous islets, rocks, and below-water dangers fringe the S shore of the island up to about 3.5 miles S of it.

From Punta de las Islas the W coast of Isla Mocha trends irregularly N about 6 miles to Punta Arvejas. Islets, above and below-water rocks, reefs, and breakers fringe this coast. Morro de las Torrecillas lies about 2.8 miles NNW of Punta de las Islas. It is a dark and rocky promontory, about 15.2m high. Morro de las Torrecillas is prominent when seen from the N or S, but does not show up well from the W due to the sand dunes behind it. A white, round, disused light tower stands on Morro de las Torrecillas.

5.43 Punta Manuel (38°30'S., 73°31'W.) backed by the

hills, lies 7.5 miles S of Cabo Tirua. The coast extending S of the point consists of precipitous cliffs.

Morro Cauten lies 11 miles SSE of Punta Manuel. The headland, about 90m high, is bare and cliffy.

The Rio Imperial empties into the sea about 6 miles SE of Morro Cauten. The original mouth of the river was displaced to its present position by a seaquake. The present mouth of the river is fronted by a shallow bar; the original mouth is silted up.

The **Rio Tolten** (39°14'S., 73°14'W.), about 34 miles SSE of Morro Cauten, is barely visible from 2 miles offshore. At the mouth of the river is a bar, on which the sea breaks.

Aspect.—Volcan Villarrica (39°28'S., 71°55'W.) rises about 60 miles E of the Rio Tolten mouth. It is an active volcano and reported to be visible up to 60 miles offshore.

Caution.—Due to the existence of submarine oil wells, a fishing prohibited area, the limits of which are shown on the chart, lies about 23 miles NW of the mouth of the Rio Tolten. Reports of volcanic material being ejected above the crater rim from Volcano Villarrica.

5.44 Bahia Queule (39°20'S., 73°13'W.) is located about 8 miles S of the mouth of the Rio Tolten. It occupies a bight between Punta Nihue, high and thickly wooded, and Punta Ronca, almost 5 miles S.

Anchorage.—Small vessels can take anchorage in the S part of the bay in Caleta Queule, in 8 to 9m, sand, almost 0.5 mile NE of Punta Choros, the NE extremity of Punta Ronca. The bay affords good anchorage, except during W and N winds when the sea breaks over the whole extent of the bay and makes it impossible to remain at anchor.

Punta Ronca is the steep-to and cliffy W extremity of Promontorio Queule, a peninsula which has the appearance of an island when seen from the N. Roca Martinez, with a depth of 4.6m, lies about 0.2 mile NNW of Punta Choros. A light is shown from a framework tower standing about 0.2 mile S of Punta Choros.

Caution.—An isolated shoal, with a depth of 16m, was reported to lie about 22 miles W of Punta Ronca.

Bahia Maiquillhue is entered between Punta Ronca and Punta Maiquillahue, about 4 miles SSW. The depths in the bay vary from 11.9 to 18.3m, fine black sand. Caleta Maiquillahue, in the S part of the bay, is well-sheltered from SW wind. Coastal vessels use this cove for protection during the S gales which prevail in the summer. The best anchorage is in 14.6m, with Punta Ronca bearing 359° and the outer rocky islet off Punta Maiquillahue bearing 280°.

Punta Maiquillahue is low, but may be recognized by several rocky islets which extend about 1 mile NW from the point. Rocks and breakers fringe these islets.

Morro Bonifacio (39°42'S., 73°25'W.) about 15.5 miles SW of Punta Maiquillahue, is steep-to and fringed with below-water rocks. The higher part of the headland is well-wooded, and on its NW side there is a white peaked rock, which is prominent when seen from the N. Eastward of the point there is a range of mountains, the highest of which, Cerro Oncol, is about 671m high.

A light is shown from Punta Rocura, the NW extremity of Morro Bonifacio.

From Morro Bonifacio to Punta Juan Latorre, about 6.5 miles S, the coast forms a bay composed of sandy beaches separated by projecting rocky points, which are fringed with below-water rocks. Punta Loncoyen, the southernmost of these, is steep-to and lies about 1.3 miles N of Punta Juan Latorre.

5.45 Punta Juan Latorre (39°49'S., 73°25'W.), the E entrance point of Bahia de Corral, is somewhat steep-to with a low and level summit.

Bahia de Corral occupies a large bay between Punta Juan Latorre and Morro Gonzalo, about 3 miles WSW. The port of Corral is situated on the W shore of the bay, about 3.3 miles S of Punta Juan Latorre. Maximum size vessel entering the port is 180m length with a draft of 9.7m and 15,000 gt. Vessel moors to the buoy from astern using two anchors, usually paying out 8 shots on each. The Rio Valdivia empties on the E shore about 3 miles SSE of Punta Juan Latorre. The port of Valdivia lies about 8 miles within the mouth of the Rio Valdivia.

Winds—Weather.—Winds between the N and NW frequently bring bad weather and fogs. Fogs sometimes last 2 days and persist at the entrance to Bahia de Corral.

Tides—Currents.—The current accompanying the rising tide generally has a velocity of about 1 knot, increasing to about 2 knots between Morro Niebla and Punta del Conde. During the rainy season the current accompanying the rising tide is barely perceptible, but the velocity of the current accompanying the falling tide is increased by the falling rains to 3 or 4 knots, and in the vicinity of Morro Gonzalo it has a velocity of 5 to 6 knots. The currents at the entrance of Bahia de Corral and along the adjacent coast are somewhat irregular, depending on the season, tides, and prevailing winds. **Depths—Limitations.—** The main Jetty is 146m in length and a depth of 14m (berth length 515m incl. dolphins). With a draft of 12m and beam of 37m. Primary cargo is wood chips.

Aspect.—From Punta Juan Latorre, the E shore of the bay trends irregularly S about 2.3 miles to Morro Niebla, and is composed mostly of sandy beaches. The cliffs at Morro Niebla are perpendicular, reddish-colored, and about 35m high with a level summit. The point is fringed by black above-water rocks. It is easily recognized by the light structure, the barracks, and the battery on it. A wreck, with least depth of 1.2m, lies 1.5 miles W of the mouth of Rio Valdivia (39°52.6'S., 73°25.0'W.).

Pilotage.—Pilotage is compulsory for both entering and mooring in Bahia de Corral, or when proceeding upriver to Valdivia. The pilot boards off Punta Armagos on the W side of the entrance and near Pena del Conde Beacon in positions 39°51.95'S, 73°24.91'W and 39°52.33'S, 73°24.92'W. The pilots can be contacted on VHF channels 9, 14, and 16.

The vessel's ETA should be sent to agents 72 hours prior arrival and then reconfirmed 24 hours prior arrival.

Anchorage.—Vessels awaiting berths or a pilot may anchor to the N of Pena de la Conde, where there is 13.7m of water available. Vessels must enter or sail on a rising tide as there are strong currents on the ebb which may make any maneuvering highly dangerous. Vessels bound for Valdivia should not exceed 4.8m in draft.

5.46 Isla Mancera (39°52'S., 73°24'W.) rises in its center to a height of 87m. The plain surrounding the hill is cultivated and has some houses on it.

Caleta San Carlos (39°50'S., 73°26'W.) indents the coast between Punta Palo Muerto, a low and rocky point, and Punta San Carlos. The head of Caleta San Carlos is divided into two small coves by an area of foul ground that extends almost 0.1 mile offshore. The settlement of San Carlos, which can be identified by its chimneys, is situated in the SE cove. Punta San Carlos is the extremity of a rocky peninsula, on the summit of which are the ruins of a fort.

From Punta San Carlos, the W shore trends almost 1 mile SE to Punta Amargos, a low rocky point with the ruins of a fort on its summit. The ruined fort is difficult to distinguish. A group of above-water rocks, the NE of which is Punta del Conde, lies close NE of Punta Amargos.

From Punta Amargos to Punta Chorocamayo, about 0.2 mile S, the coast recedes about 0.1 mile W to form Bahia Amargos, a small bight with a sandy shore.

Punta Fronton (39°53'S., 73°23'W.), about 0.5 mile E of the SE end of Isla Mancera, is steep-to and covered with vegetation.

Punta Carbonero (39°52'S., 73°23'W.) is the S entrance point of the Rio Valdivia. The point is low, of blackish color, and backed by a high cliff with vegetation on it. The river provides access to Las Mulatas, the river port for Valdivia, about 7 miles upstream. A series of submerged training walls border the river channel to Valdivia.

Fogs are frequent in the river from May to August. In foggy weather, vessels are advised to anchor clear of the fairway and as close as possible to the bank, as even during fogs the passage of tugs and other small craft continues.

The river banks are lined with beacons which indicate the fairway. Lights are shown from some of the beacons. Special attention should be given to the steering in certain parts of the river, especially just below Valdivia. An anchor should always be ready to let go.

It was reported that vessels with a draft of 3.8m could navigate the river, preferably at half-tide.

Mooring buoys are situated 0.2 mile WNW and 0.1 mile NW of the lighted beacon, situated about 1 mile ENE of Punta Carbonero.

Tides—Currents.—The outgoing tidal current attains a velocity of 2 knots in summer, and a velocity of 4 knots in winter. The incoming tidal stream is not felt in winter. In summer, it is advisable to navigate the river on the rising tide.

5.47 Valdivia (39°48'S., 73°15'W.) (World Port Index No. 14340) is situated on the S shore of the Rio Valdivia, about 7 miles from its entrance. The terrain in the vicinity of the town is wooded and hilly, and attains an elevation of about 305m.

At Las Mulatas, close SW of the city, there is a pier 126m in length with a depth of water alongside of 5.8m; the turning basin here is 600m wide with a depth of water in this area of 7.9m. There are two mooring buoys and a dolphin at either end of the pier. Muelle Shuster is located on the S side of the Pedro de Valdivia Bridge with length of 400m and depth alongside of 8m. At the city itself there is a customs wharf 71m in length.

Vessels with cargo for Valdivia discharge to lighters at Puerto de Corral, which lies at the mouth of the river between the old Spanish forts of San Carlos to the W and Niebla to the E. Cargoes such as wheat, fertilizers, and lumber are handled here.

Pilotage.—Pilotage is compulsory for both entering Bahia de Corral and proceeding upriver to Valdivia. See paragraph 5.45 for details.

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

Valdivia—Contact Information	
Port Operations	
Call sign	Valdivia Radio (CBT4)
VHF	VHF channels 9, 14, and 16
Frequency	2182 kHz and 2763 kHz
Telephone	56-63-2291300
Facsimile	56-63-2291396
MMSI	007250220
Harbormaster	
Telephone	56-63-2361302
Facsimile	56-63-2361321
E-mail	cpvaldivia@directemar.cl

Regulations.—Entry to Valdivia is restricted to daylight hours only.

Entry and departure from Valdivia is prohibited during the ebb tide due to strong tidal currents.

All maneuvers during entry and departure will be assisted by mooring launches.

5.48 Puerto de Corral (39°52'S., 73°26'W.) (World Port Index No. 14330) is situated on the W shore of Bahia de Corral. All cargo operations are to lighters, which are then taken to Valdivia. There are no warehouses at Corral, but there is one storage shed. The port has piers for small river passenger vessels.

Most of the activity for this port is transshipment of cargo for delivery upriver to Valdivia.

Depths—Limitations.—Muelle Portuaria Corral, located at Punta Chorocamayo, is an L-shaped dock with length of 146m and width of 13.5m used for loading woodchips using a loading tower, 38m in height, with a fixed loading arm. Vessels up to 70,000 dwt, with a maximum length of 229m and a draft as deep as 12.2m can be accommodated. In general, all maneuvers at this jetty are carried out on a rising tide, in daylight, and with good visibility. The use of tugs is mandatory for all vessels greater than 120m in length.

Most of the activity for this port is transshipment of cargo for delivery upriver to Valdivia.

Pilotage.—Pilotage is compulsory for both entering and mooring in Bahia de Corral. See paragraph 5.45 for details.

Contact Information.—See the table titled **pUERTO DE cORRAL—Contact Information**.

Puerto de Corral —Contact Information
Port Operations

Puerto de Corral —Contact Information	
Call sign	Corral Radio (CBT26)
VHF	VHF channels 9, 14, and 16
Frequency	2182 kHz and 2738 kHz
Telephone	56-63-2471267
Facsimile	56-63-2471604
Harbormaster	
Telephone	56-63-2471267
Facsimile	56-63-2471604
E-mail	cpcorral@directemar.cl

Port of Corral—Woodchips Loading Facility

Regulations.—Entry to Corral is restricted to daylight hours only.

Entry and departure from Corral is prohibited during ebb tide due to strong tidal currents.

All maneuvers during entry and departure will be assisted by mooring launches.

Anchorage.—All vessels with draft exceeding 8m must anchor outside the port limits about 0.6 mile NW of Morro Niebla, in depths of 12 to 13m, sand, good holding ground.

For the smaller vessels, there are three anchorage areas within the port limits, with all distances measured from Roca El Conde Light, as follows:

1. Anchorage Area A—about 0.5 mile ENE, for vessels with a maximum draft of 8.0m.
2. Anchorage Area B—about 0.25 mile E, for vessels with a maximum draft of 6.5m.
3. Anchorage Area C—about 0.45 mile SE, for vessels with a maximum draft of 5.0m.

Bahia Corral to Cabo Quedal

5.49 The coast, from Morro Gonzalo through Cabo Quendal to Punta Chocol, is generally cliffy and fringed by many rocks and reefs. Few anchorages are available here and offer poor shelter.

Morro Gonzalo (39°50'S., 73°28'W.) is a steep-to cliff about 160m high. It is slightly reddish in color and its summit is covered with trees. A light is shown from Morro Gonzalo.

Between Morro Gonzalo and Punta Chaihuin, about 9 miles SW, the coast recedes about 1.5 miles SW to form a bay, on the shores of which there are several rocky points.

Between Punta Chaihuin (39°55'S., 73°36'W.), high, rocky, and wooded, and Punta Galera, about 6.5 miles SW, the coast is indented by two large bights, Caleta Chaihuin and Caleta Guadei.

Caleta Chaihuin recedes about 1.3 miles SE between Punta Chaihuin and Punta Falsa Galera, about 5 miles WSW. The E shore of the cove is composed of a sandy beach 1 mile long. Islotes Loberia, a group of islets, lie about 0.1 mile offshore at the SE end of the bight. Cerro Chaihuin, 154m high, is a prominent conical hill with numerous white rocks on its slopes located about 2 miles SE of Punta Chailhuin. Vessels may take anchorage, in 20.1m, sand, about 0.5 mile offshore SSW of Punta Chaihuin, but are advised to proceed to Puerto de Corral and not use the anchorage at Caleta Chaihuin except in case of extreme necessity.

From Punta Falsa Galera to Punta Galera, about 2 miles S, the coast recedes almost 0.5 mile E and forms a bay. There are depths of 18.3 to 21.9m in the entrance, which decrease gradually toward the shore.

Caleta Guadei, at the S end of the bay, has depths of 4.6 to 12.8m. Vessels can take anchorage, in 23.8 to 32.9m off the head of the cove outside a line joining Punta Falsa Galera and Punta Galera, but should be prepared to put to sea on the first sign of bad weather from the N or W.

5.50 **Punta Galera** (39°59'S., 73°43'W.) is prominent. The point is low, wooded, and undulating. Altos de Valdivia, three prominent peaks about 472m high, back the point about 3 miles NE. A light is shown from a prominent tower, 12m high, standing on the point.

From Punta Galera to Punta Colun, a steep-to and rocky point about 5.5 miles SSE, the coast consists of a beach of black sand.

Punta Hueicolla (40°09'S., 73°42'W.), the W entrance point of Caleta Hueicolla, is steep-to and rocky. A rock, on which the sea breaks constantly, lies about 0.3 mile N of Punta Hueicolla. Caleta Hueicolla has depths of 11 to 12.8m, sand, but is of little importance as it is exposed to W winds.

Caleta Lameguapi (40°11'S., 73°43'W.) recedes about 0.3 mile SE between an unnamed point and Punta Lameguapi, about 1 mile SW. The cove is sheltered from the S, but fully exposed to W winds.

Anchorage.—Anchorage can be taken, in 11 to 18.3m, black sand, about 0.3 mile offshore NE of Punta Lameguapi.

Piedra Lobos, an above-water rock surrounded by below-water rocks, lies close offshore about 0.8 mile WSW of Punta Lameguapi. Punta Escalera, about 2 miles SSE of Piedra Lobos, is steep-to, rocky, and backed by high hills.

Ensenada Dehui lies between Punta Escalera and Punta Dehui (40°14'S., 73°45'W.). It has depths of 7.3 to 14.6m, but is exposed to the prevailing winds and subject to heavy swells.

The Rio Bueno, which empties into Ensenada Dehui, is fronted by a shoal, shifting, dangerous bar which breaks, and is impassable by ocean-going vessels.

From Punta Dehui to Punta Trahuilco, about 3 miles SSW, the coast is steep-to and rocky. It is backed by mountains which rise to an elevation of about 1,006m, about 4.5 miles E of Caleta Milagro. Punta Trahuilco is rocky, and below-water rocks extend about 0.8 mile SW from the point.

5.51 Farallones de Trahuilco (40°20'S., 73°45'W.), a group of low above-water rocks, lie about 0.3 mile WSW of the N entrance point of Caleta Milagro.

Caleta Milagro recedes about 0.3 mile SW between its N entrance point, mentioned above, and Punta Milagro, about 0.7 mile SW. Anchorage can be taken, in 15m, sand, about 0.3 mile N of Punta Milagro. The cove is sheltered from the S, but the anchorage is not good. Some above and below-water rocks extend about 0.2 mile W from the point. El Farallon, a detached rock with a height of 14.9m, lies almost 0.7 mile W of Punta Milagro.

Punta Pucatrihue (40°25'S., 73°48'W.) is high, steep-to, and fringed by foul ground up to 0.5 mile off. Rada de las Banderas lies between Punta Pucatrihue and a point about 1.5 miles NNE. The cove is open from the N to WSW, and the anchorage is exposed to the ocean swell. Depths range from 12.8 to 33m, with a bottom of fine white sand and large stones. The S part of the bay affords the best shelter.

Roca Covadonga, a below-water rock over which the sea usually breaks, lies almost 1.5 miles offshore about 2.5 miles SSW of Punta Pucatrihue.

Rada Manzano, about 6.5 miles S of Punta Pucatrihue, affords anchorage, in 12.8 to 27.4m, sand. It is protected from winds between the E and S. Below-water rocks extend about 0.8 mile W from the N entrance point of the cove.

Farallones de Los Lobos, consisting of some black above and below-water rocks, extend about 1 mile offshore between the S entrance point of Rada Manzano and the N entrance point of Caleta Mansa, about 1.5 miles SSW.

5.52 Caleta Mansa (40°33'S., 73°46'W.), a small bay, has depths of 12.8 to 21.9m in its entrance. Two beacons situated on the SE shore, in line bearing 104°, lead into the bay. The approach to Caleta Mansa should only be made in daylight with clear weather, as the entrance is difficult to distinguish because of breakers. A light is shown from Punta Moquegua, the S entrance point of the bay.

A wharf, about 48m long, lies in a NE and SW direction in the N part of the cove. The wharf, which has depths of 7.9m at its seaward end, and 6.7m and 4.9m on its E and W sides, respectively, is connected to the shore N by a bridge, 183m long. Ships berthed at the wharf are sheltered from all but W winds. The E berth, with a depth of 6.7m alongside, is used by small vessels up to 80m in length with a maximum draft of 5m.

Caleta Muicolpue (40°34'S., 73°46'W.) lies between Punta Moquegua, the S entrance point of Caleta Mansa, and Punta Muicolpue, a wooded point a little over 0.8 mile SSW. Above and below-water rocks extend about 0.1 mile W from Punta Moquegua, and below-water rocks extend about 91m off Punta Muicolpue. Caleta Muicolpue affords good shelter during S winds, but is completely exposed to W and NW winds. Anchorage may be taken, in 20.1 to 21.9m, sand, about 0.5 mile NW of the mouth of the Rio Muicolpue, at the head of the cove.

5.53 The coast from Punta Muicolpue to Punta Llesquehue, about 6 miles SW, is rocky and steep-to. Between Punta Llesquehue and Cabo Quedal, about 20 miles SSW, the irregular coast is generally steep-to with intermittent sandy beaches. It is indented by numerous bays and bights.

Morro del Compas (40°42'S., 73°52'W.), about 3.5 miles S of Punta Llesquehue, is rocky, steep-to, and wooded to its summit.

Rada de Ranu recedes about 1 mile SE between Morro del Compas and the N entrance point of the Rio Hueyelhue, about 1.5 miles NNE. The N entrance point of the cove is high and steep-to; below-water rocks and breakers extend almost 0.3 mile off it. Three rocks, awash and surrounded by below-water rocks, lie about 0.8 mile WNW of the N entrance point of Rada de Ranu. The cove affords anchorage in its SE part during S winds, in depths of from 20.1 to 28m, sand, about 0.3 mile offshore NW of the head of the cove.

Punta Condor (40°45'S., 73°54'W.) is high and steep-to. Caleta Condor lies between Punta Condor and the S entrance point of the Rio Chalguaco, about 1 mile NE. Depths decrease gradually from 37 to 40m in the center of the entrance to about 7.3m near the shore. The N and S shores of the cove are rocky, steep-to, and densely wooded. The cove provides shelter from S winds, but cannot be recommended.

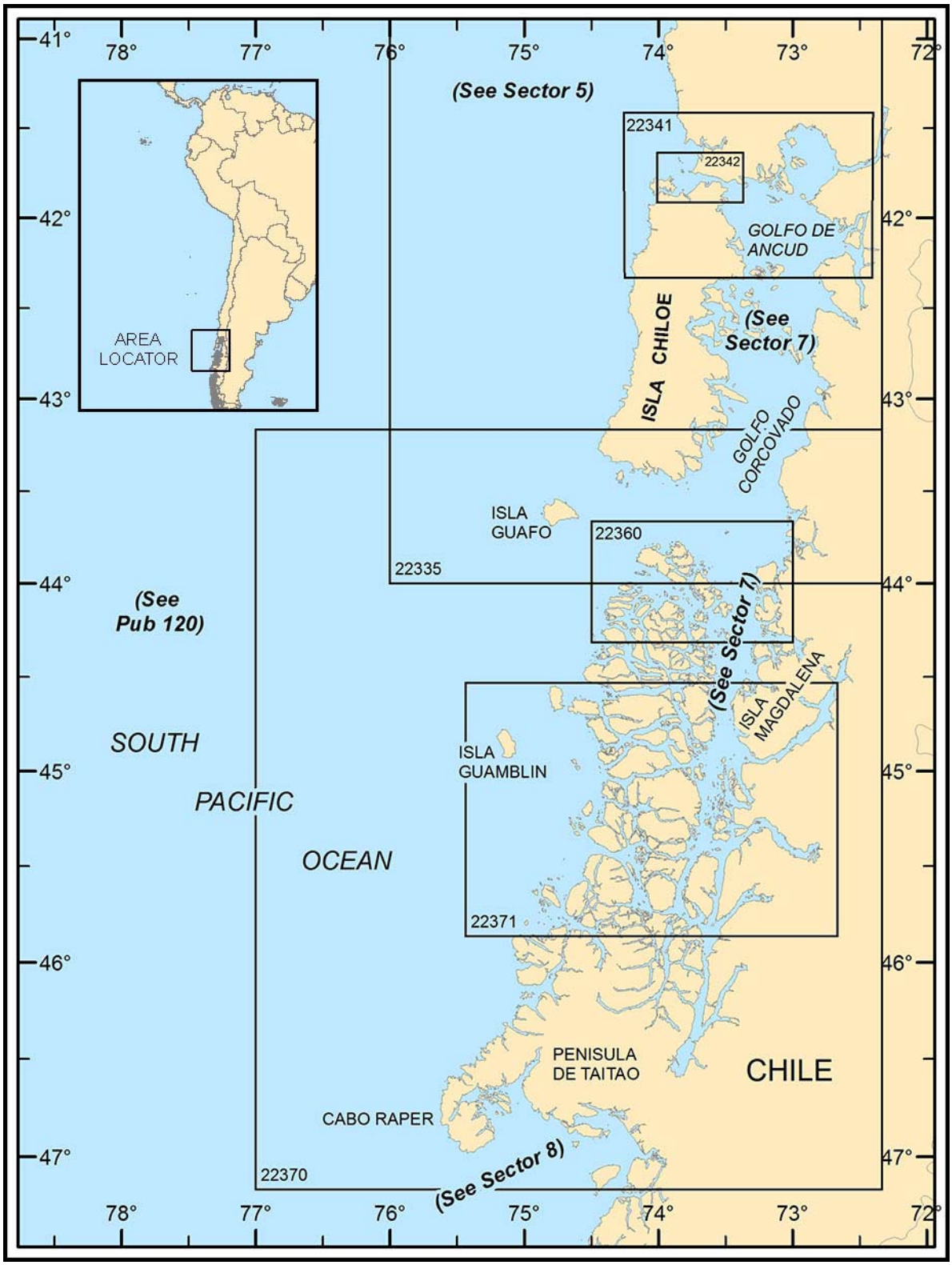
Cabo San Antonio, about 6 miles S of Punta Condor, is high and covered with vegetation. Below-water rocks fringe the coast between Cabo San Antonio and the N entrance point of Bahia San Pedro, and lie up to 0.2 mile offshore.

Punta San Pedro (40°56'S., 73°53'W.) is the S entrance point of Bahia San Pedro. The point is somewhat high. Above and below-water rocks lie up to 0.3 mile off the point and from the coast SW to Cabo Quedal. Farallones de San Pedro, a group of above and below-water rocks, lie with their NW extremity almost 1.5 miles WNW of Punta San Pedro. There is a clear channel about 0.3 mile wide, with depths in the fairway of from 12.8 to 37m between these rocks and the coast SE.

Bahia San Pedro recedes almost 2 miles between Punta San Pedro and a position about 3.8 miles N. The bay has depths of from 11.9 to 16.5m from 0.3 to 0.7 mile off its head, but is exposed to swells from NW.

5.54 Cabo Quedal (40°59'S., 73°57'W.) lies about 8 miles SSW of Cabo San Antonio. The cape is high and precipitous, and the most prominent point in the vicinity. Several moderately-high hills back Cabo Quedal to the E. The shore of the cape is fronted by submerged rocks. A light is shown from a tower, 8m high, standing on the cape.

A small cove, about 1.5 miles NE of the cape, has a sandy beach with two streams emptying into it.



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

SECTOR **6** — CHART INFORMATION

SECTOR 6

CHILE—CABO QUEDAL TO CABO TRES MONTES, INCLUDING THE WEST COAST OF ISLA DE CHILOE AND THE ARCHIPELAGO DE LOS CHONOS

Plan.—This sector describes the coast of Chile from Cabo Quedal S to Punta Cogomo, the SE extremity of Isla de Chiloe. Canal Chacao, the channel between Isla de Chiloe and the mainland N, and the N, W, and S coasts of that island are also described. Isla Guafo and the dangers in Boca del Guafo, the passage between Isla de Chiloe, and the Archipelago de los Chonos are described. The W side of the Archipelago de los Chonos is described and the inner channels within the archipelago from Isla Guaiteca to Cabo Taitao from the N to S. The inner channels are described from E to W when they connect with Canal de Moraleda. The coast from Cabo Taitao to Cabo Tres Montes is then described from N to S.

General Remarks

6.1 A number of bays and bights indent the coast and numerous rivers empty into it. It is mostly steep-to and rocky, with intermittent sandy beaches. It is generally backed by low ground and occasional hills, except at the central part of Isla de Chiloe, where the hills reach an elevation of almost 823m. In general the coast is steep-to, but above and below-water dangers fringe many parts of the coast.

The Archipelago de los Chonos extends about 120 miles N from Peninsula Taitao and is separated from the mainland eastward by Canal de Moraleda. The islands on the seaward side are generally barren, rugged, and steep. Those to eastward are forested. Some of the peaks attain elevations of more than 1,524m.

The three principal channels, which trend from W to E and connect with Canal de Moraleda, are Canal Pulluche and its continuation E, Canal Darwin, and Canal Ninualac. Canal Darwin provides a safe passage for vessels wishing to pass inside the archipelago via Canal de Moraleda.

Most of the channels within the archipelago have not been thoroughly examined and uncharted dangers may exist. Navigation is often difficult in autumn and winter because of fog.

Most of the vessels which frequent the Archipelago de los Chonos are small in size and possess local knowledge. Information on anchorages described in this sector has been derived from these small vessels, therefore, larger vessels should keep this in mind when evaluating the information herein.

The coast between Cabo Taitao and Cabo Tres Montes is hilly and rugged. Most of the inlets have not been thoroughly examined, although some provide shelter to small vessels.

Tides—Currents.—The west wind drift, flowing across the South Pacific Ocean, strikes the coast of Chile within the area covered by this sector. Part of the current turns S and flows along the coast past Cabo Hornos, while another portion turns N and becomes the Peru Current. The Peru Current has a width of 100 to 150 miles, but is generally weak. Offshore, the current has a more W set, but within 10 miles of the shore an E set, towards land, is experienced.

Caution.—Between Isla de Chiloe and about latitude 50°S, E sets are encountered, especially near Golfo de Penas. North of 50°S, after storms or strong winds from the N or NW, E and SE sets should be guarded against; with these conditions, rates of more than 1 knot have been observed. Between Isla Guanbin and Isla Guafo, an E current of 2.5 knots has been observed when augmented by wind and tidal currents.

Northward of Islas Guaitecas the tidal currents follow the general trend of the coast, running E on the rising tide and W on the falling tide. Northeast of Islas Guaitecas the tidal current sets SE toward Canal de Moralenda on the flood, and NW on the ebb, with rates of 1 to 3 knots.

In Canal Tuanapu the tidal currents run in a general ESE direction on the flood, and in a WNW direction on the ebb. Maximum rates for the current are usually 1 to 3 knots, but rates of 4 knots have been experienced.

Currents of a local nature are described with the features of which they occur.

Cabo Quedal to Canal Chacao

6.2 **Cabo Quedal** (40°58'S., 73°58'W.) has been previously described in paragraph 5.54.

Punta Capitanes, about 10 miles S of Cabo Quedal, has a small peninsula at its extremity with reddish-yellow cliffs which appear to be an island when seen from the S. Above and below-water rocks extend about 1 mile offshore between Cabo Quedal and Punta Capitanes. Roca Parga, an above-water rock surrounded by below-water rocks, lies about 0.8 mile offshore about 5 miles SSE of Punta Capitanes. From Roca Parga the coast trends about 4.5 miles S to the N entrance point of Ensenada de Llico. This part of the coast is rugged, hilly, and backed by high mountains covered with trees. Ensenada de Llico and Ensenada Estaquillas, close S, are of little importance.

Punta Estaquillas (41°21'S., 73°51'W.) is prominent. Numerous above-water rocks and rocks awash extend nearly 1 mile W from Punta Estaquillas. From Punta Estaquillas to Punta Quillagua the coast is rugged, with intermittent sandy beaches in its S part.

Punta Quillagua (41°35'S., 73°48'W.), the NE entrance point of Golfo de los Coronados, is low and rocky at its extremity, but rises to a wooded summit. There are several sandy beaches and small rocky points in the vicinity. Two below-water rocks, on which the sea breaks in bad weather, lie about 1.8 miles offshore WNW of Punta Quillagua. The point should not be approached within a distance of 2 miles.

Bahia Maullin recedes about 5 miles E between Punta Quillagua and Punta Chocoi, about 9.5 miles SSE. Small vessels may find shelter within the Rio Maullin, which empties into the head of Bahia Maullin.

The bay has general depths across its entrance of from 11.9 to 36.6m, which decrease gradually toward the shore. Farallones de

Carelmapu, a chain of rocky islets, lie from 3.5 to 5.5 miles NW of Punta Chocoi. Farallon Grande, the outermost and highest islet, is reported to give a good radar return. El Moco, in the middle of the chain, is sharp-pointed and prominent. Farallones de Carelmapu are surrounded by numerous below-water rocks and should not be approached within 0.5 mile.

Banco Alto del Peru, with depths of less than 9.1m, extends about 2.5 miles W from a position about 1 mile offshore, about 1.3 miles NNE of Punta Chocoi, where it has a least depth of 2.7m. The sea breaks on the E side of the shoal with strong winds and a heavy swell, and occasionally breaks when it is calm.

Isla Dona Sebastiana lies with its E extremity about 1.5 miles W of Punta Chocoi. There are two prominent hills on the island separated by a cultivated valley. A wreck lies sunk close off the SE side of a 5m shoal, about 0.3 mile SSW of the SE extremity of the island. Lights are shown from the SE and SW ends of the island.

6.3 **Bajo Aquiles** (41°44'S., 73°51'W.), with depths of less than 9.1m on its outer part and less on its inner part, extends 2 miles WNW from the NW side of the island. A 9.1m patch, over which the sea breaks occasionally, lies about 3 miles WNW of the NW extremity of the island. Bajo Campana, a spit of coarse sand and shells which dries, extends almost 0.7 mile E from the SE extremity of Isla Dona Sebastiana. An isolated shoal, with an unconfirmed depth of 14.1m (position approximate), was reported to lie about 6.5 miles NW of the island.

Paso Chocoi, about 1 mile wide between the E extremity of Bajo Campana and Punta Chocoi, is encumbered in its N approach by Banco Alto del Peru, and is not recommended as the tidal currents in the passage are very strong.

Caleta Godoy recedes about 0.8 mile N, on the N side of Bahia Maullin. From the SE entrance point of Caleta Godoy to the S extremity of Morro Godoy, about 2.5 miles SE, the coast is rocky except for a small sandy beach on the N side of Morro Godoy.

Anchorage.—Vessels can take anchorage, in 11m, sand, about 1.8 miles E of Punta Quillagua. Small vessels can take anchorage, in about 8.2m, about 1 mile W of Punta Godoy.

6.4 **Punta Godoy** (41°36'S., 73°41'W.), the N entrance point of the Rio Maullin, is low, rocky, and steep-to. El Mirador, about 58m high, is the largest of a group of rocks which lies close offshore about 0.7 mile NW of the S extremity of Morro Godoy. Javier Igor, a high, yellow, above-water rock, lies about 0.5 mile W of the S extremity of Punta Godoy.

Morro El Amortajado lies about 1.8 miles SSW of Morro Godoy. The promontory has steep-to sides of reddish-yellow color. A reef extends about 0.2 mile N from the N extremity of Morro El Amortajado, and ends at a below-water rock marked by kelp.

From Morro El Amortajado to Punta Lincai, about 1.5 miles S, the coast is steep-to and rocky. Then Playa de la Yagua, a sandy beach, extends about 5.5 miles SSW to Punta Chocoi. The coast about 1 mile inland is low, with sand dunes and swamps.

The Rio Maullin empties into Bahia Maullin between Morro Godoy and Morro Amortajado. The bar at the entrance to the river is reported to have depths of 2m and to be silting up.

The river is one of the most important in Chile, and has its source near the foot of the Andes. Vessels of light draft can reach Puerto Maullin, about 4 miles from the mouth of the river. Numerous dangers encumber the Rio Maullin. The fairway of the river channel is marked by range beacons.

Maullin (41°37'S., 73°36'W.) (World Port Index No. 14320) lies on the S bank of the Rio Maullin, on an extensive plain. There are several piers used by fishing craft and shallow-draft river vessels.

Tides—Currents.—The tidal current at the river entrance sometimes has a velocity of from 2 to 4 knots. Caution should be exercised during the E current as a vessel may be set N, and during the W current a vessel may be set toward the S. The tidal current attains a velocity of from 3 to 7 knots off Maullin.

It is not advisable to enter the river without local knowledge.

Anchorage.—Anchorage can be taken by small vessels about 0.2 mile N of Maullin, in 5.9m. Anchorage is prohibited within 27m of the submarine cable which extends from Maullin in a NNE direction to the N shore.

Canal Chacao (41°48'S., 73°35'W.)

6.5 Canal Chacao separates Isla de Chiloe from the mainland northward, and joins Golfo de los Coronados with Golfo de Ancud. Both shores of the channel are moderately high and regular, either sloping to the shore or terminating in cliffs of up to 49m in elevation.

The canal is entered between Punta Chocoi and Punta Corona, about 5.5 miles WSW. It extends about 13 miles E to its E entrance between Punta Coronel and Punta Tres Cruces, about 2 miles S. The channel is navigable, but caution must be exercised to avoid several dangers.

Due to construction of the bridge, an alternative channel has been made navigable SE of Roca Remolinos, in the event the N passage is restricted. Vessels entering the canal from the W have priority to decide which route to take, vessels should contact the local authority for regulations. Vessels may not approach within 0.1 miles of the piles.

The least charted depth on the recommended track shown on the chart is 22m, near the W end of the canal.

Tides—Currents.—The currents in Canal Chacao are very dangerous, and have velocities from 2 knots off Punta Huechucuicui to 9 knots off Roca Remolinos, about 2 miles W of Punta Coronel. In the vicinity of Roca Remolinos the E tidal current begins 5 hours after HW, and the W tidal current begins 1 hour before HW. There is no slack water. After N gales a strong E current may be experienced which attains velocities of more than 5 knots in the channel proper. During spring tides the waters have the appearance of a rapid river, with rips and whirls of great strength; at quarters of the moon the strength decreases considerably. With strong winds contrary to the current, great agitation of the waters, called “rayas,” takes place.

Aspect.—When approaching the W entrance of the canal, the loom of the lights at Ancud (41°52'S., 73°50'W.) may be seen up to 25 miles seaward.

Pilotage.—Pilotage is compulsory in the canal. Pilots board at the Ancud pilot boarding area. The port monitors VHF channels 13 and 16.

Caution.—Fog appears in Canal Chacao, especially in the

Canal Chacao

vicinity of Farallones de Carelmapu, in the form of dense banks. Fog occurs more frequently during the months of February, March, and April.

In addition to the dangers fringing the shore, there are numerous detached dangers, best seen on the chart, in and near the channel.

Heavy tide rips and breakers occur on Rocas Puguenun (41°48'S., 73°42'W.), which are covered with kelp which shows only at low water. Heavy tide rips also occur about 0.5 mile N and NW of Rocas Puguenun, and should be avoided as they may mark hidden dangers.

Submarine cables lie across the canal in an area shown on the chart near the W end. It was reported (1986) that a risk to anchoring was possible when remaining in a former cable area about 4 miles W of Punta Coronel.

Ferries cross the canal between Pargua and Chacao, and between Carelmapu and Ancud.

Navigational aids marking the fairway in the canal are liable to drift and should not be relied on.

A power cable, with a vertical clearance of 44.8m, crosses the E end of Canal Chacao.

6.6 **Punta Chocoi** (41°45'S., 73°46'W.), the NW entrance point of Canal Chacao, is cliffy and of medium height. The point is pierced by a visible opening. A small, but conspicuous, islet lies close off the N tip of the point. From Punta Chocoi the cliffy coast trends about 2.3 miles ESE to Punta Falsa Picuta, and then 0.5 mile E to Punta Picuta de Carel mapu. A wreck, with one mast visible at all stages of the tide, lies about 0.7 mile SSE of Punta Chocoi. Small vessels can take anchorage, in about 11m, almost 0.5 mile offshore, about 1 mile ESE of Punta Chocoi. A quantity of pig iron, dumped about 0.1 mile offshore, may cause difficulty in this anchorage.

Punta Picuta, about 2.8 miles E of Punta Chocoi, is prominent. Its S and E slopes are steep-to and there is a rocky beach at its foot. The principal cross-channel ferry plies between the village of Carelmapu, close N of the point, and Ancud, about 10 miles SW. Bajo Colo-Colo (41°45.4'S., 73°4.0'W.), extending S from Punta Picuta, is marked by a lighted beacon. In the vicinity of Bajo Colo-Colo an extensive rocky shoal area stretches ESE and WNW. Mariners are advised to exercise extreme caution.

Punta Lenqui, about 2 miles E of Punta Picuta, is cliffy and about 19.8m high. A light is shown from the point.

From Punta Lenqui to Punta Astillero, about 3.5 miles E, there are cliffs about 19.8m high. In places these are located from 0.3 to 0.5 mile inland and are fronted by marshy ground. A pyramidal concrete beacon, 9.1m high, is situated about 0.5 mile ESE of Punta Lenqui, but the beacon is reported to be difficult to see. Punta Redonda, a prominent point, is located about 2 miles E of Punta Lenqui.

Punta Astillero, surmounted by a stone monument about 3.5 miles E of Punta Lenqui, is rugged and covered with vegetation. From Punta Astillero to Punta Santa Teresa, about 2.5 miles ESE, the coast is rugged and steep-to.

Punta Coronel (41°48'S., 73°29'W.) is the NE entrance point of Canal Chacao. The yellow cliffs on the point are barren and about 24m high. A light is shown from the point and at Punta Barranco, about 1.3 miles NNW.

Punta Barranco Light

Bahia Guapacho (41°47'S., 73°58'W.), on the SE side of the W entrance to Canal Chacao, lies between Punta Huechucuicui and Punta Guapacho, about 4.3 miles E. Punta Barrancas, about 1.5 miles SE of Punta Huechucuicui, is rocky and has a height of about 50m.

Punta Guapacho, about 56m high, is steep-to and of light yellowish color. Its summit is bare and its seaward extremity is rocky. The point is reported to give a good radar return. Two red patches, visible from N, are located on the hillsides 0.5 mile S and 1 mile SSE of the point. Rodal Guapacho, a reef which dries in places, extends about 1.8 miles W from Punta Guapacho. This reef is generally marked by breakers, but it is dangerous at night during calm weather, when it breaks infrequently and the low land behind it cannot be seen. Roca Osorio, with a depth of less than 1.8m, lies about 0.8 mile NW of

Punta Guapacho and breaks in moderate weather. Punta Guapacho should be given a berth of at least 1 mile as the tide rips are very strong off Rodal Guapacho and becomes dangerous during strong NW winds. In 1998, shoaling was reported 0.6 mile NNW of Punta Guapacho.

Anchorage.—Vessels can take anchorage, in 20.1 to 25.6m, sand, in Bahia Guapacho about 1.3 miles E of Punta Huechucuicui. There are depths of 15 to 18m, with good holding ground in the SE part of the bay. Rocks, obstructions, and shoals extend about 1.5 miles E of Punta Huechucuicui, which is close N of the anchorage.

6.7 Punta Corona (41°47'S., 73°53'W.) is about 58m high. Pale yellow cliffs, with a uniform elevation of from 50 to 61m, lie between Punta Corona and Punta Guapacho.

The red and white banded tower of Punta Corona Light stands on the point and is equipped with a racon and AIS.

From Punta Corona to Punta Ahui, about 3 miles SSE, the coast recedes about 1.3 miles W to form Puerto Ingles. The N shore of Puerto Ingles is steep-to, while the S shore is rocky and backed by hills of moderate height. A group of three houses stands on the N shore and a church stands at the head of the bight.

Punta Corona Litgh

Anchorage.—Vessels can take anchorage, in 12.8 to 14.6m, gravel and coarse sand, a little over 0.5 mile SSE of Punta Corona. Puerto Ingles is the quarantine anchorage for Ancud. Strong winds from the N, NE, and NW create a heavy sea at this anchorage.

Punta Ahui (41°50'S., 73°52'W.) is the W entrance point of Bahia de Ancud. The point is steep-to and about 44m high. Punta Ahui is reported to give a good radar return. A light is shown from the point.

Isla Cochinos, about 2.3 miles ESE of Punta Ahui, is wooded and has a depression in the middle. The coasts of the island are cliffy and rocky, except on its SE side. Roca Cochinos, which dries, lies almost 0.3 mile N of the W end of Isla Cochinos. Depths of less than 5.5m extend up to about 0.3 mile off the NW side of the island, and about 1 mile offshore SE of the SE side of the island.

Punta Mutrico (41°51'S., 73°46'W.), about 5 miles ESE of Punta Ahui, has a height of about 53m and is rocky and rugged. A church is situated near the shore about 0.5 mile SSW of Punta Mutrico.

From Punta Mutrico to Punta Pihuio, about 3.3 miles NE, the coast consists of a sandy beach interrupted by small streams and backed by hills. Punta Pihuio is cliffy with a sand and gravel beach at its foot.

6.8 Punta Puguenun (41°48'S., 73°40'W.) is low and consists of yellow sand dunes, backed by higher ground. A small church is situated on the point, and another church is situated near the shore about 1 mile SW.

Punta Quetrelquen (41°48'S., 73°36'W.), about 21.3m high, is a small cliffy peninsula. The point is reported to give a good radar return. About 0.3 mile S of the point the land rises to an elevation of about 46m and is wooded.

Punta San Gallan, about 2.3 miles E of Punta Quetrelquen, is cliffy and about 46m high. There is a prominent clump of trees on its summit. A whitish rock stands on the beach at the foot of the cliff. Punta San Gallan is one of the most prominent points in Canal Chacao. A light is shown from the point.

Roca Remolinos lies about 0.8 mile E of Punta San Gallan; a lighted beacon stands on the rock. Roca Seluian lies 0.5 mile SE of Roca Remolinos. Tidal currents run strongly over and past these rocks, causing tide rips.

Punta Remolinos, almost 1 mile SE of Punta San Gallan, is of even height, cliffy, and has deep water close-to. Punta Soledad, about 1 mile SSE of Punta Remolinos, has a dark, barren aspect.

Punta Tres Cruces (41°50'S., 73°29'W.), the SE entrance point of the canal, lies 2.5 miles SE of Punta Remolinos. The point is steep and wooded. A light is shown from a prominent tower, 8m high, standing on the point.

6.9 Chacao (41°50'N., 73°32'W.) is situated at the head of Bahia Chacao, which recedes about 0.8 mile between Punta Soledad and El Morro, about 1 mile further ESE. A small church, school, post office, and telegraph office are visible from seaward.

There is a pier about 100m long which is used by passenger and automobile ferries. A pier, 78m long, is used by small craft. A mooring buoy is situated off the ferry pier.

Anchorage.—Temporary anchorage can be taken in Bahia Chacao, in 10.1 to 11.9m, coarse sand and gravel, about 0.5 mile SE of Punta Soledad. The holding ground is not good.

Pilotage.—Pilotage is compulsory for all foreign vessels. The pilot is the same for directing vessels through the canal. The port can be contacted by VHF.

Caution.—A countercurrent, with a velocity of from 1 to 3 knots, exists within Bahia Chacao. The dividing line between the currents and the countercurrents extends from Punta Tres Cruces to Punta Remolinos and is marked by strong tide rips.

6.10 Bahia de Ancud (41°52'S., 73°52'W.) recedes about 3 miles SW between Punta Ahui and Punta San Antonio, about 2 miles SE. The W extension of the bay, Golfo de Quetalmahue, recedes about 5 miles W. Bahia de Ancud is encumbered with numerous dangers which reduce the navigable area to a width of about 0.8 mile.

Ancud (41°52'S., 73°50'W.) is situated in a small valley surrounded by wooded hills on the E shore of Bahia de Ancud. The town is divided into two sections, the higher part standing 19.8 to 24m above sea level and containing the main plaza, the cathedral, and government buildings. The lower part contains the shops, warehouses, and customhouse. A small pier, 63m long, extends from the town.

Tides—Currents.—A vessel entering the bay should beware of crosscurrents.

Aspect.—Conspicuous landmarks include an isolated house and a monument standing 0.1 mile SE and 0.1 mile SSW, respectively, of Punta San Antonio; a tank with a radio mast, 20m high, standing close NW, situated about 0.8 mile SSE of Punta San Antonio; a radio mast, 45m high, standing on a hill about 2 miles SSE of Punta San Antonio; a statue standing on the slope of a hill about 1.8 miles SW of Punta San Antonio; and an isolated tree standing about 1.5 miles SW of Punta Ahui.

Aeronautical lights are reported to be shown from two radio masts standing 0.2 mile apart about 2 miles SW of Punta San Antonio. These lights are reported to be visible from a distance of up to 35 miles seaward.

Pilotage.—Pilotage is compulsory. The pilot boards vessels in position 42°47'40"S, 73°50'27"W. Pilots for Canal Chacao and channels farther S, including Magellan Strait, are also embarked and disembarked here.

Contact Information.—The port can be contacted, as follows:

Bahia de Ancud—Contact Information	
Port Operations	
Call sign	CBP23 (Ancud Radio)
VHF	VHF channels 9, 14, and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	56-265-622363
	56-265-623113
Facsimile	56-265-622363
E-mail	cpancud@directemar.cl
MMSI	007250240

Anchorage.—Vessels can take anchorage, in 7.8 to 9.1m, sand, about 0.5 mile offshore SSE of Punta Ahui. This anchorage is partially protected from SE winds and sea and is particularly convenient for vessels awaiting a pilot or favorable conditions in Canal Chacao. Vessels may also anchor about 0.3 mile offshore E of Punta Balcacura, in 10.1 to 12.8m, sand and mud.

Anchorage can be taken in about 12.8m, sand and mud, about 1 mile ESE of Punta Arenas (41°52'S., 73°54'W.). This anchorage is sheltered from NW winds. Temporary anchorage may be taken, in about 10.1m, a little over 0.8 mile N of Punta San Antonio.

Anchorage can be taken off the entrance of Golfo de Quetalmahue, about 0.5 mile SE of Punta Arenas, and is inconvenient only because of the currents. West winds, when contrary to the current, may interfere with the working of cargo. Anchorage can also be taken, in about 7.3m, within the gulf about 0.3 mile offshore about 1 mile W of Punta Arena, and, in 11m, about 0.3 mile offshore, about 1 mile WSW of Punta Arenas.

Caution.—Numerous changes in depths have occurred in Bahia de Ancud. Ships should proceed with caution.

Rollers are encountered in the bay after strong gales which are common May through September.

The buoys marking shoals in Bahia de Ancud and the approaches to Canal Chacao are liable to drift and should not be relied on.

Isla de Chiloe—West Coast

6.11 The W coast of Isla de Chiloe is irregular, generally high, and rugged, with short stretches of whitish sandy beach. It is characterized by its thick forests and the even outline of its high land, in marked contrast with the islands along the W coast of Patagonia to S and the mainland to E, the mountain ranges of which are higher and very steep-to and rugged.

A lowland, in which lie Lago Cucao and Lago Huillinco, nearly divides the island into two parts. North of the lowland the land rises to Alturas de Cucao, prominent heights which attain elevations of from 610 to 914m;, the range continues N with lesser elevations, except for Tetas de Metalqui, about 30 miles S of Punta Huechucuicui and 3 miles inland.

About 15 miles N of Tetas de Metalqui the range is interrupted by a valley through which the Rio Chepu flows. From a distance the heights of Cocotue to the N of this valley and the heights of Metalqui to the S appear as islands. Cerro Huy Manao, conical in form and about 320m high with a cap resembling a helmet, lies at the S end of the heights of Cocotue and is an excellent landmark from the W.

Caution.—Caution must be exercised because of the lack of sufficient soundings and the possibility of uncharted dangers. In addition, the charts have been reported not to conform with the actual coastal configurations in a number of places.

6.12 **Punta Huechucuicui** (41°46'S., 74°00'W.), the NW extremity of Isla de Chiloe, is cliffy and rises to a height of about 244m about 1 mile S of the point. The lower part of the point is bare, but there is dark vegetation near its summit. A dangerous submerged rock lies about 1 mile NE of the point in position 41°45.8'S, 73°58.6'W. Additionally, a depth of 13.1m has been reported about 5.8 miles NE of Punta Huechucuicui in position 41°43.2'S, 73°53.6'W.

Punta Guabun, about 3 miles SW of Punta Huechucuicui, is about 128m high and has the appearance of a steep wall. Punta Caucaguapi, about 2 miles S of Punta Guabun, is high, cliffy, and fringed by high ground.

Tetas de Teguaco, prominent summits covered with vegetation, lie about 3.3 miles E of Punta Almanao (41°56'S., 74°04'W.). Punta Choros, the S entrance point of the Rio Chepu, lies about 7.5 miles S of Punta Almanao and is of moderate height. Islote Tromacho, a dark conical rock with red patches on it, lies about 0.8 mile NNW of Punta Choros. Rodal Aulen, below-water rocks with depths of less than 1.8m on which the sea always breaks heavily, lies about 1 mile N of Islote Tromacho.

6.13 Islote Ahuenco (42°07'S., 74°05'W.), a dark above-water rock with vegetation on its summit, lies close offshore. Punta Refugio, about 4 miles SW of Islote Ahuenco, is rugged with a wooded summit.

Morro Metalqui, about 3 miles SW of Punta Refugio, is steep and bare, with a beach at its foot formed by rocks which have fallen from it. Cabo Metalqui lies about 4.5 miles SSW of Morro Metalqui. Islote Corcovado, which is conical and yellow, lies close off it.

Caleta Quiutil (42°31'S., 74°14'W.) recedes about 0.5 mile between Punta Cuevas and Punta Huentemo, about 0.5 mile S. The cove is encumbered by islets and rocks, and is suitable only for small vessels, which take anchorage, in a depth of 14.6m, fine sand and stones, with Punta Cuevas bearing 006° and Farallones de Quiutil bearing 290°. This anchorage should be vacated at the first sign of bad weather. Farallones de Quiutil, a group of above and below-water rocks, lie in the approach to the cove about 0.5 mile NW of Punta Huentemo.

Punta Huentemo, the S entrance point of Caleta Quiutil, is shaped like a sugar loaf and is about 55m high. It appears to be an island when seen from the N or S.

Bahia Cucao (42°37'S., 74°13'W.) lies between Punta Huentemo and Punta Pirulil, about 13 miles S. The shores of the bay are composed of a sandy beach on which there is always a heavy surf. Villorio de Rahue, which can be seen from seaward, lies about 2 miles NE of Punta Pirulil.

6.14 Punta Pirulil (42°43'S., 74°13'W.) rises about 1 mile E to Morro Pirulil, which has steep-to cliffs of a yellowish or reddish color and with two whitish rocky islets close offshore, and is very conspicuous. From Punta Pirulil to Punta Tablaruca, about 12 miles SSW, there are several unimportant sandy bays.

Punta Tablaruca, about 47m high, is covered with dense vegetation and is steep-to on its N side. A large unimportant bay, with a sandy beach about 3 miles long at its head, lies between Punta Tablaruca and Punta Chaiguaco, about 4 miles SSW.

Punta Chaiguaco, a small and cliffy peninsula of dark color, can be identified by some large rocks which lie up to almost 0.3 mile off it.

Ensenada Huenocoihue lies between Punta Chaiguaco and Punta Huenocoihue, about 2.5 miles S. There is a sandy beach about 1.8 miles long at the head of this bay.

Caleta Zorra (43°08'S., 74°19'W.) lies between Punta Barranco and Punta Zorra, about 1 mile S. It is used as a shelter by local fishermen in fair weather. There is a sandy beach about 1.8 miles long at its head. Caleta Zorra provides moderate shelter to small craft.

Punta Pabellon, about 5.5 miles SSW of Punta Zorra, is conical. The Rio Pabellon flows into the head of a cove about 1.3 miles ENE of the point. From Punta Pabellon to Cabo Quilan, about 2 miles S, the coast is cliffy and fringed with numerous above and below-water rocks lying up to 0.8 mile offshore.

Cabo Quilan (43°16'S., 74°24'W.) is about 79m high and of yellowish color. From SW or NW, it appears to be a series of terraces. The beach at the foot of the cape is very narrow and strewn with large rocks. The sea is always very rough and breaks violently against the cape and for about 1 mile off. Cerro Quilan, with an elevation of about 488m, is located about 6 miles E of Cabo Quilan.

Isla Guafo

6.15 Isla Guafo (43°35'S., 74°42'W.), centered about 25 miles SW of Cabo Quilan, is densely wooded and reaches an elevation of about 240m near Punta Weather, its NW extremity. There is a noticeable depression near the middle of the island and the E part, which is not as high as the W part, descends gradually to Punta Caleta, its E extremity. It was reported that an earthquake 34 years ago had caused changes in the vicinity of the island and that the island had risen about 3m.

Caution.—Fog occurs on the average of 11 to 12 days per month in December and January, and on 4 to 8 days per month, on the average, in the vicinity of the island.

Isla Guafo should not normally be approached within 2 miles. Small vessels navigating within this distance should exercise extreme caution.

6.16 Punta Norte (43°31'S., 74°45'W.) is the N extremity of the island. A small bay indents the NW coast of the island between the point and Punta Weather, the NW extremity about 5 miles SW. Above and below-water rocks extend about 0.8 mile N from Punta Norte. The shores of this bay are fringed with rocks and the sea breaks up to 0.8 mile offshore.

Punta Weather (43°34'S., 74°50'W.) consists of a small peninsula, from 61 to 70m high, which is joined by a low isthmus to a steep-to bluff over 122m high. Rocas Salientes, above and below-water rocks, extend about 1.5 miles offshore NW from the point. A light is shown from a prominent tower, 8m high, with a dwelling alongside, standing on Punta Weather. A racon is situated at the light tower.

Caleta Rico lies on the E side of Punta Weather and affords some shelter during S winds. The best anchorage is in 20.1m, sand, about 0.2 mile NE of Punta Weather.

From Punta Weather to Punta Sur, about 6.5 miles SSE, the W coast consists of high and almost continuous cliffs, fringed by islets and rocks up to about 1 mile offshore.

Caleta Toro is located about 0.8 mile S of Punta Weather. The cove indents the coast about 0.3 mile and is about 0.1 mile wide. Entrance into the cove is difficult with a W swell, because of a rock, awash, in the middle of the channel.

The S coast of Isla Guafo is unapproachable due to rocks and breakers which lie up to about 0.7 mile offshore. An islet, surrounded by breakers, lies about 0.5 mile S of Punta Caleta and should be given a wide berth.

Caleta Sheep recedes about 0.5 mile W between a position almost 0.5 mile NW of Punta Caleta and a point about 1 mile farther NW. Caleta Sheep is sheltered from S winds, but should not be used during strong N winds, which cause a heavy sea.

Anchorage.—Anchorage can be taken, in 18.3m, rock, almost 0.5 mile SSE of the N entrance point of the cove.

Caleta Samuel recedes about 0.5 mile W between Punta Toro, about 2.3 miles NW of Punta Caleta, and Punta Yanez, almost 0.3 mile further NNW.

The cove affords shelter to small vessels during NE to SE winds, but the latter winds may at times raise a moderately heavy sea. The shores of the cove are cliffy. A building and a pier of the former whaling station, both in ruins, are situated near the head of the cove. A chimney is situated 0.3 mile SW of Punta Yanez. Below-water dangers, marked by kelp, extend about 0.1 mile off the N shore.

Isla Guafo and Isla Guafo Light

Anchorage.—Anchorage can be taken in an emergency, in 12.8m, sand, about 0.2 mile NW of Punta Toro. This anchorage should be abandoned upon indications of S winds, which form strong currents and heavy breakers.

Isla de Chiloe—South Coast

6.17 Punta Cogomo, the SE point of Isla de Chiloe, lies about 28 miles ESE of Cabo Quilan. The point is 24m high and easily identified. The coast between is generally steep-to with intermittent sandy beaches. Numerous above and below-water rocks and islets fringe the coast up to about 8 miles offshore. In general, the land backing the coast is high. There are no ports or important villages along this coast.

Isla Quilan, centered about 10 miles SE of Cabo Quilan, is the largest of Islas Guapi Quilan and has the appearance of two walls, one at each end. The remainder of the island consists of smooth hillocks, thickly covered with small trees.

Grupo Esmeralda, consisting of several small islands and islets surrounded by dangerous ground and rocks, is centered about 3 miles SE of the S extremity of Isla Quilan.

Punta Roble lies about 3 miles SE of Cabo Quilan. The coast between is a continuous cliff about 40m high. It is fronted by a beach composed of sandstone blocks and fossiliferous conglomerates.

Cabo Doce de Febrero, about 3.5 miles ESE of Punta del Roble, is a steep-to promontory about 61m high. Between Cabo Doce de Febrero and Punta del Roble, the coast recedes to form a bay with a whitish sandy beach. From Cabo Doce de Febrero to Punta Tiques, about 4 miles ESE, the coast is fronted by foul ground which extends up to 0.5 mile offshore. The W part of this coast is steep-to and bold, and the E part is low. Isla Redondo, about 0.5 mile S of Punta Tiques, is steep-to and about 19.8m high.

Bahia Nayahue indents the coast about 1 mile N between Punta Tiques and Punta Inio, a cliffy point about 3.3 miles ESE. The shore of the bay is composed of a sandy beach. A group of above-water rocks extends about 0.8 mile S from Punta Inio.

6.18 **Canal Quilan** (43°20'S., 74°14'W.) lies between the S shore of Isla de Chiloe, from Cabo Doce de Febrero to Isla Redondo, and the N extremities of Isla Quilan and Grupo Esmeralda. The channel is 2.5 miles wide. It is foul, dangerous, and affords passage only to small vessels with local knowledge or a pilot.

Isla Yencouma (43°24'S., 74°05'W.) is about 19.8m high, cliffy, and wooded. Punta Chacua, about 4 miles ENE of the island, is about 30m high, cliffy, and wooded. Two groups of above-water rocks lie about 1 mile and 2.5 miles S of Punta Chacua.

Bahia Asasao recedes about 1.3 miles N between Punta Chacua and Punta Locos, a cliffy point about 3.5 miles E. The Rio Asasao empties into the NW part of the bay. The shore is rocky to the W of the mouth of the river and sandy to the E.

Punta Olleta, about 2.5 miles SE of Punta Locos and 3.5 miles WSW of Punta Cogomo, terminates in a cliff about 19.8m high. Above and below-water rocks lies on foul ground which extends up to about 7 miles SE of Punta Olleta.

Boca del Guafo is the deep channel extending for about 40 miles E from the E side of Isla Guafo to its connection with the N end of Canal Moraleda and the S end of Golfo Corcovado. It is about 20 miles wide between the S coast of Isla de on the N side and de los Chonos on the S side.

Caution.—A submarine exercise area, the limits of which are shown on the chart, lies in the E end of Boca del Guafo.

The Archipelago de los Chonos

6.19 The **Archipelago de los Chonos** extends S for about 130 miles from Islas Guitecas, on the S side of Boca del Guafo, to Cabo Taitao (45°52'S., 75°04'W.), the NW extremity of Peninsula Skyring. Canal Moraleda lies on the E side of the archipelago and leads to Golfo Corcovado in the N and numerous small channels and inlets in the S. The archipelago consists of over 1,000 islands of various sizes. The islands closer to the ocean and consequently exposed to the prevailing W winds are barren. The islands in the inner part are covered by vegetation which extends from the water to the summits of hills, some of which attain elevations of about 1,500m. Most of the islands are not permanently inhabited, but are visited in summer by lumbermen, hunters, and fishermen. The only commercial set-

tlement is at Puerto Melinka. The principal channels leading through are Boca Wickham, Canal Darwin, and Canal Ninualac.

Pilotage.—Pilotage is compulsory for all foreign vessels navigating in the channels. Pilots should be requested in advance by the vessel's agent.

Caution.—Navigation through the channels is frequently made difficult by fog. It occurs slightly more often in summer.

The inner channels have not been completely surveyed and many uncharted dangers may exist. The main dangers are rocks marked by kelp; caution is advised due to the strong tidal streams frequently drawing the kelp under water.

Off the W side, vessels have experienced a set toward land. In general, the tidal currents set E through the archipelago on the rising tide and varies within the channels.

6.20 Isla Guaiteca (43°52'S., 74°00'W.) is the most important and extensive of the Islas Guaitecas, and attains an elevation of about 370m, 9 miles ESE of the W extremity. The island has two good places for shelter, Bahia Low on the N coast and Puerto Barrientos on the S coast.

Punta Chayalime (43°46'S., 73°52'W.), the N extremity of Isla Guaiteca, is the NW point of a peninsula which rises gradually to Monte Trau, 148m high. Rips occur off the point.

Bahia Low (43°48'S., 73°58'W.) recedes about 4 miles S between Punta Chayalime and Islote Urano, about 6 miles W. The bay has depths of from 14.6 to 37m and offers good shelter from all winds except from the N, which blow with great force. It is one of the best and most spacious harbors on this coast.

Islotes Gaviotas and its surrounding reefs lie about 1 mile offshore from about 1 to 2 miles W of Punta Chayalime. Two islets lie close offshore in a bight between Punta Chayalime and Punta Selanec, about 2.5 miles SW. Only small craft can use this part of the bay.

Islote Blanco lies near the center of the bay, about 1.5 miles SW of Punta Selanec, and is connected by foul ground with a rocky point on the S shore about 1.5 miles farther S. Islote Sargento, fringed by above and below-water rocks, lies on this bank. The coast E of Islote Sargento, in the SE part of the bay, is very low, flat, and swampy, and is backed by low hills. The coast W of Islote Sargento is backed by low hills, and the beaches are generally composed of sand and pebbles.

6.21 Puerto Low (43°49'S., 74°00'W.) occupies the W part of the head of the bay and is sheltered from the W by Isla Guacanec and Isla Marta.

Anchorage.—Anchorage can be taken in the W part of Puerto Low, in 12.8 to 22m, sand and stones, but care should be taken to avoid above and below-water dangers which lie up to 0.3 mile offshore S of Isla Guacanec and Isla Marta. The best anchorage for large vessels is in 14.6 to 37m, sand and mud, midway between Isla Guacanec and Islote Sargento.

Isla Guacanec, about 142m high, is larger and more prominent than Isla Marta and is easily recognized. The N and S extremities of the island are low and rocky. A chain of islets extends about 0.8 mile N from Isla Guacanec, the N of which is Islote Urano. Another chain of islets extends about 2.5 miles WSW from Islote Urano and borders the coast at about 0.8 mile offshore to a position about 0.8 mile N of Punta Patgui, the NW extremity of Isla Guaiteca.

The W coast of Isla Guaiteca, from Punta Patgui to Isla Murta, about 4 miles SSW, is fronted by rocks and reefs on which the sea breaks heavily. These dangers extend up to 2 miles offshore, and with strong currents in the vicinity, render the N approach to Canal Tuamapu dangerous.

Isla Maria and Isla Murta, two small islands, lie within about 0.7 mile offshore SW of the SW extremity of Isla Guaiteca, and form the NW entrance point of Canal Tuamapu.

6.22 Canal Tuamapu (43°59'S., 74°07'W.) separates Islas Guaitecas from the other islands of the Archipelago de los Chonos. At its E end it joins Canal Leucayec, which leads N to Bahia Melinca, and Canal Perez Norte, which trends S through the archipelago. Numerous dangers lie in the channel.

Tidal currents in Canal Tuamapu flow ESE on the rising tide and WNW on the falling tide, with rates of 2 to 3 knots.

Islas Bajas (43°57'S., 74°08'W.), consisting of numerous islets and rocks, lie at the middle of the W entrance of Canal Tuamapu. The islets are low and wooded. Isla Larenas, the E islet, attains an elevation of 79m. There is no suitable anchorage for ships among the islets. The islets are closely fringed with above and below-water dangers and should not be approached within 1 mile.

The S coast of Isla Guaiteca, from its SW extremity to the W entrance point of Puerto Barrientos, about 6 miles ESE, is generally steep-to and fringed by above and below-water dangers to a distance of about 0.2 mile.

6.23 Puerto Barrientos (43°55'S., 74°01'W.) recedes about 1.5 miles N between its W entrance point, mentioned above, and a point about 0.8 mile SE. The W entrance point is low and rocky, with foul ground that extends about 0.3 mile offshore S of it. At the middle of the entrance there is a 9.1m patch which can be passed on either side. A rock, awash and marked by kelp, lies about 0.2 mile NE of the W entrance point of the inlet, and about 0.1 mile offshore.

Anchorage.—Anchorage can be taken near the head of the bay, in 20.1m, sand and mud, or farther off the head, in 16.5 to 17.8m, sand and stones. Although open to the SW and S, a vessel will be well-protected when anchored near the head of the bay.

Islita Cae lies almost 0.8 mile SSE of the E entrance point of Puerto Barrientos; a reef marked by rocks and breakers extends 0.3 mile SW from the islet. A small islet lies almost 0.5 mile SSE of Islita Cae, and a reef extends about 0.1 mile S from this islet.

From Puerto Barrientos, the N shore of Canal Tuamapu trends about 10 miles SE to the W entrance point of Canal Leucayec. Canal Cuervo, about 4 miles SW of Puerto Barrientos, separates Isla Guaiteca from Isla Betecoi, but its S entrance is obstructed by rocks and is accessible only to boats. Isla Cuervo lies close off Isla Betecoi, about 1.5 miles SW of the S entrance of Canal Cuervo, and a rock lies close S of the islet. Another islet, with a rock close S, lies close offshore about 3.3 miles SE of Canal Cuervo; several islets lie about 0.3 mile offshore about 0.5 mile farther SE.

6.24 Islas Gemelos (44°02'S., 73°53'W.) lies midway between the SE end of Isla Betecoi and the N extremity of Isla Sierra, about 6.5 miles WSW. Above and below-water rocks

extend almost 0.3 mile N from Islas Gemelos and should not be approached within 0.5 mile. A rock, with a depth of less than 1.8m, lies about 0.9 mile SW of the W end of Islas Gemelos.

Ships should not attempt passage between Isla Sierra and Isla Amita, about 1.5 miles SE.

Islotes Pochas, two low islets, lie about 1 and 1.3 miles NE of Islas Gemelos. Below-water rocks extend up to 0.2 mile off each islet.

A rock, position approximate, with a depth of less than 1.8m, lies about 0.8 mile E of the islets.

The S side of Canal Tuamapu lies about 7 miles S of the S coast of Isla Guaiteca. The SW entrance point of the passage is the NW extremity of Isla Tuamapu and lies about 7 miles SSW of the SW extremity of Isla Guaiteca, which is the NW entrance point of Canal Tuamapu. A rock, with a depth of less than 1.8m, lies about 0.5 mile offshore and about 1 mile ENE of the N end of Isla Tuamapu.

Islas Rhone (44°01'S., 74°08'W.), fringed by above and below-water dangers, lie about 1.3 miles ESE of the E extremity of Isla Tuamapu. Isla Requelme, about 1 mile S of Islas Rhone, is a little lower than Islas Rhone and is also surrounded by reefs.

6.25 Puerto Rhone (44°02'S., 74°08'W.) lies between the E extremity of the eastern Islas Rhone and an islet located close off the NE end of Isla Requelme, about 1 mile S. Isla Hulaud, about 1 mile SW of the W extremity of the western Islas Rhone, lies in the approach to Puerto Rhone together with numerous islets and rocks.

Roca Petun, an above-water rock, lies about 2 miles ENE of the S entrance point of the port. Vessels should pass N of Roca Petun. Bajo Hederra, with a least depth of 3.1m, lies about 0.5 mile S of Roca Petun and is marked by kelp. Bajo Diaz, with a least depth of 4.9m, lies about 0.5 mile W of Roca Petun and is marked by kelp. Bajo Lopez, two rocks with depths of less than 1.8m, lie about 0.5 mile ENE of the S end of the port.

Vessels can take anchorage, in 20.1 to 33m, rock covered with a thin layer of sand and stones, almost 0.5 mile SSW of the E extremity of the western Islas Rhone. This anchorage is not recommended and is exposed to E winds and to tidal currents. The chain of rocks and keys on the W side of the harbor do not offer sufficient protection.

Tidal currents at the anchorage flow E on the rising tide and W on the falling tide at rates from 1 to 3 knots.

Isla Llanos lies about 1.5 miles S of Roca Petun, and Isla Morel lies about 0.5 mile farther E. Isla Concoto, about 3.5 miles E of Isla Morel, lies at the junction of Canal Tuamapu and Canal Perez Norte.

Canal Leucayec (43°59'S., 73°45'W.) trends NNE from its junction with Canal Tuamapu and separates Isla Betecoi from Isla Leucayec. The channel is about 7 miles long and has a least width of a little over 0.5 mile between Grupo Anitas, about 3.5 miles NE of the SE extremity of Isla Betecoi, and Isla Emma, about 1 mile farther E. The channel leads to Bahia Melinca and is deep and free of dangers in the fairway, except for an islet on the E side of the channel about 0.5 mile off Isla Leucayec about 1.5 miles S of Isla Anita.

Caleta Betecoi, a small cove, lies at the E end of Isla Betecoi and is suitable as a temporary anchorage, in 20.1m, stones.

Tides—Currents.—The current on the rising tide sets NE between Isla Betecoi and Isla Leucayec at a velocity of up to 4 knots. Between Isla Mercedes, about 4.5 miles NE of the SE extremity of Isla Betecoi, and Isla Gunther, about 1.5 miles farther E, it attains velocities of from 1 to 3 knots. On the falling tide the current is reversed at the same velocities. There are tide rips off the W side of Isla Leucayec. A 4.4m shoal exists about 0.3 mile S of the S coast of Isla Leucayec.

6.26 Puerto Melinka (43°54'S., 73°45'W.), at the SE end of Isla Ascension and the confluence of Canal Lagreze, Canal Carbunco, and Canal Leucayec, is the commercial center of Grupo Guaitecas and the Archipelago de los Chonos.

The harbor is a fishing and shellfish cultivation center.

Winds—Weather.—North winds are the most frequent throughout the year. Mist or fog is reported to occur on only 10 days a year on an average.

Aspect.—The harbor is formed by the S coast of Isla Ascension, the NE coast of Isla Clotilde, and the islets and rocks in the entrance to Canal Lagreze. The town of Melinka is situated along the shore W of Punta Melinka. The islands which form the bay are of low elevation with rocky coasts and are covered with vegetation.

Punta Melinka, the SE extremity of Isla Ascension, is low and rocky. A hill, about 69m high, lies about 0.3 mile NW of Punta Melinka, and another hill about 171m high lies a little over 0.7 mile farther NW. These hills shelter the bay from N and NW.

Punta Valiza lies about 0.3 mile W of Punta Melinka. A chain of rocks extends about 0.1 mile S from Punta Valiza. Roca Melinka, the outermost, is marked by a lighted beacon, and is surrounded by rocks, awash.

Isla Westhoff lies with its S extremity a little over 0.5 mile E of Punta Melinka. Above and below-water rocks lie up to 0.1 mile off its N extremity.

Isla Mercedes lies with its N end about 1 mile SSW of Isla Westhoff. A reef extends about 0.2 mile N of Isla Mercedes. An islet, connected with Isla Mercedes at low tide, lies on this reef and extends about 0.1 mile NNE. A rock lies awash at the N end of the reef.

A detached group of below-water rocks lies about 0.2 mile W of the above-mentioned islet, in the N entrance of Canal Carbunco.

Isla Anita, which lies with its S extremity about 3.3 miles S of Punta Melinka, is the largest and S of a chain of islets and rocks which extend about 1.8 miles NNE to Islote Toro.

Foul ground extends about 0.2 mile offshore S of the coast between the E entrance to Estero Alvarez and Punta Melinka, about 0.5 mile ESE. Above and below-water rocks closely fringe the coast between Punta Melinka and Isla Falsa Melinka, about 1.3 miles NNE, and depths of less than 9.1m extend up to 0.2 mile offshore along this part of the coast.

Contact Information.—The port can be contacted, as fol-

Puerto Melinka (aerial view)

lows:

Puerto Melinka—Contact Information	
HarborMaster	
Telephone	56-67-2431555
E-mail	capmelinka@directemar.cl

Anchorage.—The bottom is mostly rock and does not afford holding ground. Vessels can take anchorage, in 40m, stone, shells, and sand, with Roca Melinka bearing 348°, about 0.3 mile distant. This anchorage is open to the NE and a vessel may drag slightly during a fresh gale from the NW. It has been reported that a better anchorage is in about 44m off the entrance to Estero Alvarez, with Roca Melinka bearing 079°, 0.3 mile distant.

Small vessels can obtain shelter from winds between the W and N in depths of about 18m, sand, good holding ground, with Roca Melinka Light bearing 121°, 0.2 mile distant.

6.27 The coast of Isla Ascension, from Isla Falsa Melinka, trends about 4 miles NNW to Punta Puquitin, the E entrance point of Canal Puquitin. Isla Canelo, fringed with rocks, lies about 0.5 mile offshore, about 1.3 miles N of Isla Falsa Melinka.

Canal Puquitin (43°51'S., 73°50'W.) separates the N shore of Isla Ascension from Isla Guaiteca. The channel is impassable due to rocks at its E entrance. From Canal Puquitin, the NE shore of Isla Guaiteca trends about 4.3 miles NW to Punta Chayalime and is backed by low hills.

Caleta Trau, about 2.5 miles NW of Punta Puquitin, recedes about 1 mile SW from its entrance. There are numerous above and below-water rocks in the entrance to the cove and vessels are advised not to enter without a pilot.

Isla Leucayec (44°00'S., 73°40'W.) lies with its N extremity about 2.8 miles SE of Punta Melinka, the SE extremity of Isla Ascenscion. Isla Leucayec has a lesser elevation than Isla Guaiteca, but attains an elevation of 410m at Cerro Mantan, about 5 miles SE of its N extremity.

Isla Elvira, close E of Isla Leucayec, is very irregular, and is fringed with above and below-water rocks. Foul ground extends W from Isla Elvira to Isla Leucayec. Islote Riquelme, about 2.3 miles offshore E of Isla Elvira, is fringed with foul ground. An above-water rock lies about 1.3 miles WNW of Islote Riquelme.

Islote Pato lies about 1.7 miles off the NE coast of Isla Leucayec. There are three islets fringed with sargasso within about 0.3 mile off the N side of Islote Pato.

6.28 **Isla Mulchey** (44°08'S., 73°30'W.) is roughly triangular in shape with sides measuring about 4.5 miles in length.

A dangerous sunken rock lies off the S end of Isla Sanchez, which lies close W of Isla Mulchey. Punta Alta, the NE extremity of the island, has been reported to lie about 0.5 mile farther E than charted.

Canal Perez Norte and Canal Perez Sur, connected by Canal Baeza, lead S through the E part of de los Chonos from the E end of Canal Tuamapu. The passage joins Canal Moraleda at the E entrance of Canal Ninualac, about 60 miles S.

The N entrance of Canal Perez Norte lies about midway between Islote Sin Nombre and Isla Laurel. Islote El Amortajado and Islita Yack lie about 1.8 miles S and 3.3 miles SSE, respectively, of the E extremity of Islote Sin Nombre, on the W and E sides of the channel. Two pyramidal-shaped islets lie close off the SW side of Islote El Amortajado. A 3.4m patch lies 1 mile E of Isolote El Amortajado. Islita Yack is hemispherical in shape and easily identified. An islet lies close off the NW extremity of Islita Yack. Islote Peinado lies on the W side of the fairway, about 1.5 miles W of the N extremity of Islita Yack, and a rock, awash, lies a little less than 0.3 mile offshore NE of Islote Pienado.

Roca Negra lies on the E side of the fairway, nearly 1 mile SE of Islita Yack, and is marked on its S side by kelp. The rock is also marked by a light. Islita Ceres and Islita Bobe lie on the E side of the fairway, about 0.5 mile W and about 0.8 mile SSE, respectively, of Roca Negra. Rocks extend nearly 0.5 mile SSE from Islita Bobe. A shoal, with a depth of 8.1m, lies 2.2 miles W of Islita Yack.

From a position about 0.3 mile W of Isla Yack, the passage continues S and passes between the islets and rocks off the E coast of Isla Concoto and the W coast of Isla Verdugo. Isla Concoto lies with its NE extremity about 3.3 miles SW of Isla Ceres, and Isla Verdugo lies with its NW extremity about 4.3 miles SSE of Isla Ceres.

6.29 Grupo Roa (44°10'S., 73°47'W.), an extensive detached patch of above-water rocks and foul ground, lies on the E side of the channel from 1 to 2 miles W of Isla Verdugo. Isla Chipana lies on the E side of the channel, about 1.8 miles S of Grupo Roa. An 11m shoal lies close W of Grupo Roa. Isla Aguayo, about 1.5 miles in extent, lies about 1 mile S of Isla Chipana on the E side of the channel, and some islets and rocks lie about 0.5 mile offshore off its NW coast.

From a position about 0.5 mile W of Isla Aguayo, the passage continues S between Isla Garcia and Isla Valverde. Isla Garcia lies about 2.8 miles S of Isla Verdugo, and Isla Valverde lies about 1.5 miles farther W. Isla Garrao Chico lies on the E side of the channel, about 0.5 mile SW of the S end of Isla Garcia.

Islets and rocks lie up to 0.5 mile offshore N and S of Isla Garrao Chico. Grupo Mustafa and Islote Guia lie on the E side of the channel about 1 and 1.5 miles S, respectively, of Isla Garrao Chico. Islote Guia is shaped like a helmet and has two white patches at its base which make it very prominent.

From a position a little over 1 mile SW of Islote Guia, Canal Perez Norte trends about 2 miles SW between Isla Valverde and Isla Garrao (44°24'S., 73°43'W.). Punta Garrao, the W extremity of Isla Garrao, lies about 1 mile S of the S extremity of Isla Valverde and is prominent. Foul ground extends almost 0.3 mile offshore W of Punta Garrao.

From Punta Garrao the channel trends SE about 6 miles between Isla Garrao and Isla Jechica to its junction with Canal Baeza. Islote Direccion, helmet-shaped and prominent, lies close off the E side of Isla Jechica about 2 miles SE of Punta Garrao. Islote Peligroso, about 2.8 miles SE of Islote Direccion, lies a little over 0.5 mile E of the SE end of Isla Jechica.

From a position about 1 mile SSE of Islote Peligroso, the channel trends in a W direction for about 8.3 miles passing S of Isla Jechica and N of Isla Matilde, Isla Marta, and Isla Mercedes. The channel then rounds the NW coast of the latter island and trends S for about 9 miles, passing W of Ilot Blanco (44°35'S., 73°53'W.).

Isla Soria (44°47'S., 73°46'W.), about 1.8 miles in extent, lies on the E side of the fairway about 0.8 mile offshore W of Isla Transito. Isla Florencia, about the same size, lies about 0.3 mile S of Isla Soria. An islet lies close off the NW end of Isla Florencia, and a group of islets lies within about 1.5 miles E and S of Isla Florencia.

Isla Canal, about 2.8 miles in extent, lies on the NE side of the fairway about 0.7 mile SW of the SW end of Isla Transito. Above and below-water rocks fringe the S coast of Isla Canal. Islote Cervantes, marked by a light, lies about 0.3 mile S of the S end of Isla Canal. Several islands and above-water rocks lie close off the NE end of Isla Canal. Isla Lalanca, about 1.7 miles in extent, lies on the N side of the fairway about 0.5 mile SE of Isla Canal.

The W side of de los Chonos, from Isla Tuamapu to Isla Ipun, about 40 miles SSW, is formed by the W sides of Isla Llenihuenu, Isla Arthur, Isla Mellersh, Isla Midhurst, Isla May, Isla Forsyth, Islas Broken, and Isla Level.

Numerous detached rocks and islets lie up to 4 miles W of the W ends of the above-mentioned islands. Bajo Duble, the outermost danger, lies about 8.8 miles NNW of Isla Ipun.

The channels between the islands, from Canal Tuamapu to Canal Ninualac at the head of Bahia Adventure, have not been surveyed and vessels should not attempt to proceed through them.

6.30 Isla Guamblin (44°50'S., 75°05'W.), 217m high, is comparatively level, and thickly wooded. The coasts of the island are generally sloping, but in places there are cliffs which are conspicuous against the darker woodland. The island has been reported to lie 2.3 miles W of its charted position.

Punta Norte, the N extremity of the island, is bold and a conical rock lies at its extremity. The coastal bank, having depths of 11.9 to 12.8m, extends about 1.5 miles N from Punta Norte. Punta Searle, the NW extremity of the island, lies about 3 miles SW of Punta Norte and is high and steep, with a conical rock at its summit. A wreck, with masts showing, lies in a small bight about 0.8 mile S of Punta Searle. Punta Bories, the SW extremity of Isla Guamblin, is high and rounded with steep sides, and should not be approached within 0.5 mile.

Punta Edwards, the SE extremity of the island, lies about 4.5 miles ENE of Punta Bories. The S coast of the island is very steep-to and the sea breaks in 5.5 to 8.2m along it in ordinary weather, and in 18.3m in heavy weather.

Punta Arenas, about 3.5 miles N of Punta Edwards, is sandy. The coast between the two points is low. Punta Piedras, about 2.5 miles NW of Punta Arenas, is fringed by foul ground. Punta Baja, about 2 miles NW of Punta Piedras, is low and flat as is the coast NW of it. The point should not be approached with-

in 1 mile.

Anchorage.—Anchorage can be taken off the E coast of Isla Guamblin in several places. The best anchorage is in depths of 14.6 to 27.4m, mud, sand, and stones, about 1.5 miles ESE of Punta Arenas. Anchorage can also be taken, in 14.6m, mud, about 1.5 miles E of Punta Piedras. This anchorage affords shelter from SW winds and should not be used during winds between the W and N.

6.31 Bahia Adventure (44°50'S., 74°45'W.) lies between the S extremity of Isla Ipun and the N islet of Grupo Vallenar, about 34 miles S. Islets and rocks extend up to 2.5 miles into the bay from the islands forming the E side of the bay. The entrance to all of the channels between the islands are encumbered with dangers in their approaches, except for Canal Ninualac. Isla Paz and Isla Liebre lie about 7 miles offshore in the middle of the bay, and are conspicuous because of their conical form. The islands which form the bay are high and generally barren.

Isla Ipun (44°37'S., 74°47'W.), about 101m high, is comparatively low, flat, and fertile, while the other islands of the group are generally high, rugged, and bare on their seaward sides. Isla Ipun can usually be approached, as the rocks and reefs which lie in the vicinity of the salient points are marked by breakers and can be avoided without difficulty. However, Roca Tacna, which lies about 5 miles NE from Cabo Lort, the NW point of the island, is visible only during strong W winds. These winds form breakers over Roca Tacna. Bajo Duble lies about 8.8 miles N of Cabo Lort and is about 1 mile long N to S, and has surrounding depths of 31.1m. Breakers form over Bajo Duble only during strong W winds.

A detached reef, on which there is an above-water rock, lies about 3.5 miles E of the NE extremity of Isla Ipun.

Anchorage.—Puerto Scotchwell, in the SE part of Isla Ipun, affords excellent anchorage to vessels with local knowledge, in 5.5 to 16.5m, with 18.3 to 31.1m in the entrance between the reefs. This anchorage should be approached by the N passage. Although no hidden dangers are known to lie in the S passage, it is narrow and may contain uncharted dangers.

6.32 Canal Ninualac is one of the principal channels between the Pacific and Canal de Moraleda. The entrance is at the head of Bahia Adventure, between Isla James on the N and Isla Kent on the S. The passage presents no great difficulties. Numerous rocks, shoals, and reefs lie within 2.5 miles W of the W entrance and are dangerous during fog. The channel is from 1 to 1.5 miles wide, but there are several islets and rocks, described below, within the entrance. The tidal currents in Canal Ninualac attain velocities of from 3 to 4 knots at springs.

A local magnetic anomaly, which caused a deflection of the compass needle of more than 8°, was reported to exist in Canal Ninualac.

Puerto Concha (45°01'S., 74°20'W.), with a depth of about 14.6m, provides anchorage for small vessels about 3 miles within the W entrance on the N side of the channel. It lies between the SW end of Isla James and a small island close offshore.

Isla Kent lies on the S side of the W entrance to Canal Ninualac, about 0.5 mile S of the SW extremity of Isla James. The shape of Isla Kent is very irregular and the W coast of the island is fringed by above and below-water rocks which extend from 0.5 to 1.5 miles offshore. The E coast of Isla Kent is broken and indented and a small harbor lies in its NE part.

Puerto Maria Isabel (45°05'S., 74°17'W.), on the E side of Isla Kent, provides anchorage, in 51m, less than 2 miles from the center of Canal Ninualac. Isla Puren, at the entrance to the port, forms two channels into the harbor. The S channel is preferred as it is deep and clear, although only 366m wide.

The S shore of the harbor is formed by Isla Renan. A white patch a little above the water on Punta Manchon, the S entrance point of Puerto Maria Isabel and the NE extremity of Isla Renan, provides a good landmark.

Anchorage.—Anchorage can be taken near the center of the port, in 51m, sand and mud. The anchorage is sheltered and the holding ground is good.

Caution.—A rock, awash, not marked by kelp, lies in the SW corner of the inlet, 0.1 mile offshore.

6.33 Islote Leuconton (45°01'S., 74°10'W.) lies near the middle of Canal Ninualac, about 8.5 miles E of the N extremity of Isla Kent, and should be passed to the N. Islote Leuconton should not be approached closely, although depths of 92m lie within 274m offshore, as a shorebank with depths of 3.7 to 5.5m fringes the islet. A rock, with a depth of less than 1.8m, lies about 366m W of this islet. Roca Engano, marked by a beacon, lies in mid-channel about 3.5 miles E of the above-mentioned rock. A white mark is situated N of the rock on the N side of the channel. Vessels may pass close off either side of this rock in about 18.3m.

The entrance of Estuario Cisnes, about 0.3 mile wide, lies on the S side of Isla James about 15 miles E of the SW end of the island and trends about 3.5 miles NW. Anchorage may be taken in Estuario Cisnes, a short distance within the entrance, in 21.9 to 27.4m or about 2 miles within the entrance, in 18.3m. When entering the inlet a vessel should keep close to the E entrance point in depths 14.6 to 16.5m to avoid the reef on the W side of the entrance.

Islotes Gemelos, consisting of two islets and some rocks, with depths of less than 1.8m, extend about halfway across Canal Ninualac from the S shore at a position about 3.5 miles E of the entrance to Estuario Cisnes.

Isla Auchilu (45°20'S., 74°35'W.) is the S island of Grupo Vallenar. A beacon, consisting of a white post with a white disc topmark, stands on a rock close offshore NE of Punta Sur, the SE extremity of the island. A light is shown from a tower standing close NW of Punta Sur. A shoal, which breaks in heavy weather, extends about 0.7 mile W and SW from the same point. The island has been reported to lie 0.5 mile S of its charted position.

Caution.—The depths in the approaches to Bahia Darwin and Bahia Anna Pink are deep, over 18.3m, but soundings throughout the area are sparse and scattered. Less water or dangers in addition to what is shown on the chart may exist. Rocks lie up to 1 mile off the seaward sides of the outermost islands.

6.34 Bahia Darwin lies between the S end of Bahia Adventure and the N end of Bahia Anna Pink, about 20 miles SW. The N shore of Bahia Darwin is formed by Grupo Vallenar.

The E and S shores of the bay are formed by the W coast of Isla Garrido and the N coasts of Isla Clemente, Isla Tenquehu-

en, and Isla Menchuan. The W coast of Isla Garrido is high, rugged, and barren. The N coast of Isla Clemente, which is also rugged and barren, rises to an elevation of 968m.

Isla Analao (45°29'S., 74°41'W.), steep, flat-topped, and about 40m high, lies in the center of the bay and is a good landmark. Two above-water rocks lie close off the E and N sides of the islet and breakers extend about 0.8 mile S.

Rada Vallenar (45°19'S., 74°33'W.) lies on the E side of Grupo Vallenar, between Isla Tres Dedos and Isla Auchilu on the W and the W end of Isla Isquiliac on the E. The harbor is an excellent roadstead and is easy of access. Anchorage may be taken, in about 21.9m, protected from the prevailing winds, about 0.5 mile off the SE extremity of Isla Tres Dedos.

6.35 Canal Darwin is entered between the SW end of Isla Isquiliac and the N end of Isla Garrido. A light is shown from the SW end of Isla Isquiliac. The passage is free of dangers. It is considered to be the best of the channels which lead through the archipelago from the Pacific to Canal de Moraleda. The channel is about 3 miles wide at its entrance, which is clear of danger and between high ground.

A 3.9m shoal was reported close off the SE tip of Isla Isquilac, near the S entrance to Canal Unicornio.

The tidal current within the channel sets E on the flood and W on the ebb at a maximum velocity of about 3.5 knots between Punta Quilan (45°24'S., 74°07'W.) and Isla Negra, about 7 miles ESE close S of the SW coast of Isla Quemada.

Roca Pajaros (45°24'S., 74°11'W.), a white rock about 3m high, lies a little over 0.5 mile NW of the W extremity of Isla Marcacci. A shoal, with at least a depth of 12.5m, lies 0.6 mile W of Roca Pajaros. A 10m sounding is charted about 0.4 mile NW of the rock.

Bajo Darwin lies about 1.5 miles NE of Roca Pajaros about midway between Roca Pajaros and the SE extremity of Isla Italia. Bajo Darwin is a small pinnacle rock with almost 7m over it and is surrounded by deeper water. The rock can be passed on either side, but to the N is preferred, as this side is marked by a lighted buoy with a radar reflector.

Vessels should exercise caution in the vicinity of Islotes Lamencura and Islote Lobos, close W of the S end of Isla Palumbo (45°23'S., 74°03'W.), as the bottom is rocky and uneven. Above and below-water rocks extend about 0.2 mile S from the W extremity of Isla Quemada, about 4 miles ESE of Punta Quilan, and the width of the channel between these rocks and the NW end of Isla Luz (45°30'S., 73°56'W.) is only about 0.3 mile. A rock, with a depth of less than 1.8m, lies close off the S end of Isla Quemada. An 8.5m patch lies 0.5 mile SE of the rock.

Isla Analao can usually be seen at a distance of 15 to 20 miles, even in hazy weather. On approaching closer, Grupo Vallenar and Monte Isquiliac (45°20'S., 74°29'W.) are easily identified, and the entrance to Canal Darwin, with its high and rocky sides, shows clearly. There is a conspicuous white patch near the middle of the S coast of Isla Italia, about 13 miles E of Punta Alfredo. Another conspicuous patch is located on the S side of the W end of Isla Quemada about 1 mile E of the W extremity of the island.

Canal Williams connects the W end of Canal Darwin with the E end of Bahia Anna Pink. The channel is entered between Punta Garrido and Punta Este (45°26'S., 74°25'W.), a little over 0.8 mile ESE, and trends SSW for about 24 miles with an average width of about 0.5 mile, although narrower in places. The channel has not been examined and is not recommended.

6.36 **Puerto Yates** (45°29'S., 74°26'W.) lies from 2.5 to 3 miles S of the N entrance to Canal Williams and provides anchorage, in about 21.9m, sand, about 0.5 mile N of the spit mentioned below. The anchorage is bounded to the S by a low sandspit, which extends about 0.5 mile W from the NW coast of Isla Rivero. A small islet lies 183m NW of the extremity of the sandspit. Between the end of the spit and the W shore, there is a passage about 0.2 mile wide with depths of 6.7m. Depths of less than 5.5m extend 0.3 mile N from the spit.

Caution.—Depths in Puerto Yates may be decreasing due to sediment deposited by the meeting of tidal currents from Canal Williams and Canal Darwin.

6.37 **Bahia Anna Pink** (45°47'S., 74°49'W.) is formed between the N side of Peninsula Skyring on the S and Isla Tenquehuen, Isla Menchuan, and Islas Inchin on the N. Numerous islets and rocks lie within the bay. Most of the bay is unsurveyed except for a partially examined passage that trends E between the islets and rocks in the S part of the bay and which leads into Boca Wickham.

The N side of Peninsula Skyring is indented by a number of inlets. Puerto Refugio is the only inlet that has been examined and that is known to provide shelter to vessels.

The bay is entered from the W between the N point of Cabo Taitao and Isla Inchemo, about 3.5 miles NNE.

Isla Inchemo (45°48'S., 75°00'W.) lies about 3.5 miles NNE of Punta Seal, the N extremity of Cabo Taitao. Islita Penguin, with a rock close off its S side, lies 0.5 mile off the E side of the island. A light with racon is shown from a tower standing on the S side of the island.

Anchorage.—Anchorage can be taken, in 14.9m, good holding ground, about 0.7 mile ESE of the light on Isla Inchemo. Anchorage can also be taken closer inshore, in 16.5m, sand, with the S point of Isla Inchemo bearing 207° and Islita Penguin bearing 060°.

Roca Gallardo, submerged and on which the sea sometimes breaks, lies about 2.3 miles E of the S point of Isla Inchemo. A detached rock, with a depth of 3.9m, lies 0.8 mile N of Roca Gallardo.

Isla Julian, 90m high, lies 3 miles E of Islita Penguin. Islote Mitra and Islote Patch lie close together about 1.5 miles ESE of Isla Julian. A reef, on which the sea breaks, extends about 0.5 mile W from Islote Mitra and Islote Patch. Grupo del Medio consists of three small islets which lie from 2.5 to 3 miles ENE of Islote Mitra. A shoal, with a least depth of 2.1m, lies about 0.3 mile S of Grupo del Medio.

From Punta Seal to Punta Gallegos, about 3.5 miles E, the N side of Peninsula Skyring is indented by two inlets, both of which are unexamined. Seno Purgatorio, the W inlet, has several small islets and rocks in its entrance. Fiordo Gallegos, the E inlet, recedes about 10 miles SE. Small vessels can anchor on the SW side of the latter inlet, about 4 miles inside the entrance.

From Punta Gallegos to Punta Stripe, about 5.5 miles ENE, the shore recedes S to form a very irregular bight that is further indented by several coves, the entrances of which are encum-

bered with numerous rocks and islets. The only cove suitable to small vessels is Puerto Refugio.

6.38 Puerto Refugio (45°52'S., 74°48'W.) recedes about 2 miles SE between Punta Stripe and Isla Puentes, about 1.5 miles SSW. Islote Hyatt and a number of above-water rocks encumber the entrance. The entrance is restricted to a width of about 0.2 mile, between some rocks that lie about 0.3 mile S of Punta Stripe and the above rocks adjacent to the N side of Islote Hyatt. A rock, with less than 1.8m over it, lies on the SW side of the entrance fairway. An unnamed islet lies 0.3 mile E of Isla Puentes. A reef, with a least depth of 7m, extends 0.5 mile E from the islet.

Anchorage.—Anchorage can be taken, in 20.1 to 37m, about 0.7 mile SE of the summit of Isla Puentes. Within the entrance a rock, with less than 1.8m over it, lies about 0.3 mile NNE of Islote Videla, which lies about 0.8 mile SE of Isla Puentes.

From Punta Stripe to Boca Wickham, about 8 miles E, a number of islets lie on the S side of the passage leading to that channel. A shoal, with a depth of 12.1m, lies on the recommended track, about 0.8 mile NW of Isla Entrada; a shoal depth of 6.8m lies close to the track, about 1.3 miles WNW of the same islet.

Boca Wickham (45°49'S., 74°34'W.), Canal Pulluche, and Canal Chacabuco form a continuous passage between Bahia Anna Pink and Canal Errazuriz, the S extension of Canal de Moraleda. The passage is narrow and winding, but navigable. It is about 35 miles long and trends E, NE, and then E.

A light marks the SW end of Isla Ricardo (45°49'S., 74°28'W.). The recommended track passes through Canal Pulluche from Ricardo Light and leads 6.7 miles to NNW of Punta Morro Light on Isla Prieto. The track then leads 4.7 miles NNE to Punta Pangal (45°42.3'S., 74°15.5'W.) then leading E to enter Canal Utrupa or Canal Chacabuco as necessary.

Canal Pulluche has an underkeel clearance when transiting W of Bajo Roepke, 9m, plus UKC 1.3m and transiting E of Bajo Roepke, 7.5, plus UKC 1.3m.

Tides—Currents.—The tidal currents set E and NE through the above passage following the trend of the passage at velocities of up to 4 knots on the rising tide and in the opposite direction on the falling tide.

6.39 Islote Notable (45°49'S., 74°29'W.) is a conspicuous islet on the N side of the fairway.

Anchorage.—Anchorage can be taken, in 14.6 to 20.1m, mud, in the entrance of Fiordo Balladares (45°44'S., 74°22'W.), a small inlet on the SE side of Isla Rivero.

Anchorage can be taken, in 20.1m, about 0.4 mile W of Cayo Observatorio in Puerto Harchy (45°43'S., 73°55'W.) at the E end of Canal Chacabuco. Caution is necessary here, as many dangers lie in the approaches, and the anchorage itself is open to SW winds.

Canal Utarupa (45°31'S., 74°14'W.), about 15 miles long and with a least fairway width of about 1 mile, joins Canal Darwin and Canal Chacabuco and passes along the E side of Isla Rivero. The fairway trends NNE to abreast Puerto Condell, about 4.5 miles N of the SE point of Isla Rivero, and then it trends NNW between Isla Rivero and Isla Matilde. Like the other major channels within the Archipelago de los Chonos, it has only been partially examined.

The E side of Isla Rivero is fringed with above and below-water rocks up to 0.3 mile offshore in places. Numerous islands and rocks lie on the E side of the channel SE of Isla Matilde.

Anchorage.—Anchorage can be taken in Puerto Condell (45°37'S., 74°12'W.), in 21.9 to 29.3m, sand and shell, about 0.3 mile WNW of the S entrance point.

Anchorage can be taken in Puerto Aurora, in 42 to 46m, about 0.7 mile within the entrance. This anchorage is situated in Fiordo Duble Sur, an inlet entered on the E side of Isla Rivero, about 3 miles NNW of Puerto Condell.

Cabo Taitao to Cabo Tres Montes

6.40 The coast between Cabo Taitao and Cabo Tres Montes, about 65 miles SSW, is formed by the outer part of Peninsula Taitao. The NW part of Peninsula Taitao is formed by Peninsula Skyring and the SW part by Peninsula Tres Montes. The conspicuous gap, located about 10 miles NW of Cabo Tres Montes and connecting the two peninsulas, is low, densely wooded, and about 1.3 miles wide. This coast is irregular and indented by a number of coves and inlets, most of which have not been examined. Steep, barren hills, with heights of up to about 1,067m, back the coast. The fringing dangers lie within 1 mile of the coast, except for Rocas Hellyer, described in paragraph 6.41. There are no ports, but small vessels with local knowledge can find shelter in some of the inlets and coves.

Tides—Currents.—The offshore currents along this coast set toward the land at a velocity of 1 knot on the rising tide. A SSE set has been observed in the vicinity of Cabo Tres Montes. The currents are probably augmented by the tidal currents setting into the embayments N and S of Cabo Taitao and Cabo Tres Montes.

6.41 Cabo Taitao (45°52'S., 75°04'W.), the NW extremity of Peninsula Skyring, is steep, barren, and fringed with rocks up to about 1 mile offshore. Cabo Taitao is one of the most prominent promontories in the vicinity. It appears as an island from the offing.

Rocas Hellyer (46°02'S., 75°10'W.), several rocks awash, are the outermost dangers along this coast. A shoal, with a depth of 15.8m, lies about 1.5 miles S of Rocas Hellyer, while a second shoal, with a depth of 16m, lies the same distance E of the rocks.

Fiordo Cornish is entered between the SW end of Peninsula Duende and a point about 7 miles S. This inlet recedes about 22 miles NE from its entrance and narrows toward its head. It nearly separates the Peninsula Skyring from Peninsula Taitao. Within the entrance, several arms branch off either side. Monte Alejandro, 590m high, rises close within the S entrance point. An islet, with submerged rocks up to 0.5 mile off its NW side, lies about 0.5 mile off the S entrance point.

Islas Usborne (46°11'S., 75°00'W.), three islands and several islets and rocks, lie in the middle of the entrance of Seno Cornish. Foul ground obstructs the passage E of the islands. Small vessels can take anchorage, in 9.1 to 11m, sand, off the E side of the western and largest island. Rocks, which dry, extend up to 1 mile W and 0.8 mile S of that island.

The main channel into Fiordo Cornish is N of Islas Usborne.

Small vessels can find shelter from W winds in a small inlet on the NW side of Seno Cornish, about 8 miles within the entrance. The depth at this inlet is about 23.8m. Three islets lie off the entrance of the latter inlet.

Fiordo Alejandro (46°14'S., 74°55'W.), an inlet, branches SE from the S side of Fiordo Cornish just within the entrance. Two rocks which dry lie in the entrance.

An island lies close offshore about 3 miles NNE of the NE entrance point of Fiordo Alejandro. Vessels can take anchorage off the S side of this island in good holding ground, mud bottom. This anchorage should be approached from the W passing S of Islas Usborne. Vessels should be careful to avoid a rock that lies about 0.3 mile N of the S entrance of the bay formed by the island.

From the S entrance point of Fiordo Cornish to Caleta Gato, about 4 miles SSW, the coast is fronted by numerous islets and rocks up to 1 mile offshore.

6.42 Caleta Gato (46°17'S., 75°03'W.), a small inlet frequented by sailing vessels, is entered by passing S of the islets in its entrance.

Estero San Esteban (46°19'S., 75°06'W.), a narrow inlet, recedes about 10 miles E between Punta Rescue, a small prominent peninsula, and a point about 2 miles E. Cerro Oscura, 645m high, rises within the N shore of the inlet about 8.5 miles E of Punta Rescue and is a good mark for approaching the inlet. The rocks off Punta Rescue should be passed at a distance of at least 0.1 mile. A rock lies in midchannel about 3.5 miles from the inlet's head. Breakers were reported in a position about 3 miles NE of Punta Rescue. Anchorage can be taken in the lee of Punta Rescue, in about 18.3m, clear of the fringing rocks.

Caleta Cliff (46°28'S., 75°17'W.), entered about 10 miles SSW of Punta Rescue, affords excellent anchorage for small vessels, in depths of 8.7 to 57m, mud. The entrance channel is about 0.3 mile wide and at the inner end the cove opens to a width of 1.5 miles forming a circular basin protected by mountains. The least depth in the fairway is 7m. A small islet lies close off the S entrance point of the cove. Rocks lie up to 180m N of the islet and should be passed to N. Two triangular-shaped islets, lying close together, lie about 2 miles NNE of the cove entrance. One of these islets has an open tunnel through it which is clearly visible from W. A group of rocks, which break, lies about 1 mile NW of the islet.

Directions.—Vessels should approach the entrance on a course of 130° to 144° and then maintain mid-channel courses to the basin. Within the basin anchorage can be taken, in 25.6m, mud and sand, about 0.2 mile off the NW shore, or in 31.1m, mud and sand, 0.2 mile off the SE shore.

Bahia Stewart, just S of Caleta Cliff, has extensive areas of foul ground and anchorage is not recommended.

Punta Pringle (46°32'S., 75°30'W.) is fringed with rocks which extend about 0.5 mile offshore from the coast. Within the point the land is low.

6.43 Bahia San Andres (46°34'S., 75°31'W.) is entered between Punta Pringle and Cabo Gallegos, about 4.5 miles SW. The inner part of the inlet is divided into two arms, Caleta Inutil, the NE arm, and Estero Cono, the SW arm. Monte Cono, a prominent 488m conical peak, rises at the outer end of the peninsula which separates the two arms. Islita Cono lies at the entrance of Estero Cono.

Estero Cono (46°37'S., 75°28'W.) is protected except when the NW winds enter the anchorage area, and it does with great violence. A submerged wreck (46°36.9'S., 75°28.1'W.) lies about 100m off the W shore, halfway along the fjord.

Cabo Gallegos is a bold steep promontory, barren on its seaward side. Islita Rees, small and rock-fringed, lies about 0.5 mile SW of the cape. This islet is pot-shaped and pierced by a tunnel which is visible from the W. Islita Rees is a good mark for identifying the cape from the S. It was reported that a stranded wreck lies on the shore about 0.8 mile SE of the cape.

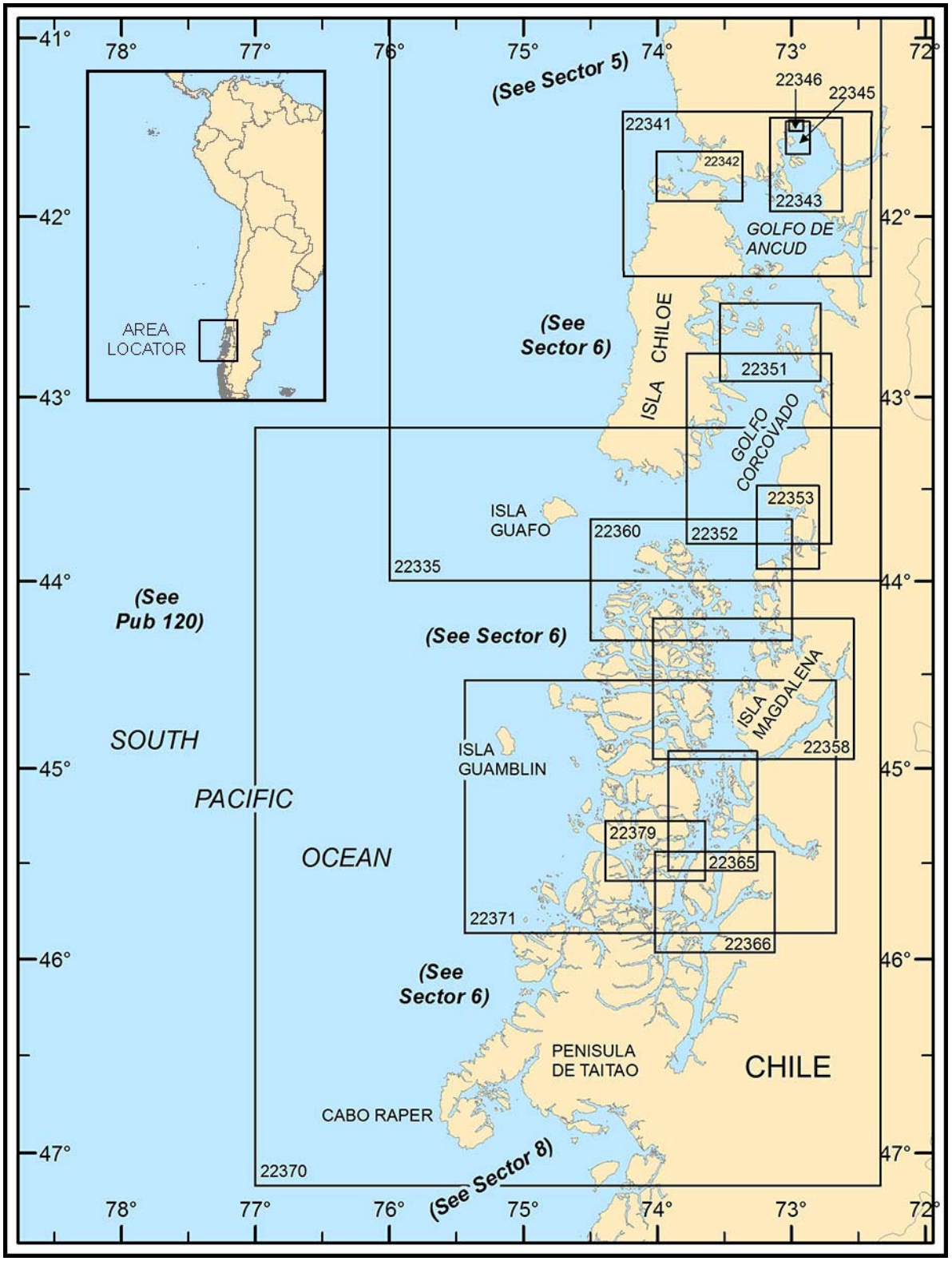
Anchorage.—Small vessels can take anchorage, in 11.9 to 21.9m, in Caleta Pascuas, a small cove on the S side of Bahia San Andres about 1.8 miles E of Cabo Gallegos, or off the S side of Islita Cono. Small vessels can also take anchorage near the head of Estero Cono, about 2.3 miles within the entrance of this arm, in 21.9 to 31m, mud and sand.

Cabo Raper (46°49'S., 75°38'W.) lies about 13 miles SSW of Cabo Gallegos. The coast between is mostly cliffy and rugged, rising to elevations of over 700m. The cape is a high, barren promontory. Foul ground extends about 1 mile W from it. A light is shown from a tower, 14m high, standing on the cape.

6.44 Cabo Tres Montes (46°59'S., 75°26'W.) lies about 13 miles SE of Cabo Raper. It is a bold and remarkable headland rising to an elevation of 396m. A conical above-water rock lies close off the cape.

Between Cabo Raper and Cabo Tres Montes the coast is formed by Peninsula Tres Montes. The peninsula is hilly with elevations of up to about 396m along the coast. It is joined to Peninsula Taitao just SE of Cabo Raper by a low isthmus. The summits of the hills are often obscured by clouds or squalls when the lower land is visible from a distance of about 2 miles. The small coves that indent the SW side of the peninsula are accessible only to boats, but some have sandy beaches at their heads.

A prominent gap, which is a good mark when the summits of the hills are obscured, separates the NW side of Peninsula Tres Montes from the SW end of Peninsula Taitao.



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

SECTOR **7** — CHART INFORMATION

SECTOR 7

CHILE—WATERS EAST OF THE ARCHIPELAGO CHILOE AND THE ARCHIPELAGO DE LOS CHONOS

Plan.—This sector describes the E sides of the Archipelago Chiloe and the Archipelago de los Chonos, with the mainland coast E, and the inner waters between the mainland and each archipelago.

General Remarks

7.1 The Archipelago Chiloe extends from Puerto Montt to Boca del Guafo. It consists of Isla de Chiloe and numerous small islands which lie in Seno Reloncavi, Golfo de Ancud, and Golfo Corcovado. The aspect of the archipelago differs radically from that of the adjacent coast. The islands, of moderate height and densely forested, differ from the continental coast which is very high, with snow-capped mountain peaks and volcanoes. There are numerous inlets and coves affording anchorage and shelter during inclement weather.

The Archipelago de los Chonos is separated from the mainland by Canal de Moraleda. From its N entrance, in the vicinity of Isla Queitao (43°44'S., 73°29'W.), Canal de Moraleda is navigable by ocean-going vessels to the E entrance of Canal Darwin (45°27'S., 73°48'W.), which leads to the Pacific Ocean. Although there are many deep inlets indenting the mainland coast E and S of Canal de Moraleda, none of them lead to ports of importance. There are several anchorages within the archipelago that are used by coastal vessels.

Ice.—There is little evidence of icebergs of Antarctic origin being encountered in the channels and inlets of Patagonia, and most of them are ice free throughout the year. There are, however, a number of glaciers which occupy the valleys at the heads of some of the more landlocked inlets. Most of these do not reach the sea, but some affect certain channels from time to time, and will be identified in the text.

Tides—Currents.—Because of the peculiar formation of the large gulfs, Golfo de Ancud and Golfo Corcovado, and because the tidal wave enters each gulf at about the same time, the rise and fall in this region reaches a greater height than in any other part of Chile, except the E entrance of the Strait of Magellan. In these bodies of water the rise and fall of the tide reaches 7m, causing tidal currents to run with great velocity. In Canal Chacao the tidal currents attain rates of 5 to 9 knots.

The E tidal current strikes Isla de Chiloe and flows around the S end of the island into Golfo Corcovado, reaching as far N as Golfo de Ancud, in the NE part of which it meets the current which flows through Canal Chacao. In the central part of these gulfs the current is weak, but it is greater in the vicinity of the coast and between the islands.

Southeast of Punta Piedras, about 1 mile SE of Punta Tres Cruces, at the E end of Canal Chacao, the tidal current is very weak, and in Bahia Manao, S of Punta Piedras, there is no current at all. The N and S currents meet opposite this bay in the middle of Golfo de Ancud. On the E coast of Isla de Chiloe the tides are very irregular because of the variable influence of the wind.

In Estero de Castro and its vicinity, HW is attained sooner than at other points farther S. For example, it has been observed in Fiordo Huildad, about 32 miles S of Estero de Castro, that the time of HW during a strong NW wind was 45 minutes later than the time of HW at Estero de Castro. The average time of HW in the N part of Archipielago Chiloe is about 1 hour, a figure which decreases about 15 minutes at the S part. The time of HW is very irregular, a difference of one half hour having been observed between the times of consecutive tides. The point of HW is also quite variable as it frequently occurs that the water reaches its highest point during the outgoing tide.

Caution.—The easy gradient with which the land slopes into the water in Archipelago Chiloe is the cause of producing extensive flats at low water. These flats, in connection with unexpected shoals, makes possible grave errors when fixing the position of the ship by bearings.

The waters described in this sector are incompletely surveyed. In general, the soundings appearing on the charts are of a reconnaissance nature. Mariners proceeding through this area should use the utmost prudence in navigation.

Shoals have been reported to lie up to 5 miles off the coast between Punta Auchemo (43°02'S., 72°52'W.) and Punta Pucaihuen (43°19'S., 73°04'W.).

Seno Reloncavi

7.2 Seno Reloncavi (41°40'S., 72°50'W.) opens N of Golfo de Ancud and has its main entrance between Punta Perhue (41°52'S., 73°00'W.) and Punta Trentelhue (41°55'S., 72°53'W.), with Isla Nao lying on the coastal bank extending at least 0.5 mile NW of Punta Trentelhue. Estero Reloncavi (41°43'S., 72°35'W.), indenting the E side of the bay, extends about 30 miles inland. Isla Puluqui, Isla Guar, Isla Maillen, and Isla Tenglo lie in the W side of the bay. Isla Queullin (41°53'S., 72°55'W.), lying in the main entrance of Seno Reloncavi, divides the bay into two passages, Paso Queullin and Paso Nao.

Winds—Weather.—At times, there is considerable atmospheric refraction in the bay and approaches. The air becomes so clear, and the sea so calm, that objects can be seen at great distances. However, a rapidly rising temperature and nimbus clouds forming in the N part of the bay indicate the coming of foul weather.

Tides—Currents.—Under certain circumstances, the winds and currents in Seno Reloncavi produce violent eddies and tide rips, known by the name of “rayas.” These tide rips occur in Paso Queullin, off Punta Perhue, and in Paso Nao, and are caused by a S wind and outgoing tide. Tide rips occur over Bajo San Jose with an incoming tide and a N wind. Under the same circumstances, there is a tide rip between Punta Redonda, the E end of Isla Guar, and Farallones Caicura, about 8.8 miles E. These tide rips are particularly dangerous for small craft.

Vessels navigating in Seno Reloncavi should take precautions to avoid being set off course by the tidal currents which

set into and out of Estero Reloncavi.

Depths—Limitations.—There are general depths of over 182.9m in Seno Reloncavi. Shoals extending off Isla Guar, and the mud flats off river mouths emptying into the N part of the bay, are best seen on charts. Bajo San Jose and Bajo Pucari, lying between Isla Queullin and Isla Guar, uncover at LWS. Dense smoke from forest fires on Isla de Chiloe and the mainland may impair visibility.

Seno Reloncavi—Southwest Side

7.3 Punta Coronel (41°48'S., 73°29'W.), the W approach point of Seno Reloncavi, is prominent due to its barren, high, and yellow cliffs. Between Punta Coronel and Punta Guatral (41°43'S., 73°03'W.), the coast is very irregular and indented by many inlets. Several islands front this coast.

Bahia Pargua (41°47'S., 73°26'W.), indenting the coast between Punta Coronel and Punta Tique, about 3.5 miles E, has a depth of 120m in the entrance, with lesser depths near shore. The shores of the bay are low and sloping, with several rivers emptying into the N and W part. Kelp patches extend about 0.3 mile off the W shore. Tidal currents in the bay run with a velocity of 6 to 9 knots at times, especially during spring tides. The currents change direction very suddenly, causing whirlpools and tide rips which bring great stress on the anchor cable. A pier, about 79m long, used by the ferry between Pargua and Puerto Chacao, is situated about 1 mile NE of Punta Coronel. There is a mooring buoy near the pier. Anchorage can be taken, in a depth of 20.1m, sand and gravel, about 0.2 mile, bearing 110° from the head of the pier. However, the anchorage should be used only in an emergency, or in calm weather and a N wind.

Punta Tique (41°48'S., 73°25'W.), a good radar target, is a high, steep, prominent bluff fronted by a sand and gravel beach for about 0.3 mile. The beach is bare at low water. Shoal water extends 0.5 mile offshore. Raya de Tique is the name given to a line of tide rips, especially heavy during spring tides, which extend from Punta Tique to Punta Lilicura (41°54'S., 73°29'W.).

7.4 **Punta Abtao** (41°49'S., 73°21'W.), the E entrance point of Rada de Cunco, is low and slopes inland. The point is a good radar target. A drying, rocky reef extends 0.8 mile SSE of Punta Abtao. Isla Abtao, a crescent-shaped island lying 0.5 mile NE of Punta Abtao, is very conspicuous at Punta Barranco (41°48'S., 73°21'W.), its NE end. Monuments stand on Punta Abato and the N end of Isla Abato. The SW end of the island is a low isthmus terminating at Punta Quilque (41°50'S., 73°21'W.), off which foul ground extends 0.5 mile.

Rada de Cunco (41°49'S., 73°22'W.), about 0.5 mile W of Punta Abtao, is a roadstead sheltered from N winds by high cliffs fronted by shoals. Tidal currents are strong, but not considered dangerous. Anchorage can be taken, in depths of 25 to 30m, good holding ground of sand and gravel, about 0.7 mile WSW of Punta Abtao. However, with freshening winds from the S and W, it is recommended that vessels leave the anchorage.

Canal Abtao lies between Isla Abtao and Peninsula Challahue to the W. Small vessels with local knowledge can transit this channel, which has sharp turns and a depth of 18.5m in the fairway. There is a 6m patch in the middle of the N entrance to the channel. The channel shores dry for 183m at LW. A dangerous reef extending SSE from Punta Abtao covers at HW. Tidal currents in Canal Abtao attain a velocity of 1.5 knots.

7.5 **Puerto Abtao** (41°48'S., 73°22'W.) consists of a widening of Canal Abtao at its N end to a width of 0.5 mile, with depths of 9.1 to 29.3m. Anchorage can be taken, protected from all directions, in depths of 18 to 29m, sand and mud, good holding ground. The confluence of the tidal currents from each end of Canal Abtao may make vessels ride uneasily.

Ensenada Codihue (41°47'S., 73°22'W.), between Peninsula Challahue and the mainland N, is entered N of Punta Barranco. Punta Peuque (41°47'S., 73°23'W.) is a conspicuous point rising vertically on the SW shore of the inlet. There are depths of 8.5 to 64m in the bay. There are no known dangers and anchorage is afforded in suitable depths, sandy bottom, throughout Ensenada Codihue. A settlement is situated at the head of the bay.

Dangers in the entrance of the bay include Isla Lagartija, an island in the center with a steep bluff at its S end. Above and below-water shoals extend at least 0.1 mile NW and 2 miles SE of the island. There are several detached patches, sometimes marked by kelp, which lie SSW of the island. Bajo Abtao, with a depth of 4m, is the outermost danger extending ESE from Punta Quilque. Pasa Lagartija, with a least charted depth of 20.1m, leads between Bajo Abtao and the detached dangers. The passage is not buoyed and should not be used without local knowledge.

Isla Quihua (41°45'S., 73°14'W.) lies in an indentation of the coast. The shore dries about 0.1 mile off Punta Chullehua, the S extremity of the island. Roca San Pedro, 0.7 mile E of the point, lies close offshore and is an excellent landmark. Canal San Antonio and Canal Quihua are shallow channels W and E of the island, respectively. An overhead cable, with a vertical clearance of 20.1m, spans Canal San Antonio. Anchorage can be taken, in about 20.1m at the entrance of Canal San Antonio.

Dangers S of Isla Quihua include Bajos de Lami, Bajo Buta, Bajo Chal, and Bajo Cailin, all above and below-water shoals that are shown on the charts. Paso Lami leads between these dangers, but is little used and not recommended. Bajo Quihua and Bajo Corvio (41°51'S., 73°13'W.) are drying, foul grounds connected by a low neck that does not dry at LW. A light is shown from near the center of Bajo Corvio. Another light is shown from Bajo Quihua. Paso Quihua and Paso Corvio are passages shown on the chart which lead between the above charted dangers. A 11m patch lies about 0.8 mile W of Punta Pinto (41°49'S., 73°10'W.) and is marked by a lighted buoy. The fairway leads S and W of the charted dangers.

7.6 **Isla Calbuco** (41°47'S., 73°09'W.) is separated from the mainland W by Canal Caicaen, and from the off-lying islands by Canal Calbuco. The island, barren and with few inhabitants, is separated from Isla Quenu (41°50'S., 73°09'W.) by Canal Quenu. A causeway joins the N end of Isla Calbuco with the mainland, thus blocking the channel to through navigation. A submarine cable is laid across the channel about 0.2 mile W of the causeway. An overhead cable, with a vertical clearance of 25m, spans the N end of the channel. Anchorage can be taken, sheltered from W winds, in Caleta La Vega, a bight located at the NE end.

Isla Calbuco

Calbuco Pier Light

Good anchorage can be taken by small vessels in Canal Caicaen between Punta Caicaen, the SW end of Isla Calbuco, and the village of San Jose, on the S coast of Isla Quihua. In addition, vessels may take shelter in any part of Canal Caicaen except at its NE end. A current of 2 knots and over sets through Canal Caiaen.

Vessels anchor at Puerto Calbuco, in depths of 20.1 to 40m, about 0.3 to 0.5 mile NE of the town. Small vessels usually anchor 0.3 to 0.4 mile NNE of the town, in 31m. The N point of Isla Calbuco should not be approached within 183m because of fringing rocks.

Calbuco (41°46'S., 73°08'W.) stands on the N end of Isla Calbuco. A small pier, showing a light, is situated at the town. Coastal vessels frequently call here.

Calbuco is a small port and consists only of a single pier with a berthing platform and four mooring dolphins (two on each side of the pier). Vessels as large as 70,000 dwt with a maximum draft of 12m can be accommodated. Berthing can only be carried out during daylight hours and if winds are less than Force 5.

Estero Huito is entered between Punta Yahuecha and a point about 0.5 mile farther N. A church and the settlement El Rosario are situated on the NE shore of the estuary, NW of Punta Yahuecha.

Within the entrance to Estero Huito the depths are irregular. About 0.8 mile NW of Punta Yahuecha, there is an 8.8m shoal in mid-channel. At the narrows, 0.2 mile farther WNW, a bank extends from the S shore, leaving a channel only 91m wide and with a depth of 6.1m N of the bank. At the inner end of the narrows a bank extends 0.1 mile SW from the N shore, S of El Rosario.

Vessels can anchor just inside the entrance to Estero Huito, in depths of 25.6 to 31m, sand, in mid-channel. There is also an anchorage about 1.5 miles within the entrance, W of El Rosario, in depths of 12.9 to 36.6m, sand. Great care must be used when passing through the narrows.

The tidal currents have a rate of about 2.5 knots, but at springs reach 4 knots. The tidal range at the berth is 6m.

An overhead power cable extends across the S approach to Estero Huito, at a height of 17m.

Pilotage.—Pilotage is compulsory. The pilot boarding ground is within the rectangular area bounded by lines joining the following positions.

a. 41°48'30"S, 73°12'42"W.
b. 41°48'30"S, 73°12'00"W.
c. 41°49'00"S, 73°12'00"W.
d. 41°49'00"S, 73°12'42"W.

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

Calbuco—Contact Information	
Harbormaster	
Telephone	56-65-2461279
Facsimile	56-65-2461279
E-mail	cpcalbuco@directemar.cl
Port Operators	
Telephone	56-65-2772150
E-mail	info@froward.cl
Web site	http://www.froward.cl

7.7 Punta Metrencue (41°44'S., 73°06'W.) lies about 2.3 miles NE of Punta Yahuecha and shows a light. A settlement lies close S of the point. Good anchorage, in 20.1m, mud, can be obtained about 0.2 mile S of Punta Metrencue.

Estero Rulo lies between Punta Metrencue and a point about 1.5 miles to the ENE. The inlet is shallow, there being only 11m in the entrance and 7.3m inside. The inner part of the estuary dries at low water. A church stands on the E shore of the inlet, near the entrance.

Banco San Agustin extends about 0.7 mile SW from the E entrance point of Estero Rulo. There is 5m on the outer edge of the bank and at low water the bank dries 0.5 mile offshore. It was reported that a concrete obstruction, with a depth of 1.5m,

lies about 0.7 mile SW of San Agustin church.

Isla Tautil (41°43'S., 73°04'W.) lies about 0.3 mile SE of the E entrance point of Estero Rulo. Rocas Tautil, awash, lies 0.1 mile E of the NE end of Isla Tautil.

Paso Tautil, between Isla Tautil and Punta San Ramon, the N end of Isla Puluqui, has a navigable width of about 0.2 mile, with a least depth of 7.3m.

Inner Channel to Puerto Montt

7.8 The inner route from Gulfo de Ancud between the islands to Seno Reloncavi and Puerto Montt is by way of Paso Corvio, Paso Quihua, Paso Quenu, Canal Calbuco, and Paso Tautil. The least depth in the fairway, as shown on the chart, is 7.3m in Paso Tautil.

Paso Corvio (41°45'S., 73°14'W.) is entered between Bajo Corvio Light and the dangers extending WNW from Isla Polmaltahue. By remaining about midway between these two features, a least depth of about 16.4m is obtained.

Paso Quihua leads between Bajo Quihua and Isla Quenu. This passage has a least depth of 10.9m and is free of dangers, except for the reef which extends W from Punto Pinto, the NW point of Isla Quenu.

Pasa Quenu (41°49'S., 73°10'W.) leads between Isla Quenu and Isla Calbuco. This passage is about 0.3 mile wide and has a least charted depth of about 35m in mid-channel.

Canal Calbuco leads to the NE where it joins Paso Tautil. This channel is over 8 miles long and has a mid-channel depth of about 18.3m; however, a shoal depth of 9.1m is charted 2 miles SE of Isla Tautil.

Having passed through Paso Tautil, a vessel can join the main channel to Puerto Montt, when E of Punta Guatral.

Gulfo de Ancud—North Side

7.9 **Grupo Tabon** lies S of Isla Chidguapi and Isla Quenu. The group consists of islands connected by low ridges which dry at low water. The tidal currents in the area attain a rate of 1 to 2 knots at neaps and 3 to 4 knots at springs. The incoming tidal current sets NE and the outgoing current sets SW.

Isla Lin (41°54'S., 73°05'W.), the E island of Grupo Tabon, is connected with Isla Tabon by a spit of fine sand which covers at HWS. It can be seen for 15 miles and is reported to be a good radar target. Good anchorage, in 14.6 to 20.1m, mud and sand, can be taken about 0.5 mile S of Punta Llayehue, the E extremity of Isla Lin. A 9.1m patch lies nearly 0.8 mile SSW of Punta Llayehue.

Isla Tabon (41°55'S., 73°09'W.) is the largest and highest of the group. The island is nearly 3.5 miles long, E and W, and near the center there is a low part which covers at HW, forming a small inlet which extends from the N to S, with its entrance in Bahia Lin. The S shore of the island is steep and the sea breaks against it at HW. Its greatest elevation is about 60m, near its W end. A sand bank extends nearly 0.5 mile S from this side. A bank of sand and stone extends about 0.5 mile W from Punta Ilto, the W end of Isla Tabon. Most of the bank dries at low water. Roca Lobos, about 0.3 mile S of the E end of the island, dries 5m, but it is covered at HW. A shoal, with a depth of 10.7m, lies about 0.6 mile offshore, 1 mile SE of Punta Ilto. A light is shown about 0.8 mile E of Punta Ilto. A church is situated on the NE side of the island.

Vessels of moderate size and with local knowledge can take anchorage, in 29m, about 0.3 mile ENE of the church on Isla Tabon.

Bahia Ilto lies between the NW side of Isla Tabon and Isla Llanquinelhue. It is about 1 mile wide, with depths of 46m in the center and 12.8m from shore in the SE corner of the shore. The bay is not recommended as an anchorage.

Isla Llanquinelhue and Isla Polmallelhue together measure 2.5 miles, SE and NW. The SE end of Isla Llanquinelhue joins with Isla Tabon at LW. A conspicuous church stands on the N side of Isla Polmallelhue. A 2.7m patch lies 0.5 mile NE of the church.

7.10 **Bajo Culenhue** (41°52'S., 73°11'W.) extends about 1.3 miles NW from the center of Isla Polmallelhue. Roca Granello is a large rock which lies near the N end of the reef. The rock uncovers shortly after the start of the outgoing tide.

Banco Amnistia (41°58'S., 73°08'W.) lies with its N edge about 2.5 miles S of Isla Tabcn. The bank is of irregular form and about 1.5 miles in extent. The bank has a least depth of 2.4m. A lighted beacon is situated on the NW side of the bank.

Isla Quenu, about 1.5 miles long and 0.8 mile wide, lies about 2 miles N of Isla Polmallelhue. A church stands near the S end of the island. Reefs surround the island on all sides. A lighted buoy is moored about 0.5 mile W of the NW point of the island and marks a 11m patch. A church stands near the S end of the island.

There is anchorage for small vessels, in about 10m, about 0.3 mile E of the church. The anchorage is sheltered against W winds.

Isla Chidguapi (41°50'S., 73°06'W.) lies about 1.5 miles E of Isla Quenu. The island is of irregular shape and surrounded by foul ground. A church stands near the E extremity of the island.

Bahia Pilolcura, in the middle of the W side of the island is about 0.5 mile wide at its entrance. The depths in the bay are moderate and the holding ground is good. Being open to W wind and sea, the bay is recommended for anchorage only in good weather.

Canal Chidguapi separates Isla Chidguapi from Isla Puluqui and has a length of 2.5 miles. The channel is about 0.2 mile wide at its narrowest part. It is somewhat crooked with dangers near each shore, but it has sufficient depth at HW for vessels of moderate tonnage.

Roca Layene, awash at LW, lies in the E approach to Canal Chidguapi about 0.4 mile S of the E extremity of Isla Chidguapi. Vessels entering or leaving the channel should always pass E of Roca Layene, being careful to remain a prudent distance off the coast of Isla Puluqui, which is bordered by shallow water and foul bottom.

7.11 **Isla Puluqui** (41°48'S., 73°03'W.) borders the E side of Canal Chidguapi and Canal Calbuco. It is the largest island in the area, being nearly 8 miles long, with a variable width caused by the numerous inlets on its W side. On the W side the land is sloping and is fronted by shoal water. On the E side the beaches uncover for quite a distance at spring tides.

Punta San Ramon, the N end of the island, is low and round, with shores of sand and stones which descend steeply into the

sea. Punta Perhue, the SE extremity of the island, is very low and narrow. There is deep water around the point, but the wind and currents produce eddies known as "rayas." High cliffs rise a short distance in back of the point. The point is reported to be a good radar target.

Estero Puluqui, located on the NW side of the island, is about 183m wide in the entrance and extends about 1 mile NE. About 0.3 mile within the entrance there is a bank of sand and stones. The inlet is shoal and tortuous, and useful only for small craft.

Estero Chauquiar is the largest and longest inlet on the W coast of Isla Puluqui. It is 3.3 miles in length and has a uniform width of about 0.5 mile. The depths decrease from about 31m in the entrance to 5.5m, about 0.3 mile from the head of the inlet. Vessels of any size can anchor here, but are exposed to NW winds.

Estero Machildad and Estero Chope, located NE and SW, respectively, of Estero Chauquiar, are of little importance to navigation. Vessels may anchor at the entrance to Estero Chope, but the anchorage is exposed to NW winds.

Seno Reloncavi—East Side

7.12 Seno Reloncavi extends about 25 miles N from the NE part of Golfo de Ancud. The main entrance lies between Punta Perhue, on the W side, and Isla Nao (41°55'S., 72°53'W.) on the E side. The entrance is divided into two passages by Isla Queullin.

Paso Queullin (41°52'S., 72°58'W.), the W entrance to Seno Reloncavi, is deep and has a navigable width of about 1.8 miles. The tidal current runs N on the rising tide and attains rates of 1 to 2 knots; on the falling tide the current runs S and attains rates of 3 to 4 knots.

Paso Nao, the E passage entrance, has a navigable width of about 0.5 mile, with depths of from 23.8 to 49.4m. The tidal current attains a rate of 3 knots in the narrowest part of Paso Nao. During the incoming tide, vessels should take care to avoid being set onto Isla Queullin.

Pilotage is compulsory for all foreign vessels navigating in the channels.

Isla Queullin (41°53'S., 72°55'W.) lies with Punta Cola, its SE extremity, about 1.3 miles NW of Punta Trentelhue (41°55'S., 72°53'W.) and Punta Huin, its NW extremity, about 2.5 miles ESE of Punta Perhue. The W side of the island is steep, but the E side is low and broken. Depths of 2.4m extend 0.5 mile E from Punta Martin, the NE extremity of the island. A light is shown from Punta Huin.

Small vessels with local knowledge can anchor, in 18.3 to 29.3m, in Caleta Martin, close S of Punta Martin. The anchorage is exposed to NW and can only be used in good weather. A small church stands on the shore nearly 1 mile W of the anchorage. South of Caleta Martin the shore bank, with less than 1m on it, extends 0.5 mile E from the island.

Isla Nao lies close W of Punta Trentelhue (41°55'S., 72°53'W.) and is connected with the point by a bank that dries at LWS. The island has been reported to be a good radar target. A small anchorage lies N of the bank connecting Isla Nao and Punta Trentelhue. The anchorage is protected against SW winds, but with winds from the N, NW, and S, the entire coast is unapproachable.

7.13 **Bajo San Jose** (41°50'S., 72°56'W.) lies between 1.5 and 2.3 miles N of Isla Queullin. At LWS, two patches, the largest nearly 0.5 mile long, dry. It is reported that the bank breaks heavily at times, with N, NW, and even S winds. A light is exhibited from a red framework tower with a green band, 15m high.

Estero Curahuene, about 3 miles NE of Punta Trentelhue, is about 0.3 mile wide at the entrance and about 0.5 mile long. A conspicuous white cross stands on a hill about 0.5 mile NE of Estero Curahuene.

Isla Aulen (41°52'S., 72°50'W.) lies close N of Estero Curahuene and is separated from the coast by a narrow channel which dries at LWS. The island is surrounded by shallow water.

Between the N end of Isla Aulen and Punta Pampichuela, about 2 miles to the NE, lies Estero Quildaco and Estero La Poza. A light is shown on the head of a pier on the N side of the entrance of Estero Quildaco.

Punta Pampicuela (41°50'S., 72°48'W.), the most salient point along this shore, lies about 6 miles NE of Punta Trentelhue. It is circular, with shores of round stones which uncover 0.2 mile at LWS. The Rio Chagual discharges NE of the point.

Anchorage can be obtained 0.8 mile WSW of this point, off the entrance to Estero La Poza.

The Rio Contao lies 2.5 miles NE of the Rio Chagual and is about the same in size. At low water the mouth of the river dries. All but small vessels should give this part of the coast a berth of at least 1 mile. A village stands close SW of the river entrance. Small ships can obtain anchorage, in 45.7m, about 1 mile W of the mouth of the river. The Rio Manihueico discharges about 2.3 miles NE of Rio Cantao.

Farallones Caicura (41°43'S., 72°42'W.) consists of two groups of islets and rocks which lie off the entrance to Estero Reloncavi. The largest of the S group is Islita Caicura which has a well-sheltered cove on its N side. East of Islita Caicura there are several islets, and N of it there are two rocks awash. Grupo Piren, the N group, consists of two main islets and some rocks. Large vessels should not attempt to pass between the two groups.

Estero Reloncavi

7.14 Estero Reloncavi is entered between Morro Chico (41°44'S., 72°39'W.) and Morro Hornos, about 2 miles N. From its entrance it extends about 15 miles ENE, then 16 miles N, with a width of from 0.5 to 2 miles.

The shores of the estuary are rocky and rugged, but clear at the foot of the bluffs, with deep water over a sand bottom. The inlet contains several good anchorages. High mountains lie on each side of the estuary and a number of rivers empty into it.

Winds—Weather.—West winds follow the bends of the channel, and, if of any strength, create a heavy sea. Northwest and N winds are not felt beyond Farallones Marimeli, about 9 miles within the entrance. Winds from between the S and W extend as far as the head of the estuary.

Moderate or fresh N or W winds cause strong gusts which follow the bends of the estuary and, when they meet outside, cause the formation of waterspouts dangerous to boats. Strong SW winds, with violent squalls descending from the mountains on the S side, render the entrance impassable.

Morro Chico (41°44'S., 72°40'W.), the S entrance point of Estero Reloncavi, is conspicuous although not very high. It rises in the center of a small peninsula, which appears as a small island that is joined to the coast by a low isthmus. Small vessels bound for Estero Reloncavi and awaiting good weather take shelter in Caleta Puelche, just S of Morro Chico.

Punta Chaparano lies about 3.5 miles E of Morro Chico and is similar to it. Bahia Martin lies W of the point and Bahia Chaparano lies E of it. These bays are only used by small craft in fair weather. There is a small pier at the head of Bahia Martin, which is shallow. Cerro Chaparano lies 4 miles E of the point.

Farallones Marimeli (41°42'S., 72°26'W.) consist of one large island surrounded by a group of islets and rocks, and is located about 9 miles ENE from the entrance to Estero Reloncavi. A rock, which dries, lies 0.2 mile off the SW point of the island. Farallones Marimeli divides Estero Reloncavi into two channels, one to the N and one to the S. The N channel, though deep, is very narrow and should not be used. The channel to the S is deep and clear.

The Rio Blanco and the Rio Puelo, which are not navigable, discharge through the S shore of the estuary NE of Volcan Yate (41°46'S., 72°23'W.). A concrete ramp for small craft is situated 0.5 mile SSW of the S entrance point of the Rio Puelo. A small village is situated close to the ramp. A light is shown from the village.

7.15 Punta Sotomo (41°39'S., 72°22'W.), the S entrance point of Bahia Sotomo, lies about 14 miles ENE of Morro Chico. Bahia Sotomo is about 0.5 mile wide between Cayo Observatorio, an islet which marks the SE entrance of the bay, and the coast to the N. Two above-water rocks lie about 91m offshore in the N part of the bay. Bahia Sotomo is deep and the bottom irregular, but small vessels can obtain good shelter. Large vessels can anchor, in 49.4m, on a line between Cayo Observatorio and Cayo Toro, about 0.3 mile offshore.

Caleta El Canutillar is a small port on the W side of Estero Reloncavi, about 8.5 miles N of Bahia Sotomo. There is a small settlement there. The port is useful only for small craft.

Bahia Cochamo (41°30'S., 72°16'W.) lies on the E side of Estero Reloncavi opposite Caleta El Canutillar. The bay is about 2 miles wide and recedes about 1 mile to the E. Cochamo is a settlement on the N shore of the bay close E of Punta Relonhue, the N entrance point of the bay. A conspicuous church and a small pier are situated at the settlement. A ramp lies close E of the pier. A light is shown from a small islet located about 0.1 mile W of the head of the pier. Anchorage, in 44m, mud, can be taken about 0.2 mile SW of the church.

Bahia Ralun (41°24'S., 72°19'W.), which forms the head of Estero Reloncavi, is a circular bay that is entered between Punta Limpia, about 4.3 miles N of Punta Relonhue, and a point 0.8 mile to the NE. Several rivers flow into the bay. A conspicuous church stands on the W side of the bay.

Banco Petrohue, which dries 0.9 to 2.7m, fills the N part of Bahia Ralun. It is formed by the silt brought down by the rivers that empty into the bay. A narrow channel gives access to an anchorage in the W part of the bay. The channel is available only to small craft which should remain just over 91m offshore from abreast of Punta Limpia until W of Punta Veriles.

Cayo Nahuelguapi, on which a light is shown, is an above-water rock on the S edge of Banco Petrohue, about 0.1 mile NNW of Punta Veriles. Vessels should not attempt to pass N of the rock.

Anchorage is afforded in Bahia Ralun, in depths of 32.9 to 40.2m, 0.5 mile W of Cayo Nahuelhuapi.

Seno Reloncavi—East Side (continued)

7.16 Morro Hornos (41°42'S., 72°39'W.) is the N entrance point of Esteros Reloncavi. It is visible for over 20 miles in the N part of Seno Reloncavi, forming one of the best landmarks in the region. This remarkable promontory is about 115m high.

From Morro Hornos the coast trends about 3 miles NNW to Punta Chaica, and consists chiefly of steep cliffs with a few beaches. Caleta La Arena, close N of Morro Hornos, is narrow and deep, and affords shelter only for boats. Morro Chaica, close E of Punta Chaica, is high and takes the form of a sugarloaf, which makes it distinctive.

Bahia Lenca (41°38'S., 72°41'W.) recedes about 1 mile to the NE between Punta Chaica and Punta Lenca. The bay is shallow in its E part and of no importance. The Rio Lenca and the Rio Chauta discharge into the bay. A settlement and a church are situated about 0.5 mile NE of Punta Lenca.

Punta Metri lies about 1 mile NNW of Punta Lenca. The point, though low, is prominent. A group of whitish above-water rocks extend up to 0.5 mile W and NW of the point. A 1.8m patch lies about 0.3 mile S of the point.

Roca Verde (41°35'S., 72°44'W.) lies about 1.8 miles NNW of Punta Metri and about 0.2 mile offshore. The rock is green in color and above-water. Roca Negra, nearly 0.8 mile NW of Roca Verde and 0.5 mile offshore, is low and covers at HW. Several shoals, with less than 10m over them, lie about 0.5 mile offshore between these two rocks.

Punta Quillaipe, about 3.5 miles NW of Punta Metri, is of moderate height and rugged, with numerous rocks in its vicinity. A shoal, with depths of 1.5 to 2.7m, extends up to 0.5 mile S and W from the point. Piedra Blanca, a conspicuous white rock, lies on the shore close S of Punta Quillaipe. Bahia Quillaipe is not recommended as half of it dries at LW.

The **Rio Coihuin** (41°30'S., 72°50'W.), the most important river of those that discharge into the N part of Seno Reloncavi, rises in Lago Chapo and is 12 miles long. It is very crooked, but navigable by boats, which at HW can proceed 6 miles upriver. Thereafter, the river becomes rapid and foul. Punta Coles, of moderate height and wooded, forms the E entrance point of the river.

Bancos de Coihuin extend about 0.8 mile S of a line between Punta Pilluco (41°30'S., 72°53'W.) and Punta Quillaipe. The outer edge of the banks have depths of from 8.2 to 10m at LW, increasing rapidly farther off. Bancos de Coihuin constitute a danger in the approach to Puerto Montt, particularly during overcast weather. Vessels should keep well to the W of the banks during such weather.

Seno Reloncavi—West Side

7.17 Between Punta Guatral and Puerto Montt, about 14 miles N, the coast is irregular and indented by a number of bays. Several islands lie off the coast, of which Isla Guar and

Isla Maillen are the largest.

Punta Guatral (41°43'S., 73°03'W.) is low but prominent. The point is clear of fringing dangers, but to the N it is fronted by a reef that is shelving and rocky, and should not be approached within 0.5 mile.

Isla Guar lies with its W extremity about 1.5 miles E of Punta Guatral. The island is very irregular in outline, rendered so by various inlets which penetrate deep into its shores, dividing the island into three parts which are connected to one another at HW by a narrow isthmus. The shores are rugged and surrounded by a dangerous beach on which lie large blocks of granite. The N, E, and SW sides of the island are somewhat shoal. Numerous houses stand on the island.

Punta Redonda (41°42'S., 72°54'W.), the SE extremity of the island, is low, but backed by cliffs, which serve as good radar targets. The coastal bank dries 0.1 mile offshore; depths of less than 3.6m extend nearly 0.5 mile off the point. A light is shown from the point.

Estero Chipue recedes nearly 2.5 miles NW between Punta Redonda and Punta Blanca, about 1 mile WSW. Depths of 18.3 to 29m are found in the outer part of the inlet; the inner part is shoal. Vessels of moderate size and with local knowledge can find good anchorage in the outer part. The anchorage lies off the NE shore of the inlet, in depths of 20.1 to 21.9m, and is sheltered from NE and NW winds.

Small vessels can anchor, in 20m, sand and mud, with Punta Redonda Light bearing 079°, distant 0.8 mile.

Punta Blanca (41°43'S., 72°55'W.), the W entrance point of Estero Chipue, takes its name from the whitish color of the point. Depths of less than 5.5m extend 0.3 mile S from the point and 0.3 mile from the coast W of the point.

Bajo Pucari lies from 1.2 to 2 miles SSE of Punta Blanca. The bank is over 0.5 mile in diameter. At LWS, an area of about 0.4 mile in diameter dries, the central part showing about 3m above water. With strong winds, the sea breaks over the bank. There is a wide, clear channel between Bajo Pucari and Isla Guar.

A rock, awash at low water, lies about 0.3 mile SW of the central part of Bajo Pucari.

7.18 Estero Chauqui (41°43'S., 72°58'W.) is entered between a point located about 1 mile W of Punta Blanca and Punta Corral Grande, 1.2 miles SW. The outer part of the inlet is deep, with depths of about 60.4m in the entrance, and depths of 21.9m near its head, about 1 mile farther in. The shores of the inlet are shoal and dangerous. The inlet should only be used by small craft.

Punta Corral Grande (41°44'S., 72°58'W.), the SW entrance point of Estero Chauqui and the S extremity of Isla Guar, is craggy and conspicuous. A church stands about 1.5 miles WNW of the point. A conspicuous statute of the Virgin Mary, 41°40'43"S, 72°59'27"W., stands on a hill 3 miles NNW of Punta Corral Grande.

Isla Mallina (41°40'S., 73°00'W.) lies with its S side about 0.3 mile N off the NW end of Isla Guar and is joined to the larger island by a bank of sand and gravel which dries at low water. A light is shown from a white, round, concrete tower with red bands, 8m high, situated on the N side of the island.

A 4.8m patch lies about 0.3 mile W of Isla Mallina. A bank, with 4.3m at its outer end, extends about 1 mile NE from the NE end of the island.

Anchorage can be taken in Caleta Alfaro, off the village of Alfaro, on the NW side of Isla Guar. The anchorage is in 20.1m, poor holding ground, a little over 0.5 mile SSW of Isla Mallina and about 0.3 mile offshore. It is used mainly by small local vessels.

Estero Cholhue (41°40'S., 72°59'W.) lies between Isla Mallina and Punta Alta, about 0.5 mile to the E. Roca Blanca, a large white rock, visible a long distance, lies at the foot of the inlet. The depth in the inlet is about 5m.

Paso Guar leads between Isla Guar and the mainland. The passage has a least width of about 1.3 miles and a least charted depth near the center of 29m. Paso Guar is safe and suitable for large ships.

7.19 Isla Huelmo (41°40'S., 73°04'W.) lies 3 miles NNW of Punta Guatral. The island is separated from the mainland by a drying channel. A reef extends about 0.5 mile E from the SE end of the island and terminates in Roca Lobos, which is black and uncovers at half tide. Roca Huelmo, nearly always visible and of a whitish color, lies between Roca Lobos and the island. It resembles a boat under sail.

Bahia Huelmo, between Isla Huelmo and the mainland, is about 1 mile in extent. Anchorage is obtainable in the outer part of the bay, in depths of 13 to 33m; local knowledge required. The shores of the bay are shallow and rocky, particularly on the S side, where rocks extend 0.2 mile offshore. A light is shown from the E extremity of the rocks.

Bahia Ilque (41°38'S., 73°05'W.) is entered between Punta Capacho and Punta Ilque, 1.7 miles NNW. The shores of the bay should not be approached within 0.4 mile. Shoal water borders the shores for a distance of about 183m, especially near the head of the bay. A 7.2m shoal lies in the entrance to Bahia Ilque, 1 mile NNE of Punta Capacho. Anchorage, in 26m, can be taken about 0.5 mile offshore.

Bahia Huenquillahue lies 2 miles N of Bahia Ilque, and recedes about 2 miles to the W. The bay is semicircular, with depths of 86m in the outer part which decrease to 11m, 0.5 mile offshore. The bay is protected against W winds and offers anchorage in moderate depths in its SW part.

Isla Maillen (41°35'S., 73°00'W.) lies close NE of Bahia Huenquillahue. Shoal depths extend 0.5 mile offshore on the N and S sides of the island. Vessels should not approach closer than 0.3 mile of the island without taking soundings. A conspicuous church stands near the S side of the island. The E extremity of the island is reported to be a good radar target.

Isla Capeaguapi lies about 0.3 mile S of Isla Maillen. The islands are separated by a channel which is 0.4 mile wide at high water, but at low water it is impassable even for small vessels. The island is surrounded by shoal ground, particularly on the N and SE sides.

7.20 Paso Maillen (41°34'S., 73°02'W.) lies between Isla Maillen and the mainland. It has a clear navigable width of 0.2 mile and a least depth of 7.9m in mid-channel. Depths of 1.8m extend 0.2 mile offshore on the N side of Punta Panitao (41°34'S., 73°03'W.). Less water than charted was reported in the N and S approaches to the pass and vessels are advised not to use the pass. During spring tides, the currents attain a rate of 2 knots and form strong eddies. Overfalls have been reported to

Puerto Montt Harbor

exist here.

Bahia Chincui is entered between Punta Panitao and the SW extremity of Isla Tenglo, 3.2 miles to the NE. The bay is deep in the center, but shoals extend 0.5 mile offshore. Islita Chincui, close offshore in the N part of the bay, has a small sheltered anchorage E of it. Isleta Caullaguapi lies close offshore near the middle of the bay and is connected to the shore by a sand bank.

Isla Tenglo (41°30'S., 72°59'W.) is 2.7 miles long and lies at the head of Seno Reloncavi. The island is separated from the mainland by Canal Tenglo. A lighted buoy is moored off the N end of the island. Submerged rocks near the S entrance and eddies in the N part render passage through Canal Tenglo difficult, and should not be attempted without local knowledge. Depths less than charted have been reported off the S and SE coasts of the island. A lighted radio mast stands on the W side of the canal. Six overhead cables, with a clearance of 39.6m, cross the canal. Pilotage is compulsory.

Bahia Puerto Montt lies at the N end of Seno Reloncavi and is entered between the S end of Isla Tenglo and Punta Pilluco, about 4.5 miles to the ENE. Puerto Montt is situated at the head of the bay. Depths of 35 to 77m are found in the center of the bay.

Puerto Montt (41°29'S., 72°58'W.)

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7.21 The bay consists of two parts; the W side, formed by Tenglo and Angelmo Bay, and the outer port, Puerto Montt Bay; the depth in the center of the harbor is 20 to 50m. There is accommodation for general cargo and bulk vessels, ro-ro vessels, and tankers. The main cargoes handled are fertilizer, wood chips, lumber, frozen fish, general cargo, and petroleum. Puerto Montt has also become a popular cruise ship destination.

Puerto Montt Home Page
http://www.empormontt.cl

Winds—Weather.—The port is protected against N winds. Southeast and SW winds cause considerable sea in the port and interrupt small boat traffic.

Tides—Currents.—Mean spring range at Puerto Montt is 5.8m, while neap tides rise 2.3m.

Tidal currents in Canal Tenglo run E-W.

Depths—Limitations.—There are two harbors which make up Puerto Montt. The inner harbor, which is situated at the NE end of Canal Tenglo, consists of two commercial berths, a ferry terminal, and a ro-ro terminal. Berth No. 1 is 200m in length

Puerto Montt Harbor from N

and can accommodate vessels up to 170m in length, with a draft of 7.4m. Berth No. 2 is 120m in length and can accommodate vessels up to 100m in length, with a draft of 6.8m. The ro-ro terminal is situated close W of the commercial berths and has four ramps for use during different stages of the tide. The ro-ro terminal can accommodate vessels up to 120m in length with a draft of 3.6m.

The outer harbor consist of two tanker berths, the Esso Terminal and the Cope Terminal.

The Esso Terminal is a CBM type berth and is used for discharge of clean products only. This terminal can accommodate vessels up to 16,000 dwt and 180m in length, with a draft of 12.2m.

The Cope Terminal is used for loading diesel and gas oil plus kerosene and is located about 200m W of the Esso Terminal. This terminal is for coasters up to 350 dwt and a draft of 3.65m.

Berthing at either terminal is carried out only during daylight hours, with two anchors down and their stern secured to two mooring buoys.

The local authorities should be consulted for the latest information on this port complex, as limiting drafts may vary depending on the state of dredging in the channel and off the wharf.

Aspect.—On approach to the port, the most conspicuous landmark is a large white hospital situated about 1 mile NE of the N extremity of Isla Tenglo. Several tanks with obstruction lights are situated about 0.7 mile ESE of the hospital. A number of radio towers stand on hills E of the town. It was reported that a prominent lighted cross stands on Quinta Hoffman at the NE end of Isla Tenglo.

Recommended tracks through Golfo de Ancud and Seno Reloncavi may best be seen on the chart.

The SE coast of Isla Tenglo should be given a berth of at least 0.5 mile to avoid the shoal depths and rocks extending from it. Depths of less than 5.5m extend 0.2 mile N and E of Isla Tenglo's NE end, and the area was reported to be shoaling further.

The outer harbor of Puerto Montt has depths of 20.1 to 159m.

Pilotage.—Pilotage is compulsory. Vessels should advise their ETA to the port captain or agent at least 24 hours prior arrival to obtain a Puerto Montt harbor pilot. See the Regulations paragraph below for additional ETA reporting requirements.

Foreign vessels entering the port for the first time can obtain pilots from Valparaiso. Pilots needed for passage through the Canal Chacao and Paso Queullin heading to Seno Reloncavi will board at the Ancud pilot boarding position.

The pilot boarding area for the Puerto Montt harbor pilot is in position 41°29'17"S, 72°56'07"W.

Regu**lations.—**The initial ETA should be sent to the vessel's agent 5 days prior arrival, then each day at 0800. In addition to the expected arrival time, this message should also include a confirmation that all cargo gear is in proper working order, if any cargo shifting is expected, if there is any dangerous cargo on board for discharge or transshipping, and the expected arrival draft.

When berthing, vessels that are between 172m and 230m in

length must use two tugs, vessels between 120m and 171m must use one tug, and vessels less than 120m in length do not have any tug requirements. All berthing is carried out only during daylight hours.

The maneuvering area of the port for mooring is restricted to vessels up to 230m length and a 9.1m draft; vessels must use two tugs.

Vessels are not permitted to enter or depart the inner harbor when cross winds across the entrance to the harbor exceed force 4.

Signals.—When the port is closed because of bad weather, signals are shown from a flagstaff on the Ministry of Marine building. The building is situated opposite the N end of Isla Tenglo. The signals consist of a black ball by day and a red light at night.

An information service is also available from the port on VHF channel 16; the service broadcasts the following information:

1. Shipping in the area.
2. Anchorage and safety area.
3. Recommended navigation route.
4. Meteorological conditions.
5. Local Notices to Mariners.

Contact Information.—The port can be contacted 24 hours, using the information contained in the table titled **Puerto Montt—Contact Information**.

Note that messages may also be sent at any time through Playa Ancha Radio (call sign: CBV) Valparaiso which listens on 500kHz and transmits on 8522kHz, as well as 16663 kHz.

Anchorage.—Anchorage may be obtained at ten lettered anchorages, in depths from 17m to 50m, as follows:

Puerto Montt Anchorages		
Designator	**Latitude**	**Longitude**
A	41°28.8'S	72°56.2'W
B	41°29.1'S	72°56.4'W
C	41°29.6'S	72°56.4'W
C1	41°29.5'S	72°56.7'W
C2	41°29.4'S	72°56.6'W
D	41°29.9'S	72°56.4'W
E	41°29.8'S	72°56.8'W
F	41°30.1'S	72°57.0'W
G	41°30.4'S	72°57.3'W
H	41°30.5'S	72°57.8'W
I	41°30.8'S	72°58.2'W
J	41°30.1'S	72°58.5'W
K	41°30.9'S	73°32.0W

Puerto Montt—Contact Information			
	Port Radio	**Harbormaster**	**Port Authority**
Call sign	CBP	CBP20	—
VHF	VHF channels 10, 16, 26, and 27	VHF channels 9, 14, and 16	—
Telephone	56-65-2291100 56-65-2291186	56-65-2259204 56-65-2291105 56-65-2291100	56-65-2252247 56-65-2364500
Facsimile	56-65-256827	56-65-2291115	56-65-2364517
E-mail	cbpradio@directemar.cl	cppuertomontt@directemar.cl	gerencia@empormontt.cl

Puerto Montt—Berth Information					
Berth	**Length**	**Maximum Vessel**			**Remarks**
		LOA	**Draft**	**Size**	
Puerto Chincui—Terminal Granelero					
Main	65m	298m	12.6m	—	General cargo, containers, grain, bulk, cruise vessels, and livestock. Berthing length of 94m (including dolphins.
Puerto Montt—Terminal					
Ro-Ro	—	131m	3.6m	—	Ro-ro and passengers.
Site 1	193m	230m	10.8m	—	Ro-ro, passengers, bulk, and fishing vessels. Continuous berthing length of 386m.
Site 2	193m	145m	9.3m	—	
Terminal de Carga General					

Puerto Montt—Berth Information					
Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Size	
Ro-Ro	49m	—	—	—	Ro-ro, lo-lo, passengers, and bulk.
Terminal Calbuco					
San Jose	27m	230m	12.0m	61,455 dwt	Multipurpose and vegetable oil. Berthing length of 432m (including dolphins).
Oxxean Terminal Maritimo					
East Berth	72	—	—	—	Breakbulk and bunkers
Ro-Ro	139	150	—	7,000 dwt	Ro-ro—passenger/vehicles/rail and bulk
West Berth	83	—	—	—	Breakbulk/bunkers/other

Anchoring is prohibited within about 185m of an outfall which extends approximately 1,066m from the coast 1.8 miles ENE of Punta Tenglo.

Caution.—A number of lights at a resort close E of Punta Penas should not be taken for Puerto Montt when approaching the port.

Golfo de Ancud

7.22 Golfo de Ancud comprises the water area between the NE part of Isla de Chiloe and the mainland to the E. It is bound on the N by Seno Reloncavi and on the S by Golfo Corcovado. Punta Tres Cruces is the NW entrance point of the gulf, and Punta Trentelhue is the NE entrance point. The W coast of the gulf extends as far S as Punta Quiquel. The E coast extends as far S as Punta Tengo. All the islands that lie on or N of a line joining the latter two points are considered as lying in Golfo de Ancud. Fish farms are situated throughout the coastal area and along the islands in the N of the gulf, especially off the E shore of Chiloe and adjacent islands.

The gulf is deep with depths over 180m in the center. Depths between the islands are irregular and there are a number of shoals.

Fogs are frequent and smoke clouds, produced by the clearing of the forests, hamper navigation in these waters. Navigational aids cannot be relied upon because of storms and strong currents in the area.

Tides—Currents.—The currents and rising tide sets N from Golfo Corcovado and E through Canal Chacao into Golfo de Ancud, and meet in the NE part of the gulf. There is considerable tidal rise along the shores of the gulf, but near the center the rise is less.

Raya de Tique.—The meeting of the tidal streams setting N through Golfo de Ancud and E through Canal Chacao causes a line of tide rips to form between Punta Lilicura, about 3.5 miles S of Punta Tres Cruces, and Punta Tique, about 6.5 miles to the NE. This line is known as Raya de Tique, and under certain conditions of wind and tidal current, the tide rips form high waves, which are very dangerous to small craft.

Golfo de Ancud—West Side

7.23 Punta Tres Cruces (41°50'S., 73°29'W.), the W entrance point of Golfo de Ancud and the SE entrance point of Canal Chacao, was previously described in paragraph 6.8.

Tide rips and eddies occur in the vicinity of the point. They are especially strong with fresh winds from the S.

Punta Piedras, about 1 mile S of Punta Tres Cruces, is steep. A conspicuous house close N of the point serves as a good landmark.

Bahia Manao (41°52'S., 73°30'W.) recedes about 2.5 miles W between Punta Piedras and Punta Lilicura, about 2.5 miles to the S. Depths of over 92m are found in the center of the bay. A 10m patch lies about 1.5 miles SE of Punta Piedras. The Rio Manao discharges into the head of the bay.

Anchorage is afforded close NW of Punta Lilicura. A second anchorage, in 11 to 18.3m is about 0.4 mile S of Punta Piedras and is used mainly by vessels awaiting favorable conditions in Canal Chacao. The house on Punta Piedras serves as a good landmark when making this anchorage. Small craft can obtain good anchorage in about 12.8m, close inshore about 0.5 mile E of the mouth of the Rio Manao.

A small village stands about 0.8 mile WSW of Punta Piedras. A settlement, with a church, is situated on the S side of the mouth of the Rio Manao. A group of houses can be seen between the hills 1 mile W of Punta Lilicura.

Punta Chilen (41°54'S., 73°28'W.) is the SE extremity of a peninsula that projects between Bahia Manao and Bahia Hueihue. A foul bank extends about 0.8 mile ESE from the point. Strong eddies and tide rips are formed on this bank by the meeting of the currents from Gulfo Corcovado and Canal Chacao. The commotion of the waters, known as the Raya de Chilen, is seen over this bank, and its effects are felt particularly when the wind and tide are opposite.

Bahia Hueihue recedes a little over 1.5 miles NW between Punta Chilen and Punta Lamecura, about 2.3 miles to the SW. Piedra Lobos lies about 0.1mile offshore, close N of Punta Lamecura. The large rock, whitish in color, makes a good landmark. Islote Cholche is a small peninsula about 1 mile W of Punta Chilen. Puerto Hueihue forms the head of Bahia Hueihue.

The bay is sheltered from all winds except those from the SE. The best anchorage is about 0.3 mile WNW of Islote Cholche, the bottom is sand.

7.24 Bahia Linao (41°57'S., 73°33'W.) is located between Punta Lamecura and the NE extremity of Peninsula Guapilinao, about 1.5 miles to the S. A reef extends about 0.8 mile E from the peninsula. The reef contains several above-water rocks. A light is shown on the peninsula.

Bahia Linao has depths of from 26 to 31m, with good holding ground of sand and mud. Anchorages are situated in the S and W sides of the bay. A village lies on the slopes of the hills in the SW part of the bay.

From Peninsula Guapilinao, the coast trends SE for about 9 miles to Punta Queniao. This section of the coast consists of beaches backed by wooded hills. During spring tides, the beaches dry over 0.5 mile offshore. If a vessel is obliged to anchor on this coast, it is advisable to keep in a depth of at least 31m. Cerro Quelequehuen, about 2 miles S of Peninsula Guapilinao, is a good landmark.

Roca Pido (42°01'S., 73°29'W.) lies about 0.3 mile offshore and about 4 miles SSE of Peninsula Guapilinao. The rock is dark in color, above-water at all times, and a good landmark.

Lliuco, a small village about 4.8 miles SE of Peninsula Guapilinao, can be recognized at a long distance by the tower of its church. A sandbank, with less than 9.1m over it, extends nearly 2 miles offshore in this vicinity.

7.25 Isla Caucahue (42°09'S., 73°24'W.) lies with Morro Lobos, its N extremity, about 2.3 miles SSE of Punta Queniao. The island is about 4.5 miles long and 4 miles wide at its widest part. The N and E shores are rough and composed of stone and gravel. The S and SW shores are smooth, sloping back to high wooded hills.

Morro Lobos is a steep bluff which serves as a good radar target, and shows a light. Between Morro Lobos and Morro Quinterguen, the SE extremity of Isla Caucahue, the coastal bank, with depths of less than 5.5m, extends up to 0.5 mile offshore. Bajo Quilahuilque, a drying rock lies 1 mile SSE of Morro Lobos.

Punta Teliupta (42°11'S., 73°24'W.), the S extremity of the island, is prominent. A reef extends about 0.4 mile S from the point.

Bajo Caucahue lies nearly 0.8 mile SW of Punta Teliupta. The shoal has a least depth of 1.8m, and is marked by a lighted beacon.

Punta Queler (42°09'S., 73°28'W.) forms the W extremity of Isla Caucahue. Roca Pillihue, with 1.8m over it, lies about 1.5 miles ESE of Punta Queler.

Canal Caucahue is the channel between Isla Caucahue and Isla de Chiloe. The channel is about 10 miles long, with an average width of 1.3 miles. West of Punta Queler the width is reduced to about 0.3 mile, and in these narrows the current attains a rate of 3 knots.

Depths in the channel are great throughout, and there are no dangers except Bajo Caucahue and the reef that extends from Punta Teliupta.

Puerto Huite (42°07'S., 73°27'W.) is situated on the NW side of Canal Caucahue. The port is surrounded by sloping land and provides excellent shelter. Depths of 26m in the center of the port decrease gradually toward the shore. On the E side of the port, about the middle of the length of the sandy peninsula and less than 0.1mile from the shore, is a rock which should be avoided when anchoring. Small vessels can be beached on the W shore for repairs.

Estero Tubildad, located about 1.8 miles SW of Puerto Huite, affords well-sheltered anchorage, in depths of 21.9 to 29.3m. Vessels should anchor nearer to the E shore, as a shallow bank extends about 183m from the W shore.

7.26 Puerto Quemchi (42°09'S., 73°29'W.) (World Port Index No. 14250) is a calm and well-sheltered harbor, and lies on the W side of Canal Caucahue, about 1 mile S of Estero Tubildad.

Vessels anchor, in 22 to 27m of water, opposite the township, or if desired, one ship's length from the shore in 11 to 15m of water. Loading is from the few available lighters. The loading rate is about 15 tons per gang, per hour, and a maximum of four gangs are available. Cargo transfer between the lighters and the ships is carried out by the ships own gear.

There is no pilot, but the channel pilot for Magellan will assist; VHF channel 16 and CBM Radio Naval Station of Magellenas on 500 kHz is used.

The tidal rise, nearly 7.6m at springs, is the highest of any other place in Golfo de Ancud.

Islita Aucar lies about 1 mile SSW of Quemchi, and at LW is connected with the coast of Isla de Chiloe. A church stands on the islet and a sawmill with bright lights stands about 0.8 mile NNW of the church.

Puerto Quemchi

Punta Chohen (42°12'S., 73°23'W.) forms the S side of the S entrance of Canal Caucahue. The point is topped by a rugged wooded hill. A bank of sand extends 0.3 mile from the point and uncovers over the greater part at LW. The village of Chohen, with a church, stands about 1 mile WSW of the point.

Punta Pirquen lies nearly 1 mile SSE of Punta Chohen. When coming from the S, Morro Pirquen, standing W of the point, can be recognized by a conspicuous ravine which can be seen in that direction.

Contact Information.—The harbor can be contacted using the information listed in the table titled **Puerto Quemchi—**

Contact Information.

Puerto Quemchi—Contact Information	
Telephone	56-65-2691334
E-mail	cpquemchi@directemar.cl

Punta Colu (42°14'S., 73°22'W.) lies nearly 1.8 miles S of Punta Pirquen. The point is low, rocky, and backed by low cliffs. A village with a church is situated close N of the point. The water is shoal for 0.5 mile offshore. The point is the N entrance point of Estero Colu.

Piedra Lilecura, which dries 3m, lies near the extremity of rocky ledges which extend about 0.4 mile E from Morro Quicavi (42°16'S., 73°21'W.). A lighted beacon marks the E side of the ledges.

7.27 **Punta Huechuque** (42°17'S., 73°22'W.) is a low bank of sand that extends about 0.8 mile S from Morro Quicavi. It encloses a lagoon which is accessible from seaward and has depths of from 6.1 to 7m at high water.

Rada Quicavi is formed S of Punta Huechuque and affords moderately good holding ground, protected from W winds. The best anchorage is in 50m, with Quicavi church bearing 325° and Punta Escaleras, the N extremity of Isla Mechuque, bearing 091°. At the head, Rada Quicavi is a channel 0.1 mile wide which connects with a lagoon that is formed W of Punta Huechuque. The depths in this lagoon at high water are 6.1 to 7m. Fresh food in limited quantities is obtainable at Aldea de Quicavi, a small settlement, from which timber is exported.

Punta Tenaun (42°20'S., 73°22'W.) is low and wooded up to 0.3 mile inland, at which distance it rises suddenly to join a chain of hills. These hills, from a distance, appear as though they were the point. A light is shown from the point. Reefs extend up to 0.5 E of the point; S of the point lie tide rips.

Rada Tenaun about 0.8 mile W of Punta Tenaun, has depths of 18.3 to 20.1m, sand and mud, about 0.2 mile offshore. The roadstead offers shelter against NW winds, but is recommended only as a temporary anchorage, as winds from the S make it untenable. A good berth is in 26m, with Tenaun church bearing 350° and Punta Tenaun 104°.

There is also anchorage about 0.2 mile offshore in a small bay about 2.5 miles WNW of Punta Tenaun. Rocks, awash, extend about 0.2 mile off the NW shore of the bay. The bay is sheltered from N winds.

Paso Tenaun (42°21'S., 73°27'W.) borders the coast of Isla de Chiloe between Punta Tenaun and Punta Quiquel. The pass is deep, with the exception of Bajo Linlin, located about 2 miles WSW of Punta Tenaun.

Estero Tocoihue is located about 4 miles W of Punta Tenaun. The inlet is about 183m wide at the entrance and recedes about 0.8 mile to its head. Depths range from 24m at the entrance to 8.2m at its head.

Rada Calen (42°20'S., 73°28'W.) lies about 1 mile SW of Estero Tocoihue. The roadstead has depths of 40 to 56m and is exposed to winds from the SW and ENE. The village of Calen, with a church, lies near the roadstead.

Estero San Juan, with a village and church at its E entrance point, is encumbered by shoals and is of no use to navigation. The inlet lies about 2.5 miles W of Estero Tucoihue.

Rada Quetalco (42°21'S., 73°33'W.) lies 2 miles W of Estero San Juan. The roadstead is open to the S, making it necessary to approach the shore within 0.2 mile to get soundings of less than 40m. It serves only as a refuge from strong NW winds, which are somewhat frequent in this area. A light is shown close S of the church in the village of Quetalco.

Off-lying Islands and Dangers

7.28 A number of islands and dangers lie off the W coast of Gulfo de Ancud, between Punta Chohen and the S part of the gulf. Grupo Chauques lies 2 to 13 miles E of the coast and is separated from the coast by Canal Quicavi. Canal Chauques divides the group into two groups, Islas Chauques Occidentales and Islas Chauques Orientales. There are six islands in the W group and three islands in the E group. Several of the islands join together at low water.

Islas Chauques Occidentales

7.29 **Isla Mechuque** (42°18'S., 73°17'W.) is the highest and western most island of this group. A light is shown from the S side of the island. A reef, with a depth of 1.5m at its outer end, extends about 0.5 mile from the N side of the island.

Isla Anihue, close S of Isla Mechuque, is separated from it by Canal Anihue. Bajo Anihue, with less than 5.5m, extends nearly 0.5 mile S and nearly 1 mile E from Punta Ouchen, the SE end of Isla Anihue. A depth of 12.8m has been reported (1991) in a position approximately 1.5 miles S of the SE end of Isla Anihue.

Canal Anihue (42°19'S., 73°17'W.), having moderate depths and convenient shelter, is useful as a temporary anchorage. Rada Mechuque, about 0.8 mile within the entrance of Canal Anihue, affords anchorage to vessels of moderate size with local knowledge, in 20.1m, with Isla Mechuque Light bearing 325° and the NW corner of Isla Anihue bearing 210°. Small vessels can anchor, in 10m, about 1 mile within the entrance of the W end of the canal. The spring range of the tide in the canal is about 5m.

Isla Cheniao and Isla Taucolon, joined by a narrow isthmus, lie E and N of Isla Mechuque. Canal Cheniao separates Isla Cheniao from Isla Mechuque. Bajo Cheniao, which dries over its E part, extends 2 miles WNW of the W end of Isla Cheniao. Rocas Peligro, awash, lie on the W part of Bajo Cheniao and is marked by a lighted beacon.

Puerto Voigue (42°19'S., 73°13'W.) indents the E side of Isla Taucolon. Anchorage is afforded at the head of the harbor in moderate depths. Puerto Voigue should only be entered by vessels with local knowledge.

Bajo Pulmunmun extends about 2 miles SE from a position about 4.8 miles N of the NW end of Isla Cheniao. The bank consists of a chain of black rocks, some of which dry at LW. The sea breaks on Bajo Pulmunmun with a moderate swell. During fair weather the rocks are not easily seen.

Bajo Chauques (42°15'S., 73°15'W.), about 1.3 miles long, E and W, consists of sand and stone. A rock awash lies on the W side of the bank, about 1.5 miles N of Isla Cheniao.

Canal Quicavi is about 8 miles long between Punta Chohen and Punta Tenaun, with a least width of about 1 mile. It can

safely be used by vessels of any size, but a mid-channel course must be maintained. The tidal currents attain a rate of 2 to 3 knots in Canal Quicavi. During N winds, short, choppy seas and strong tide rips are produced.

Islas Chaques Orientales

7.30 Isla Buta Chauques (42°18'S., 73°07'W.) is the E and largest of both groups. A conspicuous church stands about 1.3 miles NE of Punta Conev, the S extremity of the island. Foul ground extends 0.8 mile off Punta Tugnao, the E extremity of the island, which shows a light. A depth of 7.7m lies 1.5 miles SE of Punta Tugnao.

Isla Aulin lies on a shallow bank that extends about 4 miles NW from the NW coast of Isla Buta Chauques.

Anchorage is afforded about 0.5 mile off the SE coast of Isla Buta Chauques, in a depth of 14.6m, gravel. The anchorage is E of Piedra Cochetahue, which lies close offshore about 1 mile ENE of Punta Conev.

Canal Chauques (42°19'S., 73°11'W.) runs between the E and W groups of Grupo Chauques. There are depths of 40 to 212m in the center of the channel. Although sufficiently wide for vessels of any size, it is not recommended because of Bajo Pulmunmun and Bajo Chauques, which lie in the NW entrance, and because of the reefs which extend into the channel from the islands on either side. Vessels which pass through should maintain mid-channel courses, and on no account pass between Bajo Pulmunmun and Bajo Aulin.

Caleta Juan Pedro lies on the W side of Isla Buta Chauques, about 2.5 miles NNW of Punta Conev. The cove affords good anchorage for small vessels, in a depth of 24m, about 183m off the NE or SE shore of the cove. The cove is partially exposed to E winds, and wholly exposed to winds from the W. A useful mark is that of a prominent church in position (42°18'S., 73°08'W.).

Isla Tac (42°23'S., 73°08'W.) lies about 2 miles S of Isla Buta Chauques. Bajo Yahuen extends nearly 0.5 mile from the SE side of the island. Good anchorage, in 14.6m can be taken between Bajo Yahuen and Punta Piche Niche, the NE end of Isla Tac.

The NW end of Isla Tac terminates in Punta Quilque, from which a rocky shoal projects nearly 0.5 mile in a NW direction. South of the point is a small cove which affords anchorage to small craft. A church stands at the head of the cove.

Bajo Dugoab (42°23'S., 73°11'W.) lies from 0.5 to 2.5 miles W of Punta Lobos, the SW extremity of Isla Tac. The bank is covered at high water, but dries and exposes numerous rocks at low water. The channel between the shoal and Punta Lobos is foul, and heavy tide rips are formed by the currents here.

Islands South of Grupo Chauques

7.31 Isla Meulin (42°25'S., 73°19'W.) lies with Punta Raihue, its N extremity, about 3.8 miles SSW of Isla Anihue and about 4 miles SE of Punta Tenaun. The island is about 3.5 miles long and about 2.8 miles wide. The island is very irregular and has a bight on its NW side. Reefs extend about 0.3 mile from the E side of the island and up to 0.8 mile from its W side. Anchorage is afforded between Punta Lalin and Punta Queldao, on the S side of the island.

Bajo Meulin, an off-lying reef, lies with its center about 2.3 miles W of Punta Raihue. The reef is about 1 mile long and about 1.2m deep. Bajo Esmeralda lies about 1.3 miles W of Isla Meulin and has a least depth of 1.8m. Bajo Veintinuno de Mayo, with a least depth of 7.7m, lies about 2 miles WNW of Isla Meulin, and is marked by a lighted buoy.

Isla Quenac (42°28'S., 73°21'W.) lies about 1.5 miles S of Isla Meulin. The channel between these two islands is about 1.3 miles wide and deep. Farallon El Faro, a steep rock, lies close off the NW side of Isla Quenac. The S and W sides of the island are generally clear, but the E side is foul. Bajo Huemul consists of two rocks, awash, which lie about 0.8 mile SE of the SE extremity of Isla Quenac.

There are two principal anchorages off Isla Quenac. One is in the middle of the S shore, in 14.6 to 21.9m, protected from N winds. The second is off the N shore opposite the town of Quenac, but is exposed to N winds. Caleta Punilco, on the E side of the island, offers good anchorage to small vessels, but caution should be used to avoid Bajo Huemul.

Isla Caguache (42°29'S., 73°16'W.) lies E of Isla Quenac and has a high hill near its center on the W side. The hill is visible for a good distance. The island is fringed with foul ground. Isla Teuquelin lies about 0.5 mile NE of Isla Caguache and is surrounded by shoals. Two rocks, which dry, lie about 0.2 mile off its SE extremity. Roca Teuquelin, with less than 1.8m over it, lies nearly 1 mile NW of Isla Teuquelin.

Bajo Tiquia, the W part of which dries, lies from 3 to 4.3 miles E of the S end of Isla Caguache.

Isla Linlin (42°24'S., 73°26'W.) lies 3.5 miles WNW of Isla Meulin. A sandbank extends between Isla Linlin and Isla Llingua, about 0.5 mile to the S. Small vessels can anchor off the village of Linlin on the W side of the island.

Isla Llingua is comparatively low, with a high hill near its W end. Islita Chequeten lies close off the SE end of Isla Llingua and is connected to the island by a sandy spit which dries. A red and white banded beacon stands on the island. Puerto Conchas, on the S side of Isla Llingua, affords good anchorage to small vessels during N winds.

Golfo de Ancud—East Side

7.32 Punta Trentelhue (41°55'S., 72°53'W.) is low and wooded. The point is connected to Isla Nao by a bank that dries at LWS. A reef, with a rock awash at its outer end, extends about 0.8 mile SE from Punta Huron, about 1.3 miles SE of Punta Trentelhue. Isla Nao was previously described in paragraph 7.12.

Ensenada Rolecha and Ensenada Queten occupy the NW and SE parts, respectively, of a bight between Punta Huron and Punta Chauchil, about 3.3 miles to the SE. The former bay is sheltered from the N and E., and the latter bay is sheltered from the N. Both bays afford good temporary anchorage to vessels with local knowledge. A village, with a conspicuous church, stands at the head of Ensenada Rolecha. A pier, 50m long, which dries at low water, lies at the head of the bay. A factory situated nearly 1 mile NNE of Punta Huron is a good landmark.

Punta Chauchil (41°58'S., 72°49'W.) is located about 1.5 miles SSE of Ensenada Queten. Banco Chauchil extends SW from the point. The bank dries for about 0.5 mile at LW and the

sea breaks over the bank with winds from the W. Vessels should stay at least 3.5 miles off the coast between Punta Chauchil and Punta Gualaihue

Punta Gualaihue lies about 6.5 miles SE of Punta Clauchil. The point is low, but can be identified by the conspicuous pastures backing it. A light is shown from the point. A reef, over which the sea breaks at low water and W winds, extends 0.5 mile W from the point. The reef is joined to the coast by a sandbank, and at HW during calm weather is very dangerous. Bajo Maria, which dries, lies nearly 0.5 mile offshore, about 0.5 mile N of Punta Gualaihue.

7.33 Bajo Santo Domingo (42°01'S., 72°47'W.) lies about 4.3 miles WNW of Punta Gualaihue. The outer part of the bank dries at LWS, and with W winds, the sea breaks heavily over it. The channel between the bank and the coastal reef is about 0.8 mile wide with depths of 25 to 42m. A 9.1m patch lies about 1.3 miles E of the bank, in a position about 3 miles NW of Punta Gualaihue.

Ensenada Gualaihue recedes about 2 miles N between Punta Gualaihue and Punta Quebradlas, which is marked by a light, about 2 miles E. At HW, the bay appears spacious, but at low water its area is reduced two-thirds by a large drying flat which occupies the inner part of the bay. The flat terminates abruptly at less than 1 mile inside a line joining the two entrance points. A prominent church stands on the W side of the bay about 0.5 mile N of Punta Gualaihue. Cerro La Silla, a good landmark, stands about 1.5 miles N of Punta Gualaihue.

A rocky patch of unknown depth lies about 0.5 mile ENE of Punta Gualaihue. Isla Manzano lies on the S side of the flat in the E part of the bay.

Ensenada Gualaihue affords two anchorages, Caleta Manzano, NE of Isla Manzano and Caleta Gualaihue, NE of Punta Gualaihue. The first of these anchorages affords anchorage in its outer part to vessels of moderate size, with local knowledge, in 26m, good holding ground. Small craft with local knowledge can anchor in Caleta Gualaihue about 0.5 mile NE of Punta Gualaihue. A rock, awash, is reported to lie in the middle of the cove and silting is reported E of Punta Gualaihue. Vessels should not get N of Punta Gualaihue Light.

Estero Pichicolu entrance lies about 4 miles ESE of Punta Gualaihue. The inlet recedes about 2.5 miles to the N and has a width of about 0.5 mile. A sandbank extends about 0.2 mile E from its W entrance point. The inlet is reported navigable by moderate-sized vessels almost to its head. Depths in mid-channel of 40m were reported. There is good anchorage, in 20m near the W side of the head of the inlet. The E side of the head of the inlet was reported to be foul.

Violent squalls blow down the length of the inlet, whatever the direction of the wind.

Puerto Llanchid (42°03'S., 72°36'W.) is situated close E of the E entrance point of Estero Pichicolu. The port consists of a small cove with depths of 11.9 to 14.6m, sand bottom. It is well-sheltered from W winds, but is subjected to violent squalls which come down Estero Pichicolu. A sawmill and a village are situated in the port.

Grupo Llanchid consists of about ten islands and islets which lie S of Estero Pichicolu and Ensenada Gualaihue. Canal Llanchid separates the group from the mainland to the N. Canal Llancahue separates the group from Isla Llancahue to the SE.

Isla Linguar (42°04'S., 72°39'W.) is the largest of the group and lies about 2 miles SSW of the entrance to Estero Pichicolu. The other large islands in the group are Isla Malomacun, close N of Isla Linguar, and Isla Llanchid, about 1 mile E of Isla Malomacun. Islita Cuchillo lies about 0.3 mile E of Isla Llanchid. Submerged rocks and shoals make the use of the channels between the islands impracticable, except for small craft with local knowledge. A conspicuous church stands on the NE extremity of Isla Llanchid.

Islita Maniu, lying about 0.5 mile NW of the NW extremity of Isla Llanchid, is difficult to distinguish against the latter when seen some distance to the W. When seen from a closer distance, the coffee color of Islita Maniu contrasts with the green of Isla Llanchid.

7.34 Canal Llanchid (42°03'S., 72°38'W.) leads between the island group and the coast to the N. The channel is 3 miles long and deep in mid-channel. Roca Huevo, awash, lies about 0.1 mile N of Islita Maniu. The channel is deep between these two features. Roca Blas, awash, fouls the channel S of Islita Maniu.

Caution.—The width of the channel is reduced to 0.1 mile between Isla Maniu and Roca Huevo, 1.5 miles W of the E entrance to this channel.

Canal Llancahue leads NE between Grupo Llanchid and Isla Llancahue to the SE. The channel has a least width of about 1.5 miles and is deep; there is a least charted depth of 107m in mid-channel.

Punta Piti Horno (42°03'S., 72°33'W.) lies about 3 miles ENE of Isla Llanchid, and forms the W entrance point of the W branch of Canal Hornopiren. Cerro Piti Horno, a prominent peak, stands about 2 miles N of the point.

Isla Pelada lies with its W side about 1 mile E of Punta Piti Horno. The island, of moderate height is rugged and has rocky shores. It is wooded on its higher parts.

Canal Hornopiren extends W, N, and E of Isla Pelada, turning at right angles at each change of direction. The channel has a uniform width of about 1 mile, with depths exceeding 101m, and is free of known dangers. The W side of the canal is formed by mountains with abrupt slopes and steep clear shores. The E side of the head of the channel is a large flat formed by the discharge of two rivers, the Rio Negro and the Rio Blanco. A light is shown from the W bank of the Rio Negro. Anchorage can be taken about 183m S of the light, in 20.1m, but local knowledge is necessary.

Volcan Hornopiren (41°54'S., 72°27'W.), with a snow-covered summit, stands about 11 miles NNE of Punta Piti Horno. It is the most prominent mountain in this vicinity, and is visible all over Golfo de Ancud and Seno Reloncavi.

Isla Cabras and Isla Lobos lie about 0.5 mile and 1.5 miles, respectively, WSW of the W extremity of Isla Pelada. Both islands are of moderate height and densely wooded. Reefs surround both islands; a 9.1m patch lies midway between them.

7.35 Isla Llancahue (42°07'S., 72°33'W.) lies about 0.8 mile S of Isla Pelada. The channel between the two islands is deep and free of dangers. When Cerro Calzoncillo, near the center of the island, is clear of clouds, it is said to be a sign of good weather. Islote Perras lies close offshore, NW of Punta

Hornopiren National Park Town

Volcan Hornopiren

San Francisco, the W extremity of Isla Llancahue. Islote Abel, with a rock awash close E of it, is about 1.5 miles NNE of Punta San Francisco, and about 0.4 mile offshore.

Caleta Andrade indents the N shore of Isla Llancahue for about 1.5 miles. Caleta Los Banos, about 1 mile E of the month of Caleta Andrade, affords anchorage to vessels of moderate size, but care is necessary when anchoring. Estero Bonito, on the SW side of the island, affords shelter to small craft during NE and NW winds.

Canal Cholgo (42°08'S., 72°29'W.) extends about 5.5 miles N and S between Isla Llancahue and the mainland to the E. The channel has a least width of 0.5 mile and is deep. Rada Potreros de Cholgo indents the E side of Isla Llancahue near the N part of the canal. Small vessels with local knowledge can anchor here, in 35m, about 0.2 mile offshore, but this anchorage is exposed to heavy N squalls. The average rise of the tide at springs is 5m and the current is very light.

Estero Quintupeu (42°10'S., 72°26'W.) is located opposite the S end of Isla Llancahue. The inlet is very deep, except near the head, where there is a wide bank on which only boats can anchor. The anchorage is exposed to violent gusts which descend from the mountains.

Peninsula Huequi is located about 3 miles S of Isla Llancahue. The peninsula consists of a massive projection of high ground that extends about 21 miles N from the mainland. Volcan Huequi rises near the center of the peninsula, its peak is sharp and at times emits smoke.

7.36 Fiordo Comau (Estero Comau) (42°20'S., 72°30'W.) is entered between Punta San Francisco, the W extremity of Isla Llancahue and Morro Comau, the N extremity of Peninsula Huequi. The inlet extends about 19 miles SSE from Morro Comau, along the E side of Peninsula Huequi, and varies from 1 to 3 miles in width. Depths are quite deep throughout the inlet.

Pico Ulgade, an isolated cone of regular outline, dark in color and bare, but with patches of snow at the summit, and Pico Amunatagui, always snow-covered and visible all over Gulfo de Ancud, lie on the E side of Flordo Comau.

There are numerous coves where small vessels can anchor close to shore.

Caution.—The most common winds are those from N or S. North winds enter the mouth of the inlet with a strength that is dangerous to small boats. South winds take the form of violent gusts which descend through the ravines.

7.37 Isla Liliguapi (42°10'S., 72°36'W.) lies in the entrance to Flordo Comau, midway between Punta San Francisco and Morro Comau. The island is high and visible for about 10 miles. There is a small town on the E coast of the island. Islote Ballena and some above-water rocks lie 0.3 mile E of the E end of the island. Canal Marilmo lies N of the island and Canal Comau lies S of the island; both canals are deep.

Caleta Marilmo, Caleta Telele, Caleta Soledad, Caleta Calle, and Caleta Porcelana are coves on the W side of Flordo Comau. All of these afford shelter to small craft. Caleta Leptetu lies on the SW shore and affords anchorage to small vessels. The Rio Leptetu discharges at the head of the cove.

Estero Cahuelmo (42°16'S., 72°26'W.) recedes about 2 miles to the E and is 0.5 mile wide at its entrance. There is well-sheltered anchorage, with plenty of swinging room, in 40 to 42m within the entrance. Beyond the entrance the depths shoal rapidly. Northwest winds blow strongly in the inlet.

Punta Cascada, about 3 miles SSW of the N entrance point of Estero Cahuelmo, has several waterfalls near it. Piedra Blanca, about 2 miles S of Punta Cascada, lies close offshore and is whitish in color. The rock is visible more than 6 miles.

7.38 Caleta Lloncochaigue (42°23'S., 72°28'W.) is about 2.8 miles SSE of Piedra Blanca. The waters of the cove are deep, with soundings of more than 40m at 91m offshore. Small vessels anchor on the N and S sides of the cove near the beach.

Surgidero Bodudahue lies on the E side of the head of Estero Comau. The anchorage is deep, the S shore being steep-to. Vessels with local knowledge can anchor, in 40m, about 0.1 mile off the N or E shores of the anchorage. This anchorage should not be used during N winds.

Morro Comau (42°11'S., 72°36'W.), the N extremity of Peninsula Huequi, is a high rounded promontory which slopes steeply to the sea, and is visible more than 8 miles. Caleta Vel-

ero and Caleta del Ray lie E and W, respectively, of the point. These coves are suitable only for small craft.

The coast trends about 13 miles WSW between Morro Comau and Punta Chulao. Islita Poeguapi lies on the coastal bank about 4.8 miles WSW of Morro Comau. A conspicuous church is situated on the coast about 0.5 mile SW of Islita Poeguapi. Surgidero Poeguapi, about 0.5 mile ENE of Islita Poeguapi, affords anchorage to vessels of moderate size in 18.3m, and should only be used in good weather.

Punta Baja (42°14'S., 72°45'W.) is low and wooded. The coastal bank dries 0.2 mile offshore between Punta Baja and Morro Comau. The coastal bank between Punta Baja and Punta Chulao, about 6 miles SW, dries 0.5 mile offshore.

Estero Huequi is shallow and available only to small craft. Surgidero Huequi affords anchorage to moderate size vessels with local knowledge, in 20.1m, about 1.5 miles SW of the S entrance point of Estero Huequi, and about 1 mile offshore.

Punta Chulao (42°18'S., 72°51'W.) lies about 4 miles SW of Estero Huequi and shows a light. The coastal bank dries for a distance of 1 mile NNW of the point. Shoal water lies 1 mile W of the light and 1.3 miles WSW of the light. A shoal patch, with a depth of 3.6m, lies about 1.5 miles S of the point. An obstruction, with a depth of 20m, lies 2.5 miles SE of Punta Chulao.

Caleta Ayacara lies with its entrance about 2.5 miles SE of Punta Chulao. Punta Huequi forms the W entrance point to the cove. The cove affords good anchorage in moderate depths. Anchorage can be taken, in 28m, about 0.2 mile offshore, with a group of three houses on the N shore bearing 283°, 3.5 miles distant. A conspicuous white chimney stands at the head of the cove. A light is shown on the E side of the cove near a conspicuous white painted cave.

7.39 Isla Ica (42°22'S., 72°48'W.) is 2 miles S of Caleta Ayacara Light. Between the island and the mainland is a channel about 0.5 mile wide, which affords an anchorage. A rock, awash, lies 1 mile SE of the island.

Caleta Buill is located about 5 miles SE of Isla Ica. The N shore of the cove is low and flat, and the S shore is cliffy and steep-to. Roca Yelcho, a prominent white painted rock with a red "Y," is located on the S side of the cove. A light is shown on the S side of the cove near its head. A conspicuous bridge and school are visible within the cove.

The cove affords anchorage, in 29m off its SW shore. The cove is exposed to violent gusts which descend through the ravine at its head.

Fiordo Renihue (Estero Renihue) (42°30'S., 72°45'W.), the entrance of which lies about 2.5 miles S of Caleta Buill, is about 12 miles long, with a least width of 1 mile. The Rio Renihue discharges at the head of the inlet and a sand bank extends 0.5 mile N from its mouth. The bank is steep-to on its outer edge.

Estero Pillan, on the W shore of Estero Renihue at its head, has depths of 20 to 29m, but has not been closely examined. The entrance channel, between the N shore and the edge of a steep-to bank formed by the Rio Renihue, is only 50m wide, with depths of 5 to 6m.

Punta Chumilden, the SW entrance point of Fiordo Renihue, rises gradually to the SW and is thickly wooded. A light is shown about 0.8 mile SW of the point. A settlement, with a conspicuous church, stands about 1.3 miles SW of the point, while a monument stands on the point's NW side.

Several islets lie W and SW of Punta Chumilden. Between these islets and the mainland there is good anchorage for small vessels with local knowledge, in 20.1m. The anchorage is sheltered from SW and W winds. The entrance, between the point and the NW of the islets, is about 30m wide, with a depth of about 9.1m. A conspicuous monument stands on the shore at the head of the anchorage.

Golfo Corcovado

7.40 Golfo Corcovado extends from Punta Quiquel, on the W, and Punta Tengo, on the E, about 60 miles S to Buca del Guafo. It has a least width of about 20 miles. Golfo de Ancud is a N continuation of the gulf. Canal Moraleda extends about 100 miles S from the S end of Golfo Corcovado. Numerous submarine cables extend throughout canal Moraleda as best seen on the chart. A number of small ports are situated on the shores of the gulf.

The gulf is deep, with depths over 183m in some parts. The depths between the islands are irregular and there are a number of shoals.

The direction of the flood tide is always to the N and the ebb tide is always to the S. The tidal currents entering the gulf from Boca del Guafo after strong W winds have rates of 3 to 4 knots. At the S end of the gulf, about 7 miles E of Isla San Pedro (43°22'S., 73°44'W.), the current sets NE with a rising tide and SW with a falling tide, at rates of up to 4 knots. In the center of the gulf the current rate is 1 to 2 knots. The rate of currents are variable in the narrow channels between the islands.

Caution.—Large patches of kelp grow in the vicinity of shoals in the N part of the gulf. The kelp extends in long lines in the direction of the currents, and are light green in color. The navigator should use caution when in the vicinity of kelp.

A submarine exercise area, the limits of which are shown on the chart, lies in the S part of Golfo Corcovado.

The IALA Buoyage System (Region B) is in effect in the area of Golfo Corcovado.

Golfo Corcovado—Northwest Side

7.41 Canal Dalcahue.—Punta Quiquel (42°22'S., 73°35'W.) is the NW entrance point of Golfo Corcovado, and the N entrance point of Canal Dalcahue. A church is situated about 0.8 mile N of the point.

The canal separates Isla de Chiloe from the N and W sides of Isla Quinchao. The channel is about 9.5 miles long and winding. Its average width is about 1 mile, but shoals reduce the navigable width to about 0.2 mile.

Bajo Dalcahue, a rocky patch with a depth of 4.8m, lies near the center of Canal Dalcahue, about 1 mile ENE of Punta Balseo, the NW extremity of Isla Quinchao. Banco del Astillo, with a least depth of 1m at its center, lies nearly 0.6 mile off the W shore of the channel S of Punta Balseo. The least depth in the canal, about 4m, is found opposite this bank.

An overhead cable, with a vertical clearance of 65m, crosses the narrowest part of the canal between Punta Balseo and the coast of Isla de Chiloe to the NW.

Two pairs of lighted range beacons on reciprocal bearings 159°-339°, lead through the shallow part of the canal E of Banco del Astillero.

The canal should not be attempted by vessels with drafts over 4m, and then only at not less than half tide. The currents set N with a rising tide and S with a falling tide, attaining rates of 4 to 5 knots at springs. The tidal rise at springs is about 5.5m.

All vessels navigating in Canal Dalcahue are restricted to a maximum speed of 9 knots, in either direction, between Banco del Astillero and Bajo Dalcahue.

Vessels traversing the canal from the N should pass S of Bajo Dalcahue; then, keeping in depths over 9.1m, round Isla Quinchao. Having passed the overhead cable, a mid-channel course can be steered until on the lighted range beacons. Pass SW of Bajo del Pasaje, then remain in mid-channel throughout the remainder of the Dalcahue channel.

Dalcahue

Dalcahue (42°23'S., 73°39'W.) is the largest of several villages on the canal. A pier, 60m long, extends from the shore S of the village. The recommended anchorage, in 10m, lies about 0.3 mile SSW of the village church. A light is shown from the pier.

The coast from Punta Atal, the SW entrance point of Canal Dalcahue, trends about 5.5 miles SE to Punta Aguantao. Ensenada Pullao and Estero Rilan are small inlets close S and about 3 miles SE, respectively, of Punta Atal. Estero Rilan has anchorage for small craft.

7.42 Punta Aguantao (42°32'S., 73°35'W.) is conspicuous and easily identified. A light is shown from the point. A drying bank extends nearly 0.8 mile SE from the point. A buoy is situated off the point in anchor position 42°32.1'S, 73°34.0'W. Vessels can anchor, in about 35m, with the point bearing 051°, distant about 0.3 mile. The SE tidal currents sets strongly in this vicinity.

From Punta Aguantao the coast trends about 7 miles WSW to Punta Tutil, the SE entrance point of Estero Castro. Caleta Rilan and Caleta Carahue are situated about 2.5 miles W and 5 miles WSW, respectively, of Punta Aguantao. These coves afford good anchorage in moderate depths, with good holding ground, to vessels with local knowledge. The coastal bank extends about 0.2 mile SE from Punta Tutil.

Estero Castro (42°30'S., 73°45'W.), entered between Punta Tutil and Isla Linlinao, about 1.3 miles WSW, penetrates about 10 miles into Isla de Chiloe. The inlet is about 1 mile wide at the entrance, narrowing gradually to a width of about 0.5 mile at Punta Animo, on the E side of the channel about 3.5 miles NW of Punta Tutil. Just beyond, at Punta Peuque, 0.7 mile N of Punta Animo, the inlet widens again, but shoals which fringe the W shore reduce the navigable width considerably. The depth along the fairway is sufficient for large vessels, with a least depth of 12.8m in mid-channel about 1.5 miles N of Isla Linlinao.

Caleta Yutuy lies about 1.5 miles NW of Punta Peuque and is mostly shoal. In case of necessity, a vessel can anchor in the cove on the line of the entrance points.

A shoal, with a depth of 2.7m, lies on the W side of Estero Castro, about 0.5 mile N of Punta Peuque.

Lights are shown on Isla Linlinao, Punta Animo, Punta Peuque, and from the mole in Puerto Castro. A lighted buoy is moored about 0.4 mile E of Punta Castro.

7.43 Puerto Castro (42°29'S., 73°46'W.) (World Port Index No. 14220) is situated in the outer part of a cove which is entered between Punta Castro and Punta Tenten, about 1 mile to the NE. There are depths of 9.1 to 11m between the entrance points. The inner part of the cove dries.

Depths—Limitations.—A pier, the Fiscal Wharf, is 70m long with a depth alongside of 6m. No cranes are available. Vessels use ships own gear. There are six lighters with a total capacity of 400 tons. The port can be contacted by VHF channel 16 and radiotelephone.

A sheltered offshore berth, with mooring buoys, for tankers is situated at Rauco, on the W shore of the estuary. Tankers secure to the mooring buoys in a depth of about 16m.

Pilotage.—Pilotage is compulsory; channel pilots will assist with anchoring and berthing assignments.

Contact Information.—See table titled **Puerto Castro—Contact Information**.

Puerto Castro—Contact Information	
Port Radio Station	
Call sign	Castro Radio (CBP2)
VHF	VHF channels 9, 14 and 16
RT Frequency	2182 kHz and 2738 kHz
MMSI	007250250
Harbormaster	
Telephone	56-65-2561216
Facsimile	56-65-2565055
E-mail	cpcastro@directemar.cl
Port Authority	
Telephone	56-65-2561205
E-mail	cpcastro@directemar.cl

Puerto Castro

Anchorage.—Anchorage can be taken, in 14.6m, about 0.7m mile NE of Punta Castro. Punta Tenten is shoal for about 0.2 mile S and should be avoided. Vessels carrying explosives should anchor E of Punta Tenten. The harbor bottom is reported to be composed of mud and sand, good holding ground.

When approaching the anchorage off Puerto Castro, vessels should stay close to the E shore of Estero Castro until S of Punta Pello, which lies E of Punta Tenten, then steer directly for the anchorage, thus avoiding the bank which extends SE from Punta Castro.

7.44 The coast of Isla Linlinao and Punta Ahoni, about 14 miles to the SE, is indented with a number of inlets. Canal de Yal is located in this section of the coast.

Caleta Linlinao (42°35'S., 73°46'W.) recedes about 0.5 mile NW between Isla Linlinao and a point about 0.2 mile to the SW. The outer part of the cove contains depths of up to 31m, which decrease near its head. Small vessels can anchor, in 18.3m, in the outer part of the cove while awaiting favorable weather conditions to enter Estero Castro or to proceed S through Canal de Yal.

Puerto Chonchi (42°37'S., 73°46'W.), a small bay, lies 3 miles S of Isla Linlinao. The village of Chonchi, at the head of the bay, has a pier. The pier extends about 137m to the E and 61m SE from the shore. There are depths of 7m alongside the seaward side, and 6.4m alongside the inshore side, of the outer leg of the pier. A light is shown from the head of the pier. Anchorage can be taken, in 37m, about 0.3 mile ENE of the pier.

Punta Yal (42°40'S., 73°40'W.) lies about 5.5 miles ESE of Chonchi and is conspicuous. A prominent yellow house stands on the SW shore of Canal de Yal, about 4 miles WNW of Punta Yal. Islote Yal, on which a light is shown, lies about 0.4 mile N of the point. The narrow channel between Punta Yal and Islote Yal has sufficient depths for small vessels, but the currents here attain rates up to 4 knots and the channel is not recommended. The channel N of Islote Yal is wide and deep.

Bahia Yal recedes about 1.5 miles W from between Punta Yal and Punta Terao, about 1.8 miles to the SE. Anchorage can be taken a little over 0.3 mile off the W side of the bay, in 31 to 40m, but this anchorage is not recommended as the bay is open to the NE.

Caleta Yal (42°41'S., 73°40'W.) lies in the N part of Bahia Yal. Halfway to the head of the cove there is good anchorage, for vessels with local knowledge, in 10 to 20.1m. A hill on each side of Caleta Yal form good landmarks for recognizing Bahia Yal and Caleta Yal.

From Punta Terao, the SE entrance point of Bahia Yal, the coast trends S to SE to Punta Ahoni. A large bight is formed between the two points. The shores of the bight are shallow from 0.1 to 0.2 mile offshore. Inland from the coast, the land rises progressively, and wooded tracts can be observed.

Golfo Corcovado—Northwest Side—Off-lying Islands

7.45 Isla Quinchao and Isla Lemuy, with several islands lying between them, are the principal islands lying off this section of coast. Grupo Chaulinec, consisting of three islands, lies E of the above islands. The inner track through the N part of Golfo Corcovado leads between the islands.

Isla Quinchao (42°29'S., 73°30'W.), about 17 miles long, extends NW from Punta Cheguian to Punta Balseo. The island is one of the most populated in the area. The NW part of the island consists of high hills; the NE side is cliffy, while the rest of the island is rocky, broken by sandy beaches. A number of villages are situated about the island.

Punta Palqui, the NE extremity of the island, shows a light. Anchorage, sheltered from W winds, can be taken about 0.3 mile S of the point.

Achao (42°28'S., 73°30'W.), the largest village on the island, lies about 3.5 miles SSE of Punta Palqui. A pier, about 152m long, with a depth of 1m at its head, is situated at the village. A light is shown from the root of the pier.

The roadstead of Achao affords anchorage, in about 25m, about 0.2 mile NNW of the head of the pier. Small vessels can anchor, in 18.3m, about 0.1 mile NW of the head of the pier.

Punta Cheguian (42°35'S., 73°24'W.) is the SE extremity of Isla Quinchao. Shoals and rocks lie E and SE, up to 1 mile from the point. The above foul ground is covered by a red sector of Isla Imelev Light.

Punta Matao, about 2.8 miles WNW of Punta Cheguian, has a reef extending nearly 1 mile W from it. The coast turns N, forming Estero Matao and Estero Quinchao, in the entrance of which are settlements of the same name. A shoal, with a depth of 5m, lies about 0.8 mile WNW of the church at Quinchao.

Canal Quinchao (42°30'S., 73°28'W.) extends along the NE coast of Isla Quinchao, from Punta Palqui to Punta Cheguian. It has a least width of about 2 miles and is deep. A mid-channel course will clear all dangers.

7.46 **Isla Chelin** (42°34'S., 73°32'W.) lies about 2.5 miles off the SW coast of Isla Quinchao. Anchorage can be taken, in about 24m, on the S side of the island, about 0.4 mile SW of a church near the SE end of the island. Bajo Chelin, with a depth of 2.8m, lies 2 miles W of the N extremity of the island. A buoy is moored about 0.5 mile NW of the shoal.

Isla Quehui lies S and SE of Isla Chelin, the channel between being 0.5 mile wide and deep in mid-channel. A light is shown from the SW point of the island. A conspicuous house stands nearly 1.3 miles ENE of the light.

Estero Pindo, on the NW coast of Isla Quehui, nearly divides the island in two parts. This inlet affords good anchorage to vessels with local knowledge SW of Huillo Church, near the N entrance point. This is one of the best anchorage areas, being sheltered from all winds. The N entrance point, S of the church, can be approached to within 30m, in a depth of 14.6m. A light is shown from this point.

Vessels with local knowledge can obtain good anchorage, in 9.1 to 16.4m, off the E end of Isla Quehui. The anchorage is about 0.8 mile SW of the light on Isla Imelev. Anchorage is afforded off the SW end of Isla Quehui, about 0.3 mile ESE of the light. Small vessels can anchor about 1.5 miles E of the light.

Isla Imelev (42°37'S., 73°25'W.) lies about 0.5 mile ENE of the E extremity of Isla Quehui, and is connected to the larger island by a reef which dries. The island is triangular in shape. A light is shown on the SE end of the island. A beacon stands near the E extremity of the island. A bank, part of which dries, with rocks, awash, extends 1 mile SE from the SE end of the island.

Bajo Johansen, about 0.5 mile in extent with a depth of 2.7m, lies about 4.5 miles SSE of the SE end of Isla Imelev. A buoy is moored on the bank.

7.47 **Bajo Apabon** (42°41'S., 73°27'W.), with depths of less than 1.8m, and rocks awash, lies with its W extremity about 2 miles ESE of Punta Apabon, on Isla Lemuy. The currents are strong and irregular over this shoal. A metal tripod beacon stands on the N side of the shoal.

Isla Lemuy (42°37'S., 73°38'W.) is about 8 miles long, E to W, with an average width of 4 miles. Puqueldon is the principal town on the island and is situated on its N coast. Vessels with local knowledge can anchor off the town.

Estero Ichuac indents the W side of the island. The entrance is narrow and exposed to W winds, but good anchorage for small vessels is afforded in the central part of the inlet, in depths of 11.9 to 20.1m.

Promontorio Detif constitutes the SE extremity of Isla Lemuy and is connected to the island by a low, narrow, sandy isthmus about 1 mile long. Punta Detif, the SW extremity of Promontorio Detif, is steep-to on its W side. The SE side is fronted by a reef which extends 0.8 mile offshore. A reef extends 0.2 mile E from Punta Apabon. All these reefs are covered with kelp and should be passed at least 0.5 mile from their outer limits.

Canal Lemuy (42°34'S., 73°40'W.) leads between Isla Lemuy and Isla de Chiloe for a distance of about 7 miles. It is deep and clear of dangers. When entering from the N, vessels should pass W of Bajo Chelin.

Canal de Yal, a continuation of Canal Lemuy, has its N entrance between Isla Linlinao and Punta Yelqui, the N extremity of Isla Lemuy. The channel is somewhat irregular and winding, narrow at its W side, but deep and clear throughout. An overhead cable, with a center elevation of 28m, spans the narrow W side, about 2.5 miles W of Islote Yal. This cable is radar conspicuous, but produces confusing echoes. In traversing the canal, vessels

should pass N of Islote Yal, which shows a light.

The tidal currents in the canal are generally weak, but in the narrows they attain a rate of 2.5 to 3 knots.

Caution.—The narrow passage between Islote Yal and Punta Yal is not recommended, due to strong tidal currents.

7.48 Grupo Chaulinec (42°37'S., 73°16'W.)consists of Isla Alao, Isla Chaulinec, and Isla Apiao. The islands are generally flat or with easy slopes, and thickly wooded.

Isla Alao (42°36'S., 73°18'W.) lies with its W end about 2.8 miles E of Punta Cheguian. A beacon, painted white with red horizontal stripes, stands at an elevation of 40m close N of the W extremity of Isla Alao. The S shore of the island is clear, but the N shore is foul up to 1 mile off. There are no suitable anchorages about the island. Bajo La Barra, about 1 mile in extent, with a least depth of 1m, lies 2.5 miles NNW of Punta Alao. A buoy is moored on the NW side of the shoal. The shoal is covered by the red sector of Isla Imelev Light.

Canal Alao lies E of Isla Alao. The canal is 1 mile wide, deep in the middle, and free of dangers. Currents in the canal attain rates of 5 to 6 knots at springs.

Isla Apiao (42°36'S., 73°13'W.) lies about 1 mile E of Isla Alao. Punta Apiao, the N extremity of the island, is conspicuous. A bank of foul ground extends 2 miles NNW from the point. A church stands near the coast on the W side of the island. A bank, with depths of 11m, lies between 3 and 4.5 miles E of Punta Apiao.

Bahia Pilcomayo, on the S side of Isla Apiao, has good holding ground and moderate depths. Small vessels with local knowledge can obtain anchorage in the bay, in a depth of about 11.9m.

Isla Chaulinec, the largest island of the group, lies S of Isla Alao and Isla Apiao, and is separated from these islands by Canal Chaulinec. A light is shown from Punta Manzano, the S extremity of the island.

Shoals extend up to 0.5 mile S from Punta Manzano and from the middle of the S side of the island. An 11m patch lies about 0.8 mile NE of Punta Manzano. Bajo Chaulinec, a rocky patch, awash, lies about 1 mile N of Punta Huelmo, the W extremity of the island.

A light is shown from a position about 0.1 mile N of the church at Tres Redes. Good anchorage, in 20.1m, can be obtained off Tres Redes, a village 2.5 miles E of Punta Huelmo. The anchorage lies about 0.2 mile N of the church in the village.

Canal Chaulinec (42°37'S., 73°19'W.) is deep and free of dangers in mid-channel. In the E entrance the tidal currents attain rates of 5 to 6 knots. Vessels should avoid Bajo Chaulinec when approaching the channel from the W.

Paso Imelev is formed between Grupo Chaulinec on the E and by Isla Imelev and Punta Cheguian on the W. The channel is about 2 miles wide, but its navigable width is reduced to 1 mile by dangers on each side. The channel is well-traveled by vessels having due regards to the dangers it contains.

The currents of the rising and falling tides in Paso Imelev set N and S, respectively. The rate of the currents depend on the stage of the moon. Heavy tide rips form here, and when the current and wind are opposed, a rough sea is formed.

Golfo Corcovado —Northeast Side

7.49 Punta Tengo (42°37'S., 72°52'W.) lies 7.5 miles SSW of Punta Chumilden. The point is surrounded by foul water that extends 0.5 mile offshore. Rocas Tengo, awash, lie about 1.5 miles SSW of the point and about the same distance offshore. The channel E of the rock is suitable only for small craft.

Isla Llahuen, about 3.8 miles S of Punta Tengo, is low and wooded. Rocks extend 1.5 miles NW from Punta Aro, the W end of the island.

Bahia Pumalin (42°42'S., 72°50'W.) is entered between Punta Robles and the S end of Isla Llahuen. A rock, awash, lies in the approach to the bay. There are other dangers in the bay, making it available only to small craft with local knowledge, and drawing less than 3.5m.

Caleta Munoz is a small cove about 1.3 miles S of Punta Robles. A conspicuous barracks and several cabins are situated at the head of the cove. Large vessels can anchor, in 36 to 42m, about 0.2 mile offshore. Smaller vessels anchor W of the barracks in less than 15.5m, about 0.1 mile offshore.

Punta Chana (42°46'S., 72°51'W.) lies about 3.8 miles S of Punta Robles. The Rio Rayas, the largest river in this area, discharges N of Punta Chana. The river water discolors the sea water in the vicinity. A light is shown from the point.

Off-lying Islands and Dangers

7.50 Grupo Desertores lies between 3 and 11.5 miles offshore between Punta Tengo and Punta Vilcun, being separated from the mainland by Canal Desertores. There are six principal islands and several islets in the group. The channels among the islands are seldom used, as Canal Desertores and Canal Apiao are the principal channels through the N part of Golfo Corcovado.

Vessels seeking an anchorage among the islands should exercise caution in approaching them, as many rocks surround the islands and extend from their salient points. In addition, uncharted dangers may exist in the area. The tidal currents attain rates up to 6 knots, with overfalls and eddies, between the islands.

Islote Nihuel (42°38'S., 72°56'W.) lies nearly 4 miles W of Punta Tengo. Foul ground, with rocks awash, extends about 0.5 mile NW and about 1 mile S from the islet. Islote Nihuel can be passed on either side, but the channel to the E is recommended as it is straight, and passes well clear of the foul ground extending S from the islet.

Isla Chulin, the N of the group, is of moderate height and terminates in the S in Punta Chulin, which is low. Bajo Navarro, over which the sea breaks with NW winds, extends 1 mile S from Punta Chulin. Foul ground extends up to 0.8 mile off the N and NW sides of the island. An above-water rock lies 0.5 mile NE of Punta Espinosa. Depths of less than 10.1m extend 0.9 mile W from Punta Cor. A light is shown from Punta Cor, the W extremity of the island.

Ensenada Manzano lies E of Punta Gaona, a point about 1.5 miles SE of Punta Cor. A church stands at the head of the bay. Anchorage can be taken about 0.5 mile SSE of Punta Gaona, in 18.3m, good holding ground.

7.51 Rocas Barrientos (42°35'S., 73°03'W.) lie from 1 to 1.5 miles N of Punta Espinosa. The rocks are the N danger of this group of islands, and dry 0.3m.

A shoal, with depths of 11.9 to 19.2m, lies in the N approach to Canal Apiao, from 3.8 to 4.8 miles NW of Isla Chulin Light.

Isla Chuit (42°40'S., 73°05'W.) lies about 2 miles SW of Isla Chulin. The island is surrounded by foul ground except on its SE side. The channel between these two islands is about 2 miles wide and deep in mid-channel. Vessels should pass S of Bajo Navarro and N of Bajo Driver and Roca Naranjo, taking into account the currents, which set N in the vicinity of Roca Naranjo.

Isla Imerquina lies with its NE extremity about 1 mile SW of Isla Chuit. The island is surrounded by foul ground with rocks, awash, off the NW end of the island. The channel between Isla Imerquina and Isla Chuit should not be attempted without taking soundings.

Bajo Inconveniente (42°41'S., 73°11'W.), with a depth of 6.7m, lies in the center of Canal Apiao, about 3.5 miles W of Isla Imerquina. An 14.6m patch lies about 0.8 mile N of this shoal.

Bajo Imerquina lies between 0.3 and 1.3 miles SW of the SW side of Isla Imerquina. The shoal has rocky heads at its N and S ends. The shoal is marked by kelp and the depths over it, as well as those surrounding it, are very irregular.

Vessels should not attempt to enter the channel between Isla Imerquina and Isla Ahullini and Isla Nayahue, two islands to the S.

Isla Ahullini and Isla Nayahue are the SW islands of the group. Both islands are high and wooded. A church and a small group of houses stand on the W side of the N extremity of Isla Nayahue. Foul ground extends 0.3 mile off the W side of Isla Ahullini, and 1.3 miles WSW from the S end of the island. Foul ground extends 0.5 to 1 mile S from the S ends of both islands. A rock, awash, lies 0.3 mile NW of the NW end of Isla Nayahue.

Small vessels can anchor between the islands, in 20.1m, taking care to avoid the rock NW of Isla Nayahue. Small vessels can also anchor, in 11m, in a cove on the N side of Isla Nayahue, with the church bearing 190° and the W entrance point of the cove bearing 290°.

Bajo Solitario (42°47'S., 73°10'W.) lies about 5 miles WSW of Isla Ahullini. There are rocks, awash, on this shoal, and parts of its W end dries. Heavy breakers form on this shoal at all times and it is covered with kelp which is hard to see at high water. A lighted buoy is situated SW of the shoal.

Bajo Minna, about 10 miles WSW of the S end of Isla Ahullini, has 0.9m on its W side; a lighted buoy is moored on the SW part of the shoal. A shoal, the position of which is doubtful, has been reported about 1 mile S of Bajo Minna.

7.52 Isla Talcan (42°45'S., 73°00'W.) is the largest and S island of the group. The island is deeply indented on its N and S sides by Ensenada Tendedor and Estero Talcan, respectively. Estero Talcan is available only to small vessels with local knowledge. The entrance to the channel of Estero Talcan is very narrow and almost full of kelp, with a current of nearly 6 knots.

Ensenada Tendedor opens to the W of Punta Cordenas, about 1.3 miles NW of Punta Tirua. The inlet has shoal water in all parts. Anchorage can be taken about midway between the entrance points of the inlet, seaward of a line joining these points.

Roca Naranjo is above water and shows a light. Good anchorage, in 19.2m, can be taken about 0.2 mile ESE of Roca Naranjo.

Bajo Driver (42°41'S., 73°02'W.), which dries, lies 1 mile N of Punta Beltran. Two rocks, awash, lie midway between Roca Driver and Roca Naranjo.

Bahia Edwards is a small bay on the W side of Isla Talcan, about 2.8 miles SSE of Punta Beltran. Small craft with local knowledge can anchor, in 12.8 to 15.5m in the bay. The anchorage is near the middle of the bay, about 137m NW of a submerged rocky patch marked by kelp. Islote Jorge lies close S of the bay. Bajo Salvo, a group of dangerous rocks, awash and marked by kelp, lies from 1.3 to 1.8 miles SSW of Islote Jorge. A church stands on the NW side of Isla Talcan.

7.53 Canal Apiao (42°39'S., 73°10'W.) leads between Grupo Chaulinec and Grupo Desertores. The channel has a least width of about 5 miles and is deep. The only dangers in the channel are those extending from the islands and Bajo Minna, Bajo Inconveniente, and Bajo Solitario. Vessels should pass NW of Bajo Inconveniente when traversing Canal Apiao. The current of the rising tide sets W toward Canal Chaulinec, and caution must be exercised to avoid being set onto the dangers extending from the islands of Grupo Chaulinec.

Canal Desertores leads between Islote Nihuel and Isla Talcan on the W, and the mainland coast on the E. The canal has a least width of about 2.8 miles and a least depth of 64m in mid-channel. Islote Nihuel can be passed on either side; however, the passage E of the island is the recommended channel.

Golfo Corcovado—Southwest Side

7.54 The coast between Punta Ahoni and Punta Chaiguao, about 24 miles S, is indented by a number of large inlets, among which there are a number of anchorages. Several islands and dangers lie off the coast.

Punta Ahoni (42°45'S., 73°33'W.) lies S of the S side of Isla Lemuy. The point is dome-shaped and covered with vegetation. A shoal, with 2.7 to 9.1m over it, extends 0.8 mile off the point; the shoal is covered with kelp, and continues in a SE direction for about 3.5 miles to abeam of Punta Lelbun. Off Punta Ahoni the current of the falling tide sets SE at a rate of about 2 knots.

Punta Lelbun, about 3.5 miles SE of Punta Ahoni, is low and sandy. Ensenada Libno, in which occasional anchorage can be found, lies about halfway between the two above points. The village of Lelbun, with a church, stands close onshore.

Bajo Vettor Pisani (42°46'S., 73°28'W.), about 2 miles long, N to S, and nearly 1 mile wide, lies about 2 miles NE of Punta Lelbun. A lighted buoy marks the SW side of the shoal. It is recommended to pass E of the shoal.

Cabo Aitui, about 2 miles SSE of Punta Lelbun, is low, rugged, and rocky. The coast between the points should be given a berth of at least 1 mile. The village of Aitui with a church stands near the point.

Bajo Aitui (42°46'S., 73°28'W.) extends up to 2 miles offshore between Cabo Aitui and Punta Chomio. Several rocks on the shoal dry at LW. With any wind, heavy breakers form over the shoal. A buoy is moored on the outer part of this danger,

about 2.5 miles NNE of Punta Chomio.

Punta Chomio lies about 4 miles S of Cabo Aitui and shows a light. It consists of a sandy cliff on which a beacon stands. A shoal more than 0.5 mile in width, and on which two rocks show at LWS, fronts the point. The shoal and rocks are marked by kelp. A 5m patch lies about 0.7 mile ENE of Punta Chomio.

Bajo Cahlinao (42°55'S., 73°26'W.) extends about 1 mile W and E, and nearly 2 miles N from the N end of Isla Acui, which lies on the S part of the shoal. There is deep water 0.1 mile off the S side of the island. There is a channel between this shoal and Punta Chomio; navigation presents no difficulties, provided a mid-channel course is maintained.

Punta Queilen, about 1.8 mile SW of Punta Chomio, is long, narrow, and wooded, except NE of the point, which is sandy. The point can be approached to within about 0.2 mile. A light is shown about 0.3 mile NE of the point.

A depth of 15.9m lies about 0.5 mile, bearing 243°, from the light. A depth of 5m exists about 1.3 miles, bearing 231°, from the light.

7.55 Puerto Queilen (42°54'S., 73°30'W.) (World Port Index No. 14210) is a small bight located W of the peninsula which terminates in Punta Queilen. The bight extends N in Estero Mechai, at the head of which the Rio Mechai discharges. Puerto Queilen and Estero Mechai have moderate depths with good holding ground, although the latter is narrow.

The town of Queilen stands about 1.3 miles NE of Punta Queilen. A conspicuous grove of trees and a church, close by, stand in the town. There is a small pier, but it cannot be used at HWS. A large amount of kelp is found in the vicinity of the pier. Small vessels and fishing craft anchor off the pier.

The best anchorage in Puerto Queilen is abreast the town, in a depth of about 18m, mud, with the conspicuous church (42°59'S., 73°35'W.) bearing 083°, distant 0.6 mile, and close N of a 10m shoal. Farther offshore the bottom is sand and rock.

Estero Mechai, at the head of Puerto Queilen, affords good anchorage for small vessels, sheltered from all winds.

Ensenada Detico lies 1.5 miles W of Estero Mechai. Islote Chagualin lies in the center of the entrance. The bay is about 0.8 mile wide and recedes about 0.5 mile to the N. The head of the bay is foul. A small village, with a conspicuous church, stands on the W shore of the bay.

Ensenada Detico provides anchorage, in depths of 18 to 26m, sand and mud, having regard to a shoal, least depth 8m, extending WNW from Islote Chagualin, which lies in the middle of the entrance.

Caleta Pilar (42°53'S., 73°33'W.) lies 1.3 miles W of Ensenada Detico. The cove affords good anchorage, in 10m, sand and stone, about 0.1 mile offshore.

Estero Pailad lies about 1.3 miles W of Caleta Pilar, and is about 3.5 miles long, but narrow. The inlet is useful only for small vessels with local knowledge. Larger vessels can anchor in the entrance where the depths are moderate. A 6.1m patch lies 0.2 mile off the W entrance point of the inlet.

Estero Compu (42°52'S., 73°40'W.) is entered between Punta Tumaumon and Punta Yategua, 2 miles S. The inlet is about 6 miles long and about 1 mile wide, except at its head. The depths in the inlet vary from 18.3 to 44m, sand and mud, and is free of dangers. Vessels with local knowledge can find good anchorage, in a depth of 29.3m. Caleta Compu lies on the S side of the inlet, about 2.5 miles W of Punta Aulen. It has a wooden pier, suitable for small craft, and can be identified by a church close W of the pier.

Punta Yategua constitutes the S entrance point of Estero Compu. Bajo Yategua, consisting of rocks with less than 1.8m over them and marked by kelp, lies between 0.5 and 0.8 mile N of Punta Yategua.

7.56 Isla Tranqui (43°01'S., 73°20'W.) lies with Punta Vilo, its NW extremity, about 0.8 mile SE of Punta Yategua and extends about 13 miles SE to Punta Centinela, its SE extremity. A chain of hills extends the length of the island. The shores are formed of sand and gravel, and the surrounding waters contain no dangers farther than 0.5 mile offshore except off Punta Centinela, where there lies a rock about 0.7 mile off.

Bahia Chauco lies N of Punta Vilo and affords anchorage, for vessels with local knowledge, in about 28m. Islote Conejos lies in the entrance of Bahia Chauco, about 1 mile NNE of Punta Vilo. The recommended anchorage is about 0.4 mile SW of Islote Conejos, which shows a light. The currents in the bay attain a rate of 5 knots at springs.

Ensenada Leutepo (42°57'S., 73°36'W.) lies between Punta Vilo and Punta Lobo, about 2.5 miles SE. Ensenada Mapue lies between Punta Lobo and Punta Alqui, about 2.8 miles ESE. A church stands at the head of the latter bay. These two bays are suitable as emergency anchorages.

Caleta Alqui lies E of Punta Alqui and affords good anchorage, in 12m, about 0.2 mile offshore. The anchorage is abreast a flagstaff situated at a sawmill.

Punta Centinela (43°01'S., 73°20'W.), the SE extremity of Isla Tranqui, is one of the best landmarks in this region. A light is shown on the point. Shallow depths of less than 1m can be found within 1 mile E of the point. The point should be given a berth of at least 1.5 miles E of it to avoid the shoal water and strong currents in this vicinity.

Bajo Magallanes, about 1 mile in extent with a least depth of 6.8m, lies with its central part about 2.8 miles NNE of Punta Centinela. It is marked by kelp.

7.57 Bajo Bien Conocido (42°58'S., 73°09'W.) lies in the central part of Golfo Corcovado, between 7 and 11 miles ENE of Punta Centinela. The shoal has depths of less than 5.5m and patches of as little as 2.6m. Rocks, awash, lie on the NW part of the shoal.

Canal Queilen leads between the coast of Isla de Chiloe and Isla Tranqui. Its width varies between 0.5 and 2 miles. The tidal currents follow the direction of the coast and in the N part of the channel attain a rate of 1.5 knots. In the narrows of the W part of the channel, the current attains a rate of 5 to 6 knots at springs.

A 3.2m patch lies in the canal about 0.5 mile NW of Punta Santa Maria. Vessels can anchor, in 9.1m, about 1 mile WNW of Punta Cuello, with fairly good holding ground.

Punta Cuello (42°59'S., 73°33'W.), the SW entrance point of Canal Queilen, is marked by a prominent hill at the end of a range which extends from the interior. Rocks, with less than 1.8m over them, extend 0.3 mile from the point.

Bajo Chagua lies nearly 1 mile SE of Punta Cuello. The shoal consists of rocks and gravel, and is marked by kelp. At spring tides, about 0.1 mile of it uncovers, with shoal water ex-

tending 183m from its central part. An 8m patch lies close S of Bajo Chagua.

Punta Queuman (43°04'S., 73°32'W.) lies about 6 miles SSE of Punta Cuello. A light is shown from the point. A bank of sand extends 0.3 mile E and 0.2 mile SE from the point.

Isla Chaullin lies about 3.3 miles ENE of Punta Queuman. The island is about 1.8 miles long and 0.3 mile wide. A shallow bank extends 0.8 mile off the E side of the island. Roca Navio, which resembles a small ship when seen from E or W, lies close off the S side of the island. Bajo Navio, on which there are rocks awash, extends nearly 2 miles S from the S extremity of Isla Chaullin.

7.58 Estero Huildad (43°05'S., 73°32'W.) recedes about 3.8 miles WNW from Punta Queuman. The entrance of the inlet is only about 65m wide between the coastal banks which dry on either side. The N side of the channel entrance is marked by a light mounted on a tower with elevation of 13m. The least depth in mid-channel is 10m. Inside the entrance the inlet is about 0.3 mile wide. Bajo MacIntyre, with a depth of 2.7m, lies in mid-channel about 1.5 miles WNW of Punta Queuman. Bajo Diez, a sandy shoal with a depth of 4m, lies in mid-channel about 0.3 mile W of Punta Queuman.

An overhead cable, with a clearance such that is not a hindrance to navigation, crosses the inlet about 1.3 miles WNW of Punta Queuman.

Tides—Currents.—The tidal currents have a normal rate of about 2 knots in the entrance of the inlet. At springs, the currents attain a rate of 4 knots in the narrows. Tidal currents are stronger on the N side of the inlet. The currents attain maximum rates of 5 to 6 knots at springs, between the entrance and Punta Carvajal.

Anchorage.—The best anchorage in the entire inlet is off the S shore, in 9.1 to 14.6m, a little over 1 mile WNW of Punta Carvajal. The N side of the inlet is not recommended for anchorage as the tidal currents are strong there. A pier is situated on the S shore of the inlet, about 1.3 miles WNW of Punta Carvajal.

7.59 Punta Chaiguao (43°09'S., 73°29'W.) lies about 4.8 miles SSE of Punta Queuman. Banco Chaiguao, a stony spit with rocks, awash, extends 1.8 miles S from the point. A 3.9m patch lies about 0.3 mile E of Banco Chaiguao. A buoy is moored off the S end of Banco Chaiguao. Numerous submarine cables extend to the S and SE, as best seen on the chart.

Bahia Quellon is entered between Punta Chaiguao and Punta Yatac, about 13 miles SW. The bay has three principal islands, Isla Coldita, Isla Laitec, and Isla Cailin. There are four channels between the islands, three of which are navigable.

In view of its size, ease of access, and moderate depths, this bay is perhaps the best in all the archipelago. At the head of the bay, in the N part, is the port of Quellon, the principal industrial center of the region.

Isla Coldita (43°13'S., 73°43'W.) lies in the W part of Bahia Quellon. The island is thickly wooded and forms one side of Canal Coldita, about 7 miles long, narrow, and encumbered with rocks, and is practicable only for boats. Caleta Tuquetui, on the E side of the island, provides a temporary anchorage for small vessels. Foul ground extends 0.5 mile N from Punta Queupue, the N extremity of the island.

Isla Mauchil lies close S of Isla Coldita. A rock, which dries, lies in the passage between the two islands. A light is shown from the SE extremity of the island.

Isla Laitec (43°14'S., 73°37'W.) lies between Isla Coldita and Isla Cailin, separated from the first by Canal Laitec, and from the second by Canal Yelcho. A light is shown from Punta Laitec, the S extremity of the island. A reef extends nearly 1.3 miles E from Punta Laitac. Bajo Laitec, with a least depth of 7.8m, lies about 3.5 miles SE of Punta Laitec. Bajo Errazuriz, nearly 1 mile long, N and S, and with 4m over it, lies with its central part nearly 2.5 miles E of Punta Laitec.

During S or SW winds, which prevail in this region, ripples are formed on Bajo Laitec and breakers on Bajo Errazuriz. During N winds there is nothing to mark these shoals.

7.60 Bajo Blanco (43°10'S., 73°40'W.) lies, awash, about 1.5 miles NNW of Punta Lill, the NW extremity of Isla Laitec. Above-water rocks lie up to 0.3 mile off this point.

Canal Laitec lies between Isla Coldita and Isla Laitec and can best be seen on the chart. To avoid the dangers in the canal, it is recommended to keep a little to the W of the middle of the channel, taking care not to go too close to Isla Coldita, the coast of which is bordered by a bank of 5.5 to 7.3m, with foul ground, extending 0.4 mile offshore.

Two pilot transfer areas, the limits of which are shown on the chart, lie in the vicinity of the canal.

Pilots for Canal Laitec, for vessels with a draft in excess of 12.2m, board 3.7 miles SSW of Isla Laitec Light or, for vessels under 12.2m in draft, at the S end of the channel.

These pilot boarding places are also used for embarking and disembarking channel pilots.

Isla Cailin (43°11'S., 73°34'W.) is the easternmost island in Bahia Quellon. The W part of the island is hilly and thickly wooded, while the E coast is low and cultivated. The S coast borders on a large rocky bank known as Banco Velahue. The E coast is also bordered by banks, but less extensive. Canal Chaiguao leads between Isla Cailin on the W and Punta Chaiguao on the E.

Punta Yelcho, the SW extremity of the island, is low and visible only a short distance. The headland which rises E of the point is high and steep. The point is clear on the N and W, and at low water a wide beach of sand uncovers.

Banco Velahue (43°12'S., 73°33'W.) extends S of Isla Cailin, between Punta Yelcho and Punta Direccion, a distance of about 4.5 miles. The rocky bank extends about 1.8 miles SE from the island and has been reported to be extending to the NE.

Canal Yelcho, between Isla Laitec and Isla Cailin, is about 0.5 mile wide at its narrowest part. The water in mid-channel is deep, but caution must be used to avoid Banco Velahue, and other dangers when approaching the canal from the S. The channel is suitable for use only in good weather.

Punta Direccion (43°11'S., 73°31'W.), the E extremity of Isla Cailin, is marked by a light. A detached rock, with a depth of less than 1.8m, forming the E side of Banco Velahue, lies 1.5 miles SSE of the point.

Bahia Huellongquen indents the N coast of Isla Cailin, between Punta Mayo and Punta Petronhue, about 1.5 miles to the E. The bay affords space for a number of vessels to anchor, in 24 to 29m, especially on the W side of the bay, as depths de-

Puerto Quellon

crease rapidly on the E side. The holding ground is excellent, particularly near the W shore, and in the basin in the E part of the bay. At low water, stretches of beach uncover on the S shore of the bay.

Canal Chaiguao (43°08'S., 73°31'W.) is the most dangerous of the navigable channels leading into Bahia Quellon. Because of the dangers, currents, and winding course, the mariner must use the greatest of caution.

Lighted beacons, in line bearing about 000°, are situated on Isla de Chiloe, about 0.8 mile NW of Punta Chaiguao. This range leads through an inner leg of Canal Chaiguao. The rear light was reported to be partially obscured by trees. The dangers in the canal can best be seen on the chart. Tidal currents in the channel attain a rate of 5 knots at springs.

7.61 Puerto Quellon (43°08'S., 73°38'W.) lies in a bight on the N shore of Bahia Quellon, about 7 miles WNW of Punta Chaiguao. Entering Canal Chaiguao from the E is not recommended except for those with local knowledge due to the numerous rocks and shoals found S of Punta Chaiguao that block off most of the canal entrance. This can all be seen clearly on the chart.

The port has a small ramp used by small craft with drafts up to 3m and a busy ferry terminal for ro-ro traffic to Chacabuco.

Tides—Currents.—The tidal range is 5.1m at the port area. The currents in this area attain rates of 2 to 3 knots and are variable and irregular in the channels.

Pilotage.—Pilotage is available and is compulsory for all foreign vessels within the canal areas. Pilots will board from the S, prior to entering Canal Laitec in 43°20.50'S, 73°36.00'W (Outer) for vessel over 12.19m draft and 43°15.78'S, 73°38.37'W (Inner) for vessels less than 12.19m draft.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Contact Information.—See table titled **Puerto Quellon—Contact Information**.

Puerto Quellon—Contact Information	
Port Radio Station	
Call sign	Quellon Radio (CBP28)
VHF	VHF channels 9, 14 and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	65-65-2681260
Facsimile	65-65-2681260
Harbormaster	
Telephone	56-65-2680585
	65-65-2681260
Facsimile	65-65-2681260
E-mail	cpquellon@directemar.cl

Anchorage.—recommended about 0.3 mile N of Punta Lapa in depths 8m, sand, or about 0.6 mile N of Punta Lapa in depths 22m, mud.

Puerto Carmen (43°09'S., 73°46'W.) stands on the W shore of Estero Yaldad, about 1.3 miles WNW of Isla Linague. There is a sawmill and partially destroyed pier which dries alongside at LW. Vessels up to 10,000 gt enter the anchorage to load timber products.

Anchorage.—Good anchorage can be taken, in about 18.3m, about 0.8 mile W of the N extremity of Isla Linagua.

The best anchorage lies between Puerto Carmen and the mouth of a small river, 1.3 miles SSE. It is protected from the violent and frequent W winds.

7.62 Punta Yatac (43°20'S., 73°40'W.), the S entrance point of Bahia Quellon, is rocky, rugged, and wooded. Islotes Blanco, two prominent white rocky islets, lie about 0.4 mile SSW of the point.

Isla San Pedro lies in a bight between Punta Yatac and Punta Cogomo, about 8.5 miles to the SW. Canal San Pedro leads N of the island and Canal Guamblad leads W of the island. The island consist of a single high mountain and is the highest of all in the archipelago.

Canal San Pedro (43°20'S., 73°44'W.) is entered between Punta Yatac and Punta Boigue, the NE extremity of Isla San Pedro. It leads about 7 miles W and joins the N part of Canal Guamblad. Numerous rocks and shoals encumber the channel. Bajo San Pedro, with a least depth of 4m, extends about 1 mile N from the NE extremity of Isla San Pedro. Because of the strong currents and dangers, the canal is available only to small craft.

Small vessels with local knowledge can obtain good anchorge in Puerto San Pedro, a little over 1 mile WSW of Punta Yatac. The best anchorage is in 12 to 18m, about 1 mile WSW of Islotes Blanco, with Punta Boique bearing 146°.

Canal Guamblad, narrow and winding, leads along the W side of Isla San Pedro. Estero Guamblad leads W from the junction of Canal San Pedro and Canal Guamblad. Strong currents and dangers restrict the use of the inlet to small vessels only.

Islotes Guamblin (43°25'S., 73°44'W.), consisting of several conspicuous rocks, lie about 1 mile S of the S end of Isla San Pedro. Punta Cogomo lies about 3 miles W of Islotes Cuamblin. The point is of a dark color and easily recognized.

Golfo Corcovado—Southeast Side

7.63 The coast between Punta Vilcun and Punta Guala, about 55 miles S, is characterized by the imposing aspects of the Andes Mountains. The outline of the coast is notably regular, and without important indentations other than the large openings of the valleys of the Rio Yelcho and the Rio Tictoc. Aside from these, the coast is unprotected and beaten constantly by W winds and sea.

A peculiar phenomenon of this region, which may lead the mariner to believe he is in the area of shoal water, is the earthy or red coloration of the waters, which is produced by the materials carried down in the waters of the Rio Yelcho and the Rio Corcovado, and which at spring tides, when the currents set with great velocity, are carried a considerable distance.

Caution.—Shoals have been reported to lie up to 5 miles off the coast between Punta Auchemo (43°02'S., 72°52'W.) and the S portion of Bahia Corcovado along latitude 43°15'S.

7.64 Punta Vilcun (42°50'S., 72°51'W.) lies 3.5 miles S of Punta Chana and is conspicuous. Monte Vilcun rises from the point and is wooded to its summit. It is conspicuous because of its regular conical form and is visible a long distance. When the coast is obscured by clouds, the mountain is always visible as a dark shape emerging from the water.

Volcan Minchinmahuida lies about 13 miles ENE of Monte Vilcun. It is a notable saddle-shaped mountain, always covered with snow.

Ensenada Chaiten (42°55'S., 72°47'W.) lies between Punta Islotes and Punta Garcia, the N extremity of Isla Puduguapi. A light is shown on Punta Garcia. The inner part of the bay is occupied by a bank of sand and mud, brought down by the Rio Yelcho and the Rio Chaiten; the remainder of the bay is deep, but offers no advantage, being quite open to the W. The bank was reported to be extending towards the pier. Caleta Pescadores lies at the head of the bay. There is a detached 2.5m patch 1.5 miles WSW of Punta Piedra Blanca, the N entrance point of Caleta Pescadores.

A light is shown on Punta Piedra Blanca. An aeronautical radiobeacon, with an obstruction light, stands about 0.8 mile SE of the above light. A small pier, in a poor state of repair, is situated at Punta Piedra Blanca, and has a depth of 6m alongside. The village of Chaiten stands at the head of the bay.

Small vessels with local knowledge can obtain anchorage in the entrance to Caleta Pescadores, about 0.2 mile S of Punta Piedra Blanca.

Isla Puduguapi is located on the SW side of Ensenada Chaitin. The island is thickly wooded and when seen from the W, appears as a large conical hill.

7.65 The **Rio Yelcho** (42°58'S., 72°45'W.) flows into the sea through a marshy delta blocked by hills N and S of Isla Puduguapi. About 2.5 miles inland, the river winds through a spacious valley between alluvial banks covered with dense vegetation. The river is available only to small craft.

Estero Palvitad is entered between Punta Becerra, the W extremity of Isla Puduguapi, and Punta Auchemo, about 4.5 miles to the SSW. The delta of the Rio Yelcho occupies the NE part of the inlet. Grupo Auchemo consists of several islands and rocks, and lies up to 1 mile offshore between Punta Auchemo and Punta Frias, about 3.3 miles to the E.

The inlet is deep, but is not a good anchorage. A least depth of 31m has been obtained 183m off the E shore. There are several small bays with moderate depths on the W shore. Anchorage in these bays is safe only during good weather. The Rio Palvitad discharges at the head of the inlet.

Bajo Abreojo (43°01'S., 72°52'W.), nearly 1 mile N of Punta Auchemo, is a black rock which uncovers at very low tides. Roca Negra, which uncovers at low water, lies about 0.2 mile NNE of Punta Fries.

Puerto Yelcho is situated about 1.5 miles NE of Punta Fries. In approaching Puerto Yelcho, care must be taken to avoid the sandbank which extends about 0.5 mile S from Punta Errazuriz, the S entrance point of the Rio Yelcho. This bank dries at LW, but is not visible at HW. Vessels must give this bank a wide berth.

The anchorage at Puerto Yelcho is about 0.3 mile in extent, with depths of 12.9m to 44m, the former depth being about 183m offshore. When at anchor, a vessel must maintain vigilance in regards to Williwaws during N winds. These squalls, combined with the effects of current and tides, may cause difficulty in the anchorage.

7.66 Puerto Auchemo (43°01'S., 72°50'W.) lies about 1.8 miles NE of Punta Auchemo. The port should be entered from

the E, as the W channel is narrow and used only by small craft. The port provides one of the best anchorages in the area. It is more than 0.5 mile wide and has depths of 29m to 50m, with good holding ground. The water in this vicinity is discolored because of sediment brought down by the Rio Yelcho.

Caution.—Caution should be exercised along this portion of the coast, as shoals may be encountered up to 5 miles offshore between Punta Auchemo and Punta Pucaihuen.

Cabo Alman is located about 3.5 miles SSW of Punta Auchemo. The coast between the two points is rocky, high, and wooded. A small yellowish islet lies close offshore, about 0.5 mile NNE of Punta Alman. A second islet lies close offshore, nearly 1.5 miles farther in the same direction.

Temporary anchorage is obtainable N of the yellowish islet, in a depth of 20m, sheltered from S winds. The position is not recommended during winds from the SW to NW.

Cabo Corcovado (43°08'S., 72°55'W.) lies about 3.5 miles SSW of Cabo Alman. The cape is the extremity of one of the spurs of Volcan Corcovado, which terminates here in a high, wooded bluff. Rocks lie up to 0.5 mile off the point.

Bahia Corcovado recedes about 5 miles SE between Cabo Corcovado and Punta Pucaihuen, about 13 miles to the SW. The shores of the bay are entirely unprotected and should not be approached. Moreover, the possibility of uncharted dangers exists in this vicinity.

Volcan Corcovado (43°12'S., 72°48'W.) lies 6 miles SE of Cabo Corcovado and is one of the most prominent peaks in this region; in clear weather it can be seen more than 80 miles. It rises to a very sharp point about 2,217m high, and is always covered with snow. El Morrillo, a small hill, lies about 3.8 miles SW of Volcan Corcovado and is conspicuous.

Volcan Corcovado

The Rio Corcovado discharges about 3.5 miles SW of El Morrillo. Sediment brought down by the river colors the water for some distance offshore, giving the appearance of shoals. The bar at the mouth is an extensive bank which projects 1.5 miles in a NW direction, and is marked for some distance by breakers, especially during W winds. The river is navigable by boats for 35 miles from the entrance; beyond that distance progress is blocked by huge rocks, rapids, and trunks of trees.

7.67 **Isla Linagua** (43°17'S., 72°58'W.) lies 2.5 miles SW of the mouth of the Rio Corcovado. At low water the island is connected to the shore by a sandbank. A rock, awash, lies 0.3 mile W of the S extremity of the island. A shoal, with a depth of 5.8m, lies 0.3 mile E of the island.

Punta Pucaihuen (43°19'S., 73°04'W.), about 4.5 miles SW of Isla Linagua, is of moderate height, sandy, and wooded toward the interior. Shoal water, over which there are violent breakers with W winds, extend up to 2.8 miles off Punta Pucaihuen.

Caution must be exercised with respect to the large area of unsurveyed waters extending as far as 2.5 miles offshore S of Isla Linagua and the coast near latitude 43°25.6'S.

Punta Cucagua, about 7 miles SSW of Punta Pucaihuen, is the most salient point on this section of coast. Shallow water exist between these two points, and this part of the coast should be given a wide berth. A stranded wreck lies about 1 mile NNE of Punta Cucagua. The Rio Canev, which discharges about 2 miles NNE of the point, has a large waterfall near its mouth which is visible a considerable distance offshore.

Montes Yanteles, about 13 miles ESE of Punta Cucagua, consists of four principal peaks. The peaks are always covered with snow and can be seen for a great distance rising to about 2,051m.

7.68 The **Rio Yeli** (43°31'S., 73°02'W.) flows through a sandy beach at the head of Estero Yeli. The river has a dangerous bar, which can only be crossed at HW with local knowledge. The river is used mainly by fishermen. Morro Yeli forms the S shore of the river mouth.

Bahia Tictoc recedes nearly 7 miles E between a point close W of Morro Yali and Punta Guala, about 13 miles to the S. A chain of islands, with off-lying islets and rocks, extends across the entrance of the bay and protects the bay from the wind and sea of Golfo Corcovado. Channels between the island are used only by vessels with local knowledge. The inner part of the bay contains four well-protected anchorages.

Monte Miragualai (43°34'S., 73°00'W.) rises on the N side of Bahia Tictoc to an elevation of about 906m, and is distinguished by its conical form. The Rio Tictoc empties into the E side of the bay. The sediment deposited at the mouth of the river has formed a shoal which extends nearly 1 mile offshore, and has formed two sandy points. Punta del Rio, the W point, projects farther and is the most dangerous.

Isla Horadada lies about 3.3 miles S of Morro Yeli. A group of rocks, on which there are always breakers, lies about 0.8 mile W of the S end of the island. Isla Colocla, the largest island, is low at its S end and high at its N end. Isla Redonda, the S of the islands, lies about 3.8 miles N of Punta Guala. Isla Hernandez lies 0.5 mile SSE of Isla Colocla, and Isla Huepan lies about 1.3 miles N of Isla Hernandez. The remaining islets, rocks, and dangers can best be seen on the chart.

Puerto Tictoc (43°36'S., 72°57'W.), on the N side of the bay, is well-sheltered from W winds. The bottom of the cove is very irregular, but vessels can anchor, in 31 to 40m, about 0.3 mile NW of the E entrance point.

Caleta Silva Palma, about 0.8 mile E of Puerto Tictoc, affords good anchorage for vessels of moderate size, in 26m, about 183m offshore. Caution should be used in approaching both the above anchorages.

The E side of Bahia Tictoc terminates into two arms, Bahia

Pescadores, which extends to the N, and Puerto Escondido, which extends to the S. Vessels of almost any size can anchor in the middle of Bahia Pescadores, in 40m. This anchorage is protected from all but SW winds. The best anchorage in Puerto Escondido is in the middle, in 28m. Vessels should not anchor near the head of the inlet as it is foul.

Anchorage can be taken by large ships, in 38.4m, sand, in the middle of Bahia Tictoc in position 43°37'S, 72°56'W.

Peninsula Coca (43°43'S., 72°55'W.), which forms the SE side of Bahia Tictoc, consists of high sheer mountains. The shores are rocky and steep-to. The peninsula is thickly wooded. Caution must be used when approaching the peninsula because of the currents in this area.

Canal de Moraleda—North Entrance to the East Entrance of Canal Darwin

7.69 Canal de Moraleda trends about 105 miles S from Islas Queitao at its N entrance to the E entrance of Canal Darwin, the principal channel leading from the W through Archipielago de los Chonos. The canal is about 3 to 7 miles wide in the N part between the dangers, but is restricted to a width of about 1.5 miles in the S part, where numerous dangers encumber it.

The land on the E side of the channel is generally high and rises abruptly from the sea. Some of the mountain peaks are snow-covered year round. The islands on the W side of the channel are generally lower than those on the E side. Monte Cuptana is the only peak on this side that has snow on its summit in summer.

Depths—Limitations.—Canal de Moraleda has not been completely examined. There is a least charted depth of 43m in the fairway between the N entrance and Canal Darwin.

Several dangers lie near the fairway, and others may exist. These known dangers are described in this sector with their related features.

Tides—Currents.—The tidal range in the Archipelago de los Chonos does not generally exceed 3m. The tidal currents in the E-W channels set generally E on the rising tide and W on the falling tide in the direction of the channels.

In the N entrance of Canal de Moraleda, the tidal currents set SE from Boca del Guafo on the rising tide and NW on the falling tide, at rates of from 1 to 3 knots. These currents apparently meet opposing currents in the vicinity of 44°05'S. South of this latitude. the tidal currents set generally N on the rising tide and S on the falling tide. In the vicinity of Isla El Gorro. the rates are from 0.5 to 1.5 knots.

In the S part of Canal de Moraleda, in the vicinity of Isla Pajel, the tidal currents set N to NNE on the rising tide and S to SSE on the falling tide at 2 to 3 knots.

West Side of the North Part of Canal de Moraleda—North Entrance to Cayo Blanco

7.70 Islas Queitao (43°43'S., 73°30'W.) consists of two islands and some adjacent rocks that lie in the middle of the N entrance of Canal de Moraleda. The W island is the highest and largest of the two and shows a light. The other islets are low and wooded. Above and below-water rocks lie up to 0.3 mile W and N of the islands. A small islet, with rocks off its N and S ends, lies about 1 mile NW of the E end of the E island.

Small vessels can find shelter off the S entrance of the passage between the two larger islands. The depth is 18.3m, shells, with the E end of the W island in range with the W end of the E island. A 6.9m shoal lies about 0.2 mile SW of the W end of the E island. During strong S winds, anchorage can be taken with the light bearing 215°, 0.4 mile W of the coast, in 42m, rock, good holding ground.

Grupo Peligroso, the NE islets of the Guaitecas group, lies about 11.5 miles SSW of Islas Quietao and should be passed W to NE. Cerro Mantan (44°00'S., 73°39'W.) rises in the NE part of Isla Leucayec of the Guaitecas group and is fairly prominent from the N.

Islotes Locos (43°59'S., 73°27'W.), on the W side of the fairway, comprises two small islets with above and below-water rocks up to 0.5 mile N and NE, and about 0.3 mile S of them. A light is shown on the S and larger islet, which is wooded.

Islotes Riquelme lies about 3 miles SSW of Islotes Locos. A rock, awash, lies about 1.5 miles WNW of Islote Riquelme.

Isla Mulchey (44°08'S., 73°30'W.), which has been previously described in paragraph 6.28, is the SW island of the Guaitecas group. Its E end lies about 8 miles S of Islotes Locos. The island is irregular in shape. Puerto Ballenas is a small cove on the SE side of the island. Isla Mike, with a 12m shoal, lies 0.2 mile off the E side of the island. Four small islets lie W and SW of Isla Mike. Anchorage can be taken in the middle of the cove, about 0.3 mile W of a waterfall on the E shore. The anchorage has depths of 29 to 35m, with good holding ground, except during NW winds.

Islas Los Quincheles is a group of islands that lies from 4 to 7.5 miles S of Isla Mulchey. Isla El Gorro (44°18'S., 73°28'W.), the SE island of the group, is sheer and barren, and shows a light. Foul ground extends about 114m E from it.

Penon Blanco (44°23'S., 73°32'W.), a detached rock with foul ground off its W side, and on which a light is shown, lies about 5.5 miles SW of Isla El Gorro. Anchorage can be taken during moderate weather about 137m off the rock. The bottom is sand and rock, good holding ground. Isla Ballena, with a rock close off its S shore, lies 3.5 miles N of Penon Blanco.

Isla Filomena lies with its NE end about 3.5 miles SSW of Penon Blanco. Foul ground, with above-water and submerged rocks, extends about 1 mile E from the SE point of the island. Isla Lagora, a low detached islet, lies about 1.5 miles SE of the above point.

Caution.—A 7m shoal patch has been reported to lie n position 44°29.8′S, 73°34.9′W.

7.71 Isla Francisco (44°31'S., 73°38'W.), close S of Isla Filomena, is separated from it by a narrow passage. Several rocks lie on foul ground that extends nearly 1 mile E from the E end of the island. Isla Nassau, with an islet and rock close off its NW side, lies about 1 mile SE of the SE point of Isla Francisco. Small vessels can take temporary anchorage, in 9.1 to 37m, about 0.2 mile S of the point. This anchorage is known as Puerto Nassau.

Isla Cuptana is separated from the SW side of Isla Francisco and the islands to the W by a passage encumbered with islands and rocks. Monte Cuptana, with double summits, and always covered with snow, rises near the center of the island. Puerto Cuptana (44°40'S., 73°38'W.), about 0.5 mile wide at its en-

trance and outer part, recedes about 6 miles to the SW into Estero Cuptana. The inlet is used mainly as an anchorage for fishermen. Only the outer part of the inlet is usable. Small vessels can anchor, in 28m, in the small cove at the S entrance point of Estero Cuptana, 0.1 mile from Punta Bornscheurer and Isla Medio.

Isla Letrero lies on the N side of the entrance to the inlet. The S side of the island has a pebble beach which is one of the few in this vicinity. Roca de Afuera, awash and marked by breakers, lies 0.15 mile E of the E side of Isla Letrero. The entrance channel is clear and about 0.5 mile wide, and is entered between Isla Letreros and Punta Bornscheure. The tidal currents attain rates of up to 2 knots and set in the direction of the channel.

Anchorage can be taken, in 26m, in the entrance, about 0.2 mile SSE of the W end of Isla Letreros or, in 70m, about 183m offshore on the N side of the inlet, about 1 mile W of Punta Bornscheure. The anchorages in Estero Cuptana are reported to be poor, with a bottom of rock.

Isla Transito, just S of Isla Cuptana, forms the S shore of Canal Temuan. The island can be identified by a prominent mesa-shaped hill near the center of the E side of the island. The summit of the island is located on its NW side.

7.72 **Isla Sierra** (44°44'S., 73°35'W.) lies close off the SE end of Isla Cuptana. The island lies on the N side of the E entrance of Canal Temuan, a narrow passage with a least depth of 22m in the fairway, which separates Isla Cuptana from Isla Transito. It has been reported that small craft with local knowledge can proceed through this channel and then N through Canal Perez Sur and Canal Perez Norte when the seas are heavy in Canal de Moraleda.

Grupo El Enjambre (44°48'S., 73°39'W.) comprise numerous islets and above and below-water rocks that lie up to 2 miles off the E side of Isla Transito. Cayo Blanco (44°47'S., 73°33'W.), a white rock, on which a light is shown, is the outermost of the group. The dangers in Grupo El Enjambre can best be seen on the chart.

Puerto Frances, an anchorage for vessels with local knowledge, lies off the E side of Isla Transito inside Grupo El Enjambre. The entrance channel, with depths of 16.4 to 33m, leads W between the group from a position about 1 mile S of Cayo Blanco. Roca Janequero, awash at low water, lies on the S side of the fairway.

Anchorage, restricted to within a radius of 0.3 mile, can be taken, in 16.4 to 33m, rock, mud, and sand, about 0.3 mile SW of the largest and innermost islet on the N side of the fairway. This islet lies close off the N entrance point of a small inlet on the E side of Isla Transito. The anchorage is with Cayo Blanco Light bearing 076°, distant about 2 miles.

Puerto Espanol (44°50'S., 73°41'W.) lies on the SW side of Isla Transito. Anchorage is afforded, in 18.3m, rocky bottom covered with sand and mud. This anchorage is sheltered from N winds.

The entrance is clear of dangers, but local knowledge is required due to the lack of soundings on the chart.

North Part of Canal de Moraleda to Punta Machelan—East Side

7.73 **Isla Refugio** (43°57'S., 73°13'W.) is separated from the mainland by Canal Refugio. The island is high, steep, and prominent from the N. Canal Refugio is narrow and deep, with several islets in its S end. Isla Yalac and adjacent islets lie about 1 mile off the SW side of Isla Refugio and are separated from it by Canal Pedregoso, a rock encumbered passage.

Isla del Barranco, with a prominent white cliff on its W side, lies about 1 mile S of the islets off the SW side of Isla Yalac.

Peninsula Sin Nombre (44°08'S., 73°11'W.) projects irregularly about 8 miles W from the mainland. The inlets on both sides have not been examined. A number of islets and rocks lie up to 1 mile N of the NW point of the peninsula. Monte Melimoyu, high, narrow, dome-shaped, and crowned with four peaks, rises about 14 miles ENE of the outer end of the peninsula. The NE slopes of the mountain have glaciers.

Roca Negra (44°09'S., 73°22'W.) lies about 4 miles W of the outer end of Peninsula Sin Nombre. The rock is easily distinguished by its black color.

Grupo Gala consists of a number of islands and rocks on the N side of the W entrance of Canal Jacaf, and lies from 1 to 5 miles S of the S side of Peninsula Sin Nombre. They lie on a foul bank which extends about 1.5 miles W from them and continues NNW to the outer end of the peninsula and obstructs the entrance to Seno Gala, an irregular and unsurveyed inlet that recedes NE and indents the mainland.

Isla Vico (44°19'S., 73°17'W.), which forms the S entrance point of the W entrance of Canal Jacaf, lies about 2.5 miles SW of the S island of Grupo Gala. The island lies about 0.5 mile off the NW side of Isla Atilio. A light is shown from the NW extremity of the island.

Roca Chacabuco, submerged, steep-to, and marked by seaweed, lies on the E side of the fairway of Canal de Moraleda, about 5.5 miles NW of Isla Vico. A lighted beacon is shown from the rock.

Isla Magdalena (44°35'S., 73°05'W.) is separated from the mainland by Canal Jacaf and Canal Puyuguapi. The W coast of the island fronts the E side of Canal de Moraleda. The NW and SW sides of the island are indented by several large but unsurveyed inlets. The outer edge of a dangerous shore bank, on which a number of islands and rocks lie in the approaches to the inlets on the NW side of the island, trends about 21 miles SSW from Isla Vico to Punta Calqueman.

Punta Calqueman (44°39'S., 73°28'W.), the W extremity of Isla Magdalena, is fairly prominent. A number of islets and rocks lie up to 2 miles S of the point.

Isla Senec lies about 4 miles SSW of Punta Calqueman. Foul ground and rocks extend about 185m to the N off the N end of the island. Isla Guayanac lies about 2 miles SE of Isla Senec, and a group of above-water rocks lies about 1 mile farther to the SE.

Punta Machelan (44°49'S., 73°24'W.), with rocks up to 1 mile NW of it, lies about 10 miles SSE of Punta Calqueman and forms the N entrance point of Canal Puyuguapi.

South Part of Canal de Moraleda—East Side

7.74 **Isla Tuap** (44°56'S., 73°30'W.) lies about 9 miles SW of Punta Machelan. A light is shown on the NW side of the is-

land. The E side of Canal de Moraleda, between Isla Tuap and Isla Meninea, nearly 20 miles to the SSW, is encumbered with numerous dangers. Only those adjacent to the E side of the fairway are described below. The other dangers are described later in this sector.

Grupo los Yuyos comprise a number of islets and rocks that lie up to 1.5 miles SW of Isla Tuap. Isla Guia, the largest, has two prominent bluffs. A submerged rock lies about 0.2 mile SW of Isla Guia.

Isla Latolque (45°02'S., 73°32'W.) lies 5.5 miles SSW of Isla Tuap. The island is fringed with rock and foul ground up to 0.5 mile off its E side. Isla Auchile is wooded and lies 2.5 miles SW of Isla Latolque. The island has two summits, one sharp and one flat. A rock, with a depth of less than 1.8m, lies close off the NW end of Isla Auchile.

Isla El Morro shows a light and lies about 4.5 miles SSW of Isla Auchile. Foul ground extends 1.5 miles S from the S end of the island. Foul ground also lies off the N and E sides of the island.

Islote El Blanco (45°13'S., 73°39'W.), with a conspicuous white cliff on its N side, lies about 4.5 miles S of Isla El Morro. Foul ground, with a submerged rock at the outer end, extends about 1.5 miles N from Islote El Blanco.

Isla Meninea, rock-fringed and irregular, lies with its W end about 2.5 miles S of Islote El Blanco. This island is the southernmost of the islands on the E side of the fairway of Canal de Moraleda.

South Part of Canal de Moraleda—West Side

7.75 Several islands and rocks lie on the W side of Canal de Moraleda, between Isla Transito and Isla Teresa. They encumber the S entrance to Canal Perez Sur. Isla Lalanca lies about 1 mile S of Isla Transito. Isla Verde lies about 1 mile S of Isla Lalanca, and Grupo Blanco, a group of white rocks, lies about 1 mile farther S.

Isla Pajalo (44°58'S., 73°39'W.) lies 3 miles S of Grupo Blanco. Foul ground, with submerged rocks, and Roca Westoff, an above-water rock at the outer end, extends about 1.3 miles NE of Isla Pajalo.

Isla Tangbac lies about 3 miles SW of Isla Pajalo. Puerto Americano (45°02'S., 73°42'W.), a small inlet formed between Isla Tangbac and Isla Dar close off its SW side, affords shelter to small vessels. The S entrance is narrow and obstructed by a bar with a reported depth of 4.5m, but within, the depths in the wider part are from 8.8 to 18.3m. The N entrance is obstructed by a spit. A group of above-water rocks lies in the approach to the S entrance, about 1 mile SSE of the entrance. Three above-water rocks lie up to 0.2 mile offshore N of the above group of rocks.

Anchorage for small vessels can be taken, in 18.3 to 20.1m, about 0.3 mile E of the SE end of Isla Dar. The shore bank E of the anchorage has been reported as extending. Vessels with local knowledge anchor off the E side of Isla Tangbac, about 1 mile N of the S end of that island, where the depth is about 12.8m.

Isla Melchor (45°08'S., 73°53'W.), large and irregular, lies close SW of Isla Tangbac. A dangerous rock, awash, lies close E of a group of above-water rocks that lie in a bight about 2.5 miles N of the SE point of the island. Small vessels with local knowledge can anchor, in 10m, in a small cove about 6.5 miles N of the same point.

Puerto Lagunas (45°17'S., 73°42'W.) is entered between the SE point of Isla Melchor and the dangers N of Isla Castillo, 1.5 miles to the SW. Islote Santa Maria, with numerous above-water and below-water rocks off its E side, lies in the SE approach to the anchorage, about 1 mile SE of Isla Castillo. Foul ground, fringed with kelp and an above-water rock marked by a beacon at the outer end, extends up to 0.3 mile N from the N point of Isla Castillo. Bajo Otranto, a detached 4.5m shoal, lies 0.6 mile NE of the same point and on the S side of the entrance fairway. A rock, marked by a beacon, lies close off the N shore of the anchorage, and about 1.5 miles W of the SE point of Isla Melchor. A detached shoal, marked by kelp and with a least depth of 1.8m, lies about 0.3 mile SW of the rock.

A radio tower is situated on the E entrance point of a small lagoon, about 0.8 mile W of the SE point of Isla Melchor.

Anchorage can be taken, in 20.1 to 29m, about 0.3 mile S of the lagoon entrance. Small vessels can anchor, in 12.8 to 14.6m, in Caleta Sepulco at the NW part of Puerto Lagunas.

Isla Victoria and Isla Quemada, two large islands, lie S of Isla Melchor. The islands are separated by unsurveyed passages. Grupo Barba comprises numerous islets and above and below-water rocks that lie on a foul area that extends up to 3 miles E from the E coasts of the two islands, and extends about 4 miles S from Isla Castillo to Isla Mitahues. Isla Pescetto, the largest of a group of small islets that lies on the outer edge of this foul ground, lies about 2 miles NNE of the NE end of Isla Mitahues. A detached 12.9m patch lies in the middle of Canal de Moraleda, about 1.8 miles E of Isla Pescetto.

Isla Mitahues (45°24'S., 73°44'W.), on the SE part of which a light is shown, lies on the NW side of the junction of Canal de Moraleda and Canal Darwin, and about 0.5 mile E of Isla Quemada. It marks the S end of the W side of Canal de Moraleda.

Emergency anchorage can be taken, in 24 to 26m, between Isla Mitahues and Isla Quemada, but vessels must avoid a 3.6m patch that lies about 1.5 miles W of the S extremity of Isla Mitahues.

Mainland Canals and Fjords East of Canal de Moraleda—Punta Guala to Canal Costa

7.76 **Punta Guala** (43°44'S., 73°03'W.) is rock-fringed and salient, and has a sharp summit. A disused light structure, consisting of a stone tower, stands on the point.

From Punta Guala, the S side of Peninsula Coca trends about 3.5 miles ESE to Punta Piti, the N entrance point of Estero Piti-Palena. Grupo Las Hermanas, a group of rocks and islets, lies on the S side of the approach, about 1.7 miles S of Punta Guala. A number of rocks also lies about 0.3 mile S of the E island of the group.

Isla los Leones (43°47'S., 72°57'W.) lies on the S and W sides of the narrows leading into Estero Piti-Palena. The Rio Buta-Palena flows into the sea between the W side of Isla los Leones and Punta Palena, 0.3 mile W of the W side of Isla los Leones. The river entrance is fronted by a drying bar. A light is shown from a small islet located off the NE extremity of Isla los Leones.

The entrance channel to Estero Piti-Palena is narrow and

Isla Las Huichas

winding. Within the inlet there are a number of above-water rocks on either side. A narrow arm recedes about 6 miles N from the NE end of the inlet and is reported as deep. A shallow river flows into the SE end of the inlet.

Canal Refugio (43°58'S., 73°08'W.), a passage between Isla Refugio and the mainland, is foul in its S part. The N part is deep, but the coves on the mainland offer little protection. Puerto Santo Domingo, a cove on the mainland side near the middle part of the canal, offers anchorage to vessels with local knowledge. A rock, awash, lies about 0.5 mile N of some islets that lie within the N entrance and on the W side of the passage.

Canal Jacaf is entered between the S island of Grupo Gala and Isla Vico, 2.8 miles to the SW. The canal is about 30 miles in length and joins Canal Puyuguapi off the NE end of Isla Magdalena. The canal is clear of dangers in the fairway, except for some islets in Paso Sibbald, where the fairway SE of Islote Oreste is restricted to a width of 0.2 mile. There is a patch, with 7.3m over it, lying about 0.3 mile W of Islote Oreste. There are a number of islands, islets, and rocks outside the fairway that can best be seen on the appropriate chart.

The tidal currents in Canal Jacaf run NW on the rising tide and SE on the falling tide, following the general direction of the channel.

Canal Puyuguapi (44°55'S., 73°21'W.) separates the SE side of Isla Magdalena from the mainland. It has a least width of about 1 mile and is clear of dangers in the middle part throughout its length, although islets and rocks lie up to 0.5 mile offshore in places. The canal is 38 miles in length from its entrance to the junction with Canal Jacaf. The depths in mid-channel are deep throughout the length of the canal.

Isla San Andres, from which a light is shown, lies in the entrance to the canal. The approach channel leads SE between this island and Isla Magdalena. A light is shown from the N shore of the canal in a position about 17 miles NE of Isla San Andres.

7.77 Puerto Cisnes (44°44'S., 72°42'W.) is a small deep cove on the E side of Canal Puyuguapi, 30 miles above its entrance. Local assistance is required to anchor in the S part of the cove E of the delta of the Rio Cisnes, which flows into the S side of the cove. The delta extends about 0.5 mile N from Punta Buist. The bank was reported to have extended NE. The cove recedes about 1 mile E between Punta Buist and the N entrance point on which a light is shown, about 1.7 miles NNE. The light is exhibited from a green tower, 4m high. Punta Bennett can be identified by a waterfall. The E shore of the bay is backed by a gravel beach which changes to cliffs along the S part. A beacon stands on the beach about 0.4 mile SE of Punta Bennett. Anchorage can be taken, in 20.1m, about 0.3 mile offshore in a cove just SW of the delta. An emergency light is shown when using this anchorage.

A wharf, 25m long E and W, stands close E of Punta Bennett. Ships up to 70m long and having a draft of 4.6m can berth alongside in good weather on a W heading. The port anchor should be used with six shots out, in a depth of 40.2m.

Seno Ventisquero (44°28'S., 72°38'W.), the NE extension of

Canal Puyuguapi, extends about 12 miles NE from the junction of Canal Jacaf and Canal Puyuguapi. Toward the middle part of the inlet the channel is restricted at Paso Galvarino to a width of 79m and a depth of 26m. The E side of the inlet is fringed by a shore bank, the outer edge is marked by two beacons. A light is shown on the W shore of the inlet. The inlet is used mainly by small craft.

Puerto Puyuguapi, at the head of Seno Ventisquero, affords anchorage for small vessels, in 46m, about 183m off the beach and S of a sawmill and prominent house. An L-shaped pier, 31m long, stands on the N side of the inlet, with a least depth of 5.2m alongside. Vessels approach the dock steering 350° and drop the anchor broadside at about 75m off the dock, in a depth of 16m.

7.78 Canal Ferronave (45°08'S., 73°29'W.) leads S through the islands that encumber the E side of Canal Moraleda in its S part. The canal has a least width of 0.2 mile and a least charted depth of 12m in the fairway. Lights are shown from some of the islets adjacent to the fairway.

The fairway of the canal trends SSE between Isla Tuap and Grupo Tisne to a position about 0.5 mile E of Islote Eugenia (44°58'S., 73°28'W.), on which a light is shown. Then it trends SSW between Isla Oreste on the E side and Isla Viola and Isla Latolque on the W side. Foul ground extends 0.5 mile E from the E side of Isla Latolque. A rock, awash, lies about 0.5 mile S of Islote Eugenia Light.

The canal continues S to Islote Precaucion, which shows a light, then SSW to Islote La Boina, which also shows a light. The N and central part of the canal is fairly free of dangers. The dangers in the S end of the canal can best be seen on the chart. Canal Ferronave joins Canal Pilcomayo SE of Isla Zola (45°14'S., 73°32'W.).

Caution.—When navigating Canal Ferronave, the bearings of the lights must be closely watched due to the set of the current which here runs strongly. The utmost care is necessary.

7.79 Puerto Aguirre (45°10'S., 73°32'W.) is formed between Isla Eugenio and Isla Las Huichas. Small vessels can approach from the S and take anchorage, in 29 to 35m, about 0.2 mile E of the S extremity of Isla Las Huichas. The port has two small piers that are used by small craft. A third L-shaped pier, 33m long, can accommodate vessels with a draft of 4.6m alongside.

Puerto Aguirre

Canal Pilcomayo is entered from Canal de Moraleda at a position about 0.5 mile SW of Islote Direccion (45°11'S., 73°37'W.). The fairway trends SE and leads SW of Isla Swett, Isla Viel, Roca Blanca, and Isla Pilcomayo; then between Isla Pilcomayo and Isla Costa; and then along the N side of Isla Chaculay. Numerous islets lie on the S side of the approach between Isla El Blanco and Isla Costa.

Puerto Chacabuco—Berth Information

Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Size	
Puerto Chacabuco—Main Terminal					
Quay 1	65m	190.0m	9.6m	—	General cargo, containers, grains, bulk, cruise vessels, and livestock. Berthing length of 105m (including dolphins).
Quay 2	55m	—	7.6m	—	General cargo, containers, grains, bulk, cruise vessels, and livestock.
Ro-Ro/Ferry	44m	—	—	—	Ro-ro/lo-lo, passengers, containers, and bulk.
Local Ferry	—	—	—	—	Ro-ro/lo-lo and transshipment.
Oxxean—Terminal					
Pontoon NW	46m	—	—	—	Cruise vessels and breakbulk.

Puerto Chacabuco—Berth Information					
Berth	Length	Maximum Vessel			Remarks
		LOA	Draft	Size	
Pontoon SE	46m	—	—	—	Cruise vessels, fishing vessels, and breakbulk.
Pier NW	60m	—	—	—	Fast ferries and fishing vessels.
Pier SE	60m	—	—	—	Fast ferries and fishing vessels.
Terminal de Carga General					
Ro-Ro	49m	—	—	—	Ro-ro, lo-lo, passenger, and bulk.
Tanker Terminal					
SBM	—	120m	8.0m	61,500 dwt	Multipurpose and vegetable oil.

The fairway continues SSE between the E side of Isla Chaculay and Isla Carvallo, and then E into Seno Aisen (Fiordo Aysen) between Isla Elena and the mainland to the N.

Canal Pilcomayo has been only partially examined, but there is a least charted depth of 10.9m at the inner end of the channel between the N side of Isla Elena and the mainland. The narrowest parts of the channel are between Isla Costa and Isla Pilcomayo, and between the E end of Isla Elena and the mainland to the N where the channel is restricted to a width of about 0.3 mile.

The principal dangers are the foul ground that extends N from Isla El Blanco; above and below-water rocks that lie up to 0.2 mile W of the W extremity of Isla Pilcomayo; and rocks, submerged and awash, that lie 0.2 mile E and W of the S extremity of Isla Carvallo. A light is shown on the SW side of Isla Carvallo; another light is shown on the N side of the E end of Isla Elena. The tidal current attains a rate of up to 3 knots in this channel.

Large vessels can take anchorage, in 10.9 to 28m, off the entrance to Caleta Vidal, about 1 mile E of Isla Carvallo. An old landing pier and a white triangular daymark are situated near the NW entrance point of the cove.

7.80 **Canal Rodriguez** (45°19'S., 73°33'W.), entered from Canal de Moraleda, trends E and NE between Isla Chaculay and Isla Churrecue, and joins Canal Pilcimayo to the E of the former island. This channel is recommended only for small vessels.

Punta Rudolphy (45°18'S., 73°36'W.) is the W extremity of a peninsula that projects from the SW end of Isla Chaculay. Islote Sur, with a rock close off its N side, lies in the middle of the entrance about 1.3 miles SE of the point.

Paso del Medio leads between the mainland and Isla Churrecue and Isla Elena. The fairway is deep, but has not been completely examined and several islands and dangers lie in the channel. This channel is the one recommended for large vessels proceeding into Seno Aisen (Fiordo Aysen), because it is the widest of the approach channels to that inlet.

Isla Gutierrez (45°22'S., 73°36'W.) lies on the NW side of Paso del Medio. Vessels should not pass N of this island because of foul ground in the passage. Islote Gonzalez lies about 0.5 mile NNW of Isla Gutierrez, and a dangerous underwater rock lies about 0.5 mile farther to the W.

Isla Casma lies on the S side of Paso del Medio. A detached submerged rock, with 1.8m over it, lies about 0.8 mile N of the W extremity of the island. Islote Rodriguez, with several above and below-water rocks, lies up to 0.7 mile S of the SE point of Isla Churrecue.

Isla Colorado (45°21'S., 73°21'W.) lies near the middle of the channel about 3 miles E of the SW point of Isla Elena and can be passed on either side.

Seno Aisen (Fiordo Aysen)

7.81 The inlet is deep, irregular, and clear of known dangers in the fairway, but not completely examined. It is from 1.5 to 3.5 miles wide. The Rio Aysen, 6 miles within the mouth of which Puerto Aysen is situated, is accessible only to small vessels of limited draft.

Los Cincos Hermanos (45°16'S., 73°16'W.), a group of islands and rocks, lies on the N side of the fairway about 4 miles within the entrance. Puerto Perez, an anchorage with 22 to 40m, is between the group and the shore to the N. This anchorage is not recommended because vessels must anchor too close to the shore and the shoreline is steep-to.

Punta Angosta is the NE end of a T-shaped peninsula that projects from the S shore and lies about 2 miles SSE of Los Cincos Hermanos. Islote Petizo lies close off the W end of the peninsula, and Islote Bonito lies 0.5 mile off the NW side of the peninsula.

Isla Carmen and Isla Partida, separated by a deep passage, lie at the head of the inlet and in a NE direction. Two islets lie close off the NE end of Isla Carmen.

Bahia Chacabuco (45°28'S., 72°50'W.) lies on the S side of the head of Fiordo Aysen and is entered between Punta Weste and Punta Soffia, 0.8 mile to the NE. The bay affords good anchorage to all classes of vessels. The bay is well-sheltered, but is affected by sudden squalls which blow from a ravine on the SW side of the bay. A light is shown on the S side of the approach to the bay, about 1.8 miles WSW of Punta Weste, and a lighted buoy is moored on the E side of the bay and marks the edge of a shoal.

A vessel reported that the only aid to navigation for approaching the bay was a single light. Anchorage was reported to be sparse, as the bay is deep, with the exception of a shelf extending 0.2 mile from shore near the bay's SW side.

7.82 **Puerto Chacabuco** (45°28'S., 72°50'W.) (World Port

Index No. 14197) lies on the E side of the bay. The bay offers excellent anchorage with depths up to 45m. Accommodations consist of two piers, a ro-ro berth, and offshore tanker terminals. Principal cargoes handled at this port are zinc concentrates, lead, wool, timber, cattle, frozen and fresh seafood, containers, petroleum products, and LNG.

Depths—Limitations.—Berthing facilities include two separate piers. Muelle No. 1 has one berth facing out to the bay, with a dolphin located SE of the berth. Vessel length is limited to 180m for this berth. Muelle No. 2, located close NW of Muelle No. 1, has three berths, with Berth No. 3 facing out to the bay and the other two adjoining at an angle and extending to the coast. Berthing limitations are listed in the table titled **Puerto Chacabuco—Berth Limitations**.

The ro-ro ramp is located S of Muelle No. 1 and is occasionally used by coastal ferries.

There are two offshore tanker terminals and one gas (LPG) terminal, located N of Muelle No. 2.

The tanker terminals are SBM type berths operated by COPEC and Esso/Shell (COMACO). The COPEC berth is limited to small tankers of 10,000 dwt or less, 110m in length, and a draft not to exceed 8m. The COMACO berth is limited to tankers of 40,000 dwt, 165m in length, and a draft not to exceed 6m. The LPG terminal is limited to vessels not to exceed 1,000 dwt, 165m in length, and 10m draft. All draft limitations at these terminals are for HW only.

Pilotage.—Pilotage is compulsory. Pilots are provided by Ancud. Vessels should report their ETA 24 hours prior to expected arrival. The pilot boards in the area bounded by the following positions:

a. 45°28'03"S, 72°50'18"W.
b. 45°28'03"S, 72°49'45"W.
c. 45°28'27"S, 72°49'45"W.
d. 45°28'27"S, 72°50'18"W.

Contact Information.—See table title **Puerto Chacabuco—Contact Information.**

Puerto Chacabuco—Contact Information	
Port Radio Station	
Call sign	CBP32 (Puerto Chacabuco Radio)
VHF	VHF channels 9, 14 and 16
RT Frequency	2182 kHz and 2738 kHz
MMSI	007250298
Harbormaster	
Telephone	56-67-2351450
Facsimile	56-67-2351458
E-mail	cpchacabuco@directemar.cl
Port Authority	
Telephone	56-67-2351198
E-mail	info@chacabucoport.cl
Web Site	www.chacabucoport.cl

Anchorage.—Good anchorage can be obtained SW portion of the bay, exposed to strong gusts of wind, mostly from the SW, in depths ranging from 30 to 40m, in good holding ground, mud. The best position is to anchor with Punta Weste bearing 337 at a range of 1 mile to minimize adverse effects from SW gales. Vessels should use ample cable due to sudden squalls that are possible in the area.

The Rio Aysen (Rio Aisen) flows into the head of Seno Aisen between low, swampy islands. The shoals which front the river entrance are reported to be advancing, but fluctuate with the seasonal outflow of the river. The channel across the shoals, for which pilotage is advised, proceeds through depths of less than 3m, and is unmarked. Tidal currents with rates of 3.5 knots are reported to exist here. It is reported that the river has silted and navigation for small craft with drafts up to 2.5m is only practicable as far as 4 miles within the entrance. Designated anchorages lie in Bahia Chacabuco, sheltered from the NW by Isla Carmen, as follows:

Puerto Chacabuco—Designated Anchorages		
Anchorage	**Position**	**Depth**
A	45°28.86'S, 72°50.05'W	14m
B	45°28.57'S, 72°50.03'W	30m
C	45°28.21'S, 72°50.06'W	75m
D	45°28.18'S, 72°49.55'W	70m
E	45°28.50'S, 72°49.59'W	40m
F	45°28.40'S, 72°49.82'W	55m

Caution.—A wreck lies in the bay close S of Punta Daniel. Less water than charted may exist near a bank at the mouth of a stream at the SW part of the bay. The bank extends toward Anchorages A and B.

Channels and Fjords South of Seno Aisen

7.83 The network of inner channels and fjords S of Canal de Moraleda and Seno Aisen have no commercial importance. Canal Errazuriz, a S extension of Canal de Moraleda, offers a navigable route to the sea via Canal Chacabuco, Canal Pulluche, and Boca Wickham. Some of the inner fjords have hardly been explored and the surveys are only of a reconnaissance nature. Pilotage is compulsory for foreign vessels proceeding into these waters. Although many of the channels are deep and navigable, dangers are known to exist and other unknown dangers may exist.

Canal Errazuriz trends about 17 miles SSW from the junction of Canal de Moraleda and Canal Darwin to Canal Chacalbuco. It leads generally between Isla Traiguen on the E side and Isla Luz and Isla Humos on the W side. Several smaller islands and dangers lie on both sides of the channel. Although the channel has been only partially examined, the fairway has a least width of about 0.5 mile and a least charted depth of 31.5m.

Islotes Quetros (45°28'S., 73°46'W.), a group of islets and rocks, lie close off the NE point of Isla Luz on the W side of the fairway at the N entrance of the channel. Isla Ballico and several adjacent islets lie on the E side of the channel about 5

Puerto Chacabuco

miles S of Islotes Quetros. Grupo Centro, three small islets, lie toward the middle of the channel, but on the E side of the fairway, about 1.3 miles W of the S end of Isla Ballico. A rock, awash and marked by kelp, lies about 0.5 mile SSE of the S of Grupo Centro.

A dangerous steep-to rock, awash and marked by kelp, lies on the E side of the channel a little less than 1 mile NW of the NW point of Isla Acuao.

7.84 Isla Acuao (45°38'S., 73°49'W.), with foul ground up to 0.5 mile off its SW side, lies on the E side of the channel close off the W side of Isla Traiguen, and about 3 miles SSW of Isla Ballico. Islote Ana and two small islets lie about 0.3 mile S of Isla Acuao.

Islote Lillian lies on the W side of the channel, close off the E side of Isla Humos. Shoals have been reported between Islote Lillian and Isla Humos, making this pass unnavigable. Islote Diego, on which a light is shown, lies close off the SE side of Islote Lillian. Two rocks, awash, lie close off the S end of Islote Lillian. Roca Gloria, awash at low water and marked by a lighted beacon, lies about 0.5 mile NE of Islote Diego.

Cayo Observatorio, awash, lies about 0.2 mile S of Punta Harchy (45°43'S., 73°53'W.). A number of rocks and shoal patches lie S and W of the cay and can best be seen on the chart. Anchorage can be taken in Bahia Harchy, about 1.3 miles W of Punta Harchy, in a depth of 20.1m. This anchorage is not recommended, as there are many dangers in the approach, and the bay is exposed to S and SW winds which blow with great force.

7.85 Estuario Barros Arana (45°52'S., 73°55'W.) has a long irregular channel that is entered from Canal Chacabuco through Canal Renjifo. The channel is only partly explored and known only to local lumbermen who report it as deep. South of Isla Fitz Roy (45°50'S., 74°00'W.) the channel opens with several islands with rocks close off their shores on the W side of

Estuario Barros Arana.

Paso Tres Cruces is the E part of Canal Chacabuco, which trends SE from its junction with Canal Errazuriz and joins Canal Elefantes E of Isla Simpson. In Paso Tres Cruces, the tidal current attains rates of from 4 to 5 knots. There are tide rips on the SW side of the passage.

There are depths of 8.5m, 1.8 miles WNW and 0.5 mile W of the W end of Isla Paty; the latter position is on the recommended track. There are depths of 13.1m on the recommended track, 0.6 mile W and 0.9 mile NW of Islote Norte (45°46'S., 73°46'W.).

Anchorage can be taken, in 18.3 to 37m, in the outer part of Bahia San Ramon. This bay is entered from the SW between Isla Paty and Isla Rojas. Small vessels can anchor in Puerto San Miguel, a small cove that indents the SE end of Isla Rojas, but there are several dangers near this anchorage.

Paso Casma (45°25'S., 73°37'W.) is about 1 mile wide and deep in its middle part. It joins the S end of Canal de Moraleda with Canal Costa and trends SE between Isla Lavin (45°25'S., 73°36'W.) and Isla Renaico, about 1 mile SW of Isla Lavin. Bajo Casma, with less than 1.8m over it and marked by kelp, lies about 0.7 mile ESE of Isla Lavin.

Canal Costa is about 20 miles long with a least width of about 1.5 miles. It is clear of known dangers except at its S entrance. The least charted depth in the fairway is 42m. The channel separates Isla Traiguen from the mainland E. Isla Raimapu lies at the S entrance of the channel.

7.86 Estero Quetralco (45°43'S., 73°25'W.), an unsurveyed inlet, recedes about 18 miles to the NE between Punta Lynch (45°47'S., 73°34'W.) and a point about 3 miles SE. Several islands lie at the head of the inlet where it divides into two arms. A wooden pier and a flagstaff are situated at a small village which stands on the E shore of the inlet, at the mouth of a river, about 4.8 miles ENE of Punta Lynch.

Estuario Elefantes trends about 47 miles S from the S end of Canal Costa to Golfo Elefantes, the head of the inlet. The entrance to the gulf is through Paso Quesahuen, a narrow passage about 0.3 mile wide between the islets that restrict the entrance. From the entrance to Estuario Elefantes to Paso Quesahuen, the fairway is deep and clear of known dangers in mid-channel, except for Islotes los Mogotes and Bajo Porvenir.

Islotes los Mogotes (45°57'S., 73°39'W.) comprise a number of islets and rocks on the W side of the N part of Estuario Elefantes. Shoals, with depths of 4m and 12.7m, lie 3 and 4.5 miles SSW, respectively, of Punta Garrao (46°20'S., 73°40'W.). This point is the N entrance point of Estuario Francisco, a deep narrow fjord that leads 24 miles NNE of its entrance. A 3.9m patch lies 3 miles SW of Punta Garrao and it is close E of the recommended route.

Paso Quesahuen (46°24'S., 73°46'W.), with a least fairway depth of 9.1m, trends SW between Isla Leanor on the W side of the passage and Islote Pelado, about 0.5 mile SSW of the E end of Isla Leanor. The tidal currents in the passage attain rates of 5 to 7 knots at springs. The passage should only be used by small vessels with local knowledge.

Golfo Elefantes is entered from Paso Quesahuen, its N extremity. The gulf is deep and clear of dangers. Caleta Gualas, a cove on the E side of the gulf, is restricted by unmarked shoals that extend into its entrance from both entrance points. A river flows into the head of the cove. The cove has a muddy bottom, but cannot be recommended as an anchorage.

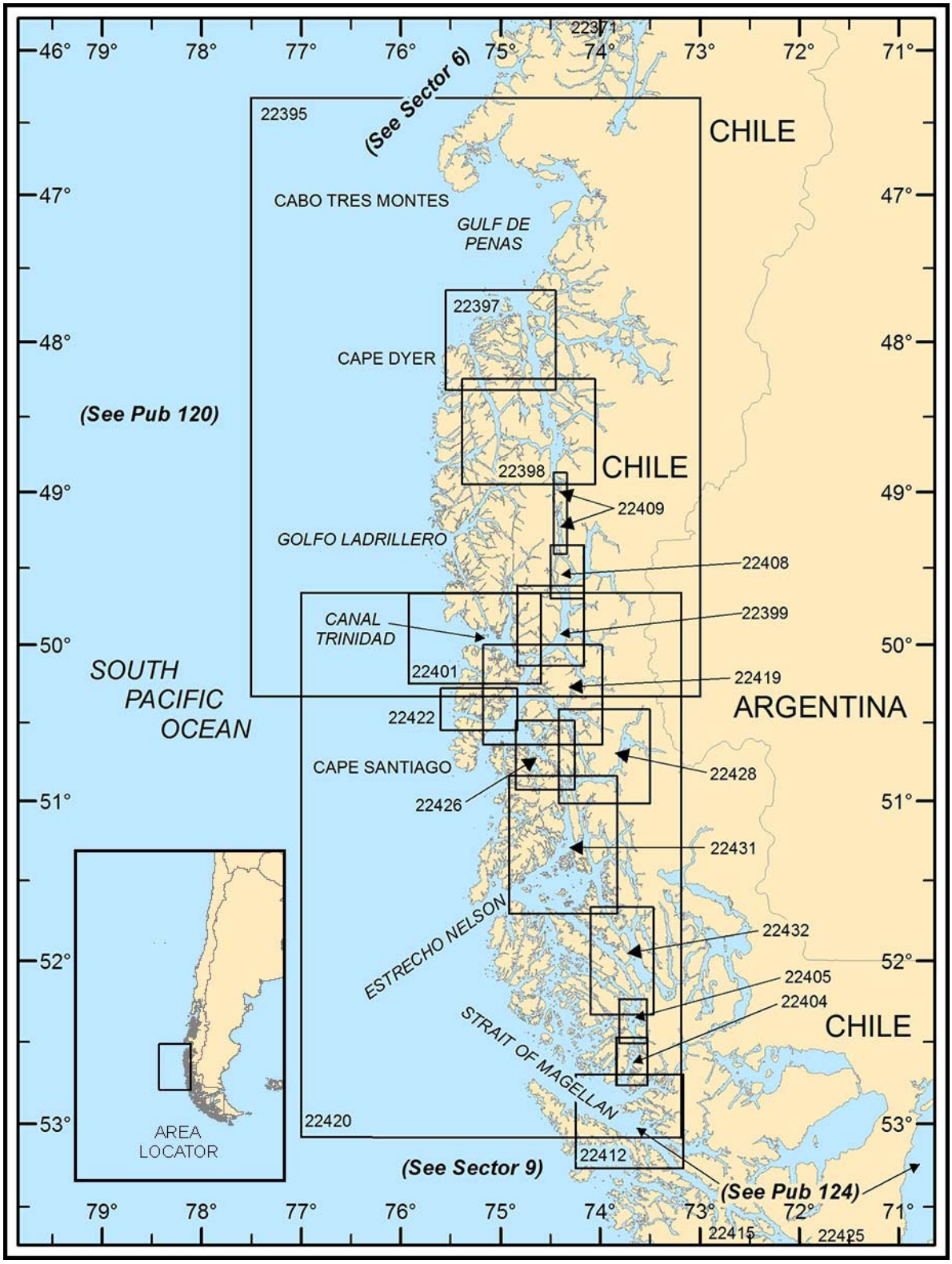
Small vessels can take anchorage in a number of places in Estuario Elefantes. Temporary anchorage can be taken, in 26m, about 0.3 mile S of Isla Raimapu. A vessel can anchor in a small bay just S of Islotes los Mogotes, in 14.6m. Anchorage can be taken in the NW part of Bahia Exploradores, about 0.5 mile offshore. This bay is entered on the E side of Estuario Francisco, about 6 miles ENE of Punta Garreo. Vessels also take anchorage in Puerto Grosse, at the head of Estuario Francisco, in 23.8m, but may be obstructed by floating logs from the local sawmills. Anchorage can also be taken in Fond Pinto, on the SW side of Golfo Elefantes, in 59m, close offshore.

Anchorage, with good shelter, can be taken, in 29.3m, in an inlet entered on the E side of Estuario Elefantes, about 7.8 miles S of Isla Raimapu. A police station with a radio is reported to lie within the inlet.

7.87 Bahia San Rafael (43°33'S., 73°48'W.), most of which dries, is the inner part of Golfo Elefantes and is separated from it by a peninsula that extends SE from the W shore. The Rio Tampanos, from 0.1 to 0.2 mile wide and with a depth of 8.2 to 14.6m, flows into the SW end of the bay and connects it with Laguna San Rafael about 5 miles to the S. Small vessels, with drafts up to 4m, can navigate the river with the aid of local pilots from Aysen or Puerto Aguirre. Icebergs from the glacier on the E side of the lagoon are carried down the river by the strong tidal currents. They can best be avoided by entering the channel on the flood tide.

The intricate channel through Bahia San Rafael is entered between Islote Entrada and Islote Direccion, which lies 0.1 mile and 0.5 mile S, respectively, of Punta Leopardos, the outer end of the peninsula. The channel then trends NW and SW between the shore banks to the river mouth. The fairway passes N of Isolote Observacion, about 0.5 mile WNW of Punta Leopardos, and then turns to the SW.

The best anchorage in Bahia San Rafael is W and about midway between Islote Entrada and Islote Direccion. Anchorage can be taken, in 5.5 to 11m, hard mud. A vessel should anchor as close to shore as depths permit in order to avoid the full strength of the tidal current and the track of the drifting ice. The channel through the Rio Tempanos into Lagoon San Rafael should not be attempted without local knowledge.



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

SECTOR **8** — CHART INFORMATION

SECTOR 8

CHILE—CABO TRES MONTES TO ESTRECHO DE MAGALLANES, INCLUDING THE PATAGONIAN CHANNELS

Plan.—This sector describes the coast from Cabo Tres Montes, including Golfo Tres Montes, S to the W entrance of Estrecho de Magallanes, and the inner waters and channels from Golfo de Penas S to the S entrance of Canal Smyth.

General Remarks

8.1 See Pub. 124, Sailing Directions (Enroute) East Coast of South America for a description of the approaches to, and the waters of, Estrecho de Magallanes.

The SW coast of Chile, between Golfo de Penas and the Magellan Strait, is fronted by a succession of islands of considerable extent, between which are good navigable channels affording a smooth water route of about 300 miles. These channels are known as the Patagonian Channels.

This route is mostly used by vessels desiring to avoid the heavy seas and bad weather so often experienced on passing into the Pacific from the W end of Estrecho de Magallanes.

Most large high-powered vessels use the ocean routes between points, but smaller low-powered vessels find the Patagonian channels the best route to avoid weather. With care, the larger vessels can also use these channels.

In no case are these channels more than 5 miles wide, the average width being about 1.5 miles. In Canal Mayne, the navigable width is reduced to 0.2 mile and in Guia Narrows the width is about 0.3 mile wide, but navigation of these presents no difficulty or danger for larger vessels.

The charted route to be followed through the Patagonian channels is Messier Channel, English Narrows, Grappler Reach, Wide Channel, Concepcion Channel, Inocentes Channel, Guia Narrows, Sarmiento Channel, Victory Pass, Canal Mayne or Canal Gray, and Canal Smyth.

Winds—Weather.—Except where an opening occurs, the true wind is rarely felt, but it is forced by the high mountains into a kind of funnel, up or down into which it always blows. The prevailing wind is from the N, and sometimes blows with great fury, but in so confined a space there is never any sea sufficiently high to be dangerous to a vessel or even a boat. The principal feature in the weather here is not the strength of the wind, but the almost perpetual rain.

Day after day, there is this steady downfall, unless the vessel is so fortunate as to arrive in one of those rare breaks of fine weather which sometimes occur. Then it will seem as if this is one of the most interesting of navigable waters, with smooth sea, well-sheltered anchorages, and surrounded by the most glorious scenery.

As far as the rain is concerned, one season is as bad as another, but the warmth and length of daylight in the summer render that season far better for such navigation.

In these narrow channels, during the squalls which frequently occur, sharp hailstorms and snow flurries will be felt, even in summer.

In many of the countless narrow passages the wind follows the run of the passage, and has therefore only two possible directions. It may be reversed abruptly when there has been a large shift of wind direction over the open sea.

The most dangerous winds are the violent and unpredictable squalls. The occurrence of one or more of these in succession from the same direction is no indication that the next will not be from some widely different direction. Moreover, of two possible anchorages a few miles apart, the more open may well be the less subject to these squalls. These squalls, unlike most of the squalls which occur in tropical and temperate regions, depend largely, if not entirely, on the existence of strong winds or gales at sea or at a height of several thousand meters over the land. These strong winds generally prevail over an area of several thousand square miles. As they strike the rugged mountains of the archipelagos, they set up eddies of varying size and intensity. In a sheltered inlet, even where the general slope of the ground is fairly regular, the wind often changes greatly in speed and direction from minute to minute; such changes are generally due to circular eddies of distant origin. The strong high-level winds occasionally disappear for a few days when an anticyclone forms, and there is then a little respite from the violent squalls; but near the W coast the return to normal weather may be very sudden.

Ice.—There is little evidence of icebergs of Antarctic origin being encountered in the channels and inlets of Patagonia, and most of them are ice free throughout the year. There are, however, a number of glaciers which occupy the valleys at the heads of some of the more landlocked inlets. Most of these do not reach the sea, but some affect certain channels from time to time, and will be identified in the text. Ice is frequently met within Canal Wide.

Tides—Currents.—Local tidal and current features will be described in the text.

Depths—Limitations.—Generally, the Patagonian Channels are limited to vessels up to 50,000 gt and 220m in length.

The maximum permitted draft of vessels using Canal Mayne at LW is 7.3m.

Canal Gray, the alternative channel to Canal Mayne, can accommodate vessels up to 10.7m draft. Pilots for the channel are reportedly able to handle vessels up to 230m in length at their discretion, depending on tidal and weather conditions. If transit through Canal Gray is chosen, see paragraph 8.39 for regulations that must be followed before and during the transit.

Angostura Inglesa is limited to vessels with a maximum length of 150m. If transiting Angostura Inglesa, see paragraph 8.73 for regulations that must be followed before and during the transit.

It is reported that vessels up to 240m in length and drafts up to 11m can use Canal Trinidad.

Pilotage.—Pilots for the Patagonian Channels are obtained at Valparaiso and Punta Arenas. Pilotage for all foreign vessels

Magellan Strait

entering Chilean ports or navigating Chilean channels is compulsory.

Regulations.—See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for details on regulations pertaining to vessels in Chilean waters.

Patagonian Channels regulations for passing certain obstructions or stretches of the channel will be given with the description of the relevant feature the regulations apply to.

Upon approaching Canal Gray or Angostura Guia in good visibility, vessels should sound one prolonged blast.

A southbound vessel should on hearing the sound signal, or on confirming the presence of a northbound vessel, wait until the northbound vessel has passed.

In inclement or foggy weather and at night, vessels should maintain a listening watch on 500 kHz 1 hour before arrival, broadcasting their ETA at 10-minute intervals.

On sighting another vessel, contact should be made by VHF. If contact cannot be established, a watch should be maintained on 2182 kHz.

Caution.—As there has been no complete survey of the channels between Estrecho de Magallanes and the Golfo de Penas, the navigator is cautioned that, although the charts and directions may be considered sufficient guides by daylight, he must not trust too implicitly in them during thick weather, as in some instances the bearing from headland to headland are not strictly accurate, and the buoys and beacons are not to be depended on.

Golfo de Penas

8.2 The mouth of Golfo de Penas lies between Cabo Tres Montes, the N entrance point, and Archipielago Guayaneco, 42 miles to the S. From its mouth the gulf recedes to the E for about 50 miles. There are many inlets and sounds in the gulf, but a large part of its shores are unsurveyed. The Patagonian Channels open into the S part of Golfo de Penas.

Caution.—Great care is necessary when navigating in the vicinity of the gulf, as a strong E set is experienced here. Winds of great force, which raise a very heavy sea, must be dealt with.

Golfo de Penas—North Shore

8.3 **Cabo Tres Montes** (46°59'S., 75°26'W.), the S extremity of Peninsula Tres Montes, has been previously described in paragraph 6.44.

Cabo Stokes lies about 9 miles NE of Cabo Tres Montes and is the W entrance point of Golfo Tres Montes. The cape is rugged and dark in color. There are some above-water rocks near the cape and foul ground extends out about 0.3 mile from the cape. Good anchorage is afforded in Surgidero Stokes, 1.3 miles N of Cabo Stokes, 0.3 mile off the head of a small bay, in a depth of 22m. A shoal, with a depth of 4.7m, lies about 0.3 mile SSW of the berth.

Emergency anchorage, in a depth of 36m, may be obtained about 0.5 mile off the head of a sandy cove situated 2.5 miles N of Surgidero Stokes. This appears to be a better anchorage than Surgidero Stokes, but the cove has not been examined.

Golfo Tres Montes (46°50'S., 75°00'W.) is entered between Cabo Stokes and the SW extremity of Peninsula Forelius, 23 miles to the E. The shores of the gulf are very indented, and there are several inlets, flanked by high mountains. In the inner part of the gulf is Grupo Chaicayan, an extensive group of islands, islets, and rocks.

Puerto Barroso (46°50'S., 76°17'W.) lies on the SW side of Golfo Tres Montes, about 5 miles NNW of Cabo Stokes. Islotes Entrada and Roca Logan lie on the NE side of the entrance to Puerto Barroso. The harbor is perfectly safe and can be entered in the heaviest weather. Anchorage is available off a sandy beach on the harbor's W side, about 0.6 mile within the entrance, in depths of 18 to 20m, over a rocky bottom. Caution is advised when approaching this anchorage as extensive shoaling has been reported at this berth.

Nearly 2 miles within the entrance the port opens into a large and deep inlet, with two arms extending SW and SE 3.5 and 2 miles, respectively. Anchorage exists in nearly all parts of the inlet, with depths of from 37 to 55m in the W arm, except near the head, and 18.3 to 46m in the outer part of the E arm.

Tidal currents reach rates of 1 knot in the entrance and 3 knots in the basin.

8.4 Seno Hoppner (Fiordo Hoppner) lies in the NW corner of Golfo Tres Montes and is approached through Seno Holloway (Fiordo Holloway), and opens up W of Islas Marinas (Grupo Chaicayan) to a width of 5 miles. A deep inlet extends 7 miles to the SW of Seno Hoppner. Bajo Entrada, awash at times, lies S of the entrance to the inlet. Puerto Slight lies at the head of the inlet and affords anchorage, in a depth of about 28m, about 0.8 mile from the head. A second anchorage lies about 0.2 mile off the W shore, with a small pier bearing 206°, distant 0.4 mile, in a depth of 35m. It was reported the shoal at the head of the harbor was extending to the NE. A white signboard beacon stands on the W side of the harbor.

Islas Marinas (Grupo Chaicayan), in the NW part of Gulfo Tres Montes, extends 11 miles WNW from the SE end of Isla Crosslet, the largest of the islands, located 9.5 miles NE of Cabo Stokes. The islands can best be seen on the chart.

Seno Newman (46°32'S., 74°57'W.) lies in the NE part of Golfo Tres Montes. The inlet extends 13 miles NE between two ranges of wooded hills. The depths near the middle are too great for anchoring, but anchorage may be obtained near the shores. The inlet should not be entered without local knowledge.

Peninsula Forelius, 13 miles long and from 1.5 to 4 miles wide, forms the S shore of Bahia San Quentin. Peninsula Cirujano is connected to the E end of Peninsula Forelius by a sandy isthmus. Islas Purcell consist of one large island and several small ones. These islands are separated from the SW part of Peninsula Forelius by a deep channel 2 miles wide. Roca Tortuga lies in the middle of the channel.

8.5 **Golfo San Esteban** (46°57'S., 74°17'W.) is bordered on the S by San Javier Island, on the W by Isla Purcell, on the N by Peninsula Cirujano, and on the E by the mainland. A heavy surf breaks on the long sandy beach on the mainland, which curves around to the NW toward the entrance to the Rio San Tadeo.

Bahia San Quentin extends W for about 12 miles from the N part of Golfo San Esteban, between Peninsulas Forelius and Esmeralda. Seno Aldunate (Fiordo Aldunate) extends WNW for about 7 miles from the NE end of Bahia San Quentin. The shores of the bay are thickly wooded. Isla Arbolada lies in the middle of the entrance to the bay and can be passed on either side. Bajo San Quentin, in the middle of the W part of the bay, has depths of less than 10m and a least depth of 3m. The shoal consists of sand, shells, and pebbles. The bay affords good anchorage with moderate depths and good holding ground.

The **Rio San Tadeo** (46°45'S., 74°12'W.) flows into the NE side of the entrance to Bahia San Quentin, where it is divided into two mouths by Isla del Diablo. A sandy beach extends E and W of it for many miles, the land being low and marshy and covered with stumps of dead trees. The mouth of the river is obstructed by a bar on which the sea breaks heavily and which cannot be crossed even by small craft, except at HW in very good weather. Within the bar, the river has depths of 2 to 4m.

Isla del Diablo, forming the NW side of the entrance to the Rio San Tadeo, is very low. The W end of the island is only 1.8m high, while the eastern and greater part is made up of mud brought down by the river.

Golfo de Penas—East Shore

8.6 **Abra Kelly** (46°59'S., 74°07'W.), in the NE corner of Golfo de Penas, is entered between Punta Armando and Punta Blanca, 2.5 miles to the ENE. Within the entrance the inlet divides into two arms. The S arm whose entrance is 1.7 miles S of Punta Blanca is of little importance. The N arm, close NE of Punta Blanca, forms Bahia Kelly inside its entrance point. The best anchorage in the inlet is in Bahia Kelly, in a depth of 45m, with Punta Armando shut in by Punta Blanca. Ventisquero San Quentin, a large glacier N of the anchorage, is a good landmark.

Isla Javier (47°06'S., 74°24'W.), which is separated from the mainland by Canal Cheap, is 11 miles long and 5 miles wide. The island is of good height and thickly wooded. There are two anchorages on the E side of the island, Surgidero Javier to the N and Surgidero Ignacio to the S. Surgidero Javier is the better of the two, being secure from the prevailing winds, with a depth of 31m, 0.4 mile from the shore. The shores of these anchorages are bordered with kelp, and surf often renders the shore inaccessible for a landing.

Seno Jesuitas lies with its entrance 7 miles E of the S point of Isla Javier. Isla Maldonado, in the middle of the entrance to the sound, makes the passage on either side very narrow. The S passage is the wider and safest of the two. The sound should not be entered without local knowledge. The sound contains a number of long inlets, none of which are of any importance to the mariner. Anchorage may be obtained on the NW side of Estero Benito, in depths of 20 to 40m, 3.2 miles E of Punta Monaguillo. Small vessels can obtain anchorage in Puerto San Salvador, a cove on the S side of the entrance to Seno Jesuitas.

Boca de Canales (47°30'S., 74°30'W.), on the SE side of Golfo de Penas, runs in a SE direction for about 11 miles and then divides into two arms, one turning to the E for 15 miles and the other to the S for 11 miles. They are merely deep and narrow arms of the sea, running between steep-sided ranges of mountains. The shores are rocky, affording neither coves or bights for shelter. A number of islets, rocks, and shoals lie on both sides of the entrance to Boca de Canales, and can best be seen on the chart.

Golfo de Penas—South Shore

8.7 **Archipelago Guayaneco** consists of Isla Byron and Isla Wager, as well as many small islands, islets, and rocks. It extends 22 miles W to E, forming the S side of Gulfo de Penas.

Cabo Mogotes (47°44'S., 75°23'W.) is the W extremity of Isla Byron. Islets and rocks, both above and below-water, lie up to 3 miles off the island between the cape and the N end of the island, 12 miles ENE. Islote Medora, 2.5 miles N of Cabo Mogotes, is prominent from seaward.

Isla Wager lies close E of Isla Byron and can be identified by Monte Anson, which stands on the N side of the island, also by

Monte Wager near the middle of the island.

Paso Rundle (47°43'S., 75°05'W.) separates Isla Byron from Isla Wager, and leads SSE for 8 miles between these islands to Paso Sur Oeste. The channel is only 0.2 mile wide, but is clear of dangers except at the N entrance.

Bahia Tarn lies between Archipelago Guayaneco and Peninsula Larenas on the mainland, 6.5 miles to the E, and is described in paragraph 8.83.

Golfo de Penas to Golfo de Trinidad

8.8 **Paso Sur Oeste** separates Archipelago Guayaneco from Isla Juan Stuven. The SW part of the pass is obstructed by rocks, and at the S extremity of Isla Byron it is scarcely 1 mile wide. The channel, which has not been surveyed, is narrowed by islets, rocks, and shoals on both sides and the W end.

Cabo Bynoe (47°59'S., 75°18'W.), with the breakers and islands extending 5 miles from it, forms the NW entrance point of Canal Fallos. There is a clear narrow passage between the islands and the cape, but foul ground extends for nearly 3 miles to the NW of the islands.

Puerto Santa Barbara is situated about 5 miles WSW of Cabo Bynoe, and affords anchorage to small vessels. The anchorage is well-sheltered by Isla Breaksea, which lies close N. Local knowledge is necessary.

Roca Dundee (48°07'S., 75°41'W.), about 4 miles W of Cabo Dyer, the NW extremity of Isla Campana, is about 36m high and a good mark in the approach to Puerto Santa Barbara. There is a below-water rock, on which the sea always breaks, midway between Roca Dundee and Cabo Dyer.

Rocas Nimrod (48°24'S., 75°42'W.) lies 16 miles S of Roca Dundee. Puerto Nimrod, between Islote Torpedo and the coast of Isla Campana, affords anchorage to small vessels with local knowledge.

Canal Octubre is entered between Rocas Nimrod and Roca Promontorio, 4 miles to the SE. The channel trends E for 12 miles, thence S for 16 miles to Canal del Castillo. The W entrance to the canal is encumbered with rocks, but within there is a least depth of 11m in the fairway. The channel is tortuous and very narrow in places. Several inlets branch from the channel, but the area has not been fully explored and there are no known anchorages.

8.9 **Punta Conglomerada** (48°42'S., 75°38'W.) lies 16 miles S of the W entrance to Canal Octubre. Foul ground extends 5 miles NW and SW from the point. A narrow channel, entered close N of Punta Conglomerada, separates Isla Cabrales from Isla Patricio Lynch, it leads 17 miles to Canal Octubre. Monte Pardo is located 4 miles NNE of Punta Conglomerada.

Punta Dineley, the NW extremity of Isla Esmeralda, lies 12 miles S of Punta Conglomerada. Rocas Dineley lies at the outer end of foul ground which extends 4 miles NW from Punta Dineley. Bahia Dineley, the approach to Canal del Castillo from the W, lies between foul ground which extends E from Rocas Dineley for 5.5 miles to the S entrance point of Canal del Castillo, and foul ground extending 5 miles NW from the SW extremity of Isla Cabrales.

Canal del Castillo (48°45'S., 75°18'W.) is entered from the E end of Bahia Dineley and leads 25 miles ENE through the archipelago to Canal Fallos. The channel is clear of dangers, but the NE end is narrow. Local knowledge is necessary for navigating Canal del Castillo.

Canal Riquelme lies with its W entrance point about 10 miles S of Rocas Dyneley. The canal separates Isla Covadonga from the W part of Isla Esmeralda. It is entered 2 miles NNW of Cabo Colmillo, between foul ground extending 1 mile off the NW end of Isla Covadonga and foul ground which extends 3.5 miles W from the SW point of Isla Esmeralda. The channel joins Canal Covadonga 11 miles ESE of the entrance.

Canal Covadonga (49°05'S., 75°27'W.) is entered 4 miles SSW of the entrance to Canal Riquelme. The W part of the canal is encumbered with reefs and is very intricate as far as the SE end of Isla Covadonga, 8 miles E of the entrance. It should not be entered without local knowledge.

Isla Western lies 3.5 miles SSW of Cabo Colmillo (49°03'S., 75°42'W.), the W extremity of Isla Covadonga. The island is flat and bare. Rocks and breakers stretch 1.2 miles N and 1 mile W of Isla Western and from the NW end of an area of foul ground extending ESE to the coast and S to Roca Maipo. A detached rock, with a depth of less than 2m, lies 1.5 miles NNW of Isla Western.

Islote Montague (49°13'S., 75°40'W.) lies in foul ground about 8 miles SSE of Isla Western. It forms the N side of the W entrance point to Golfo Ladrillero.

8.10 Golfo Ladrillero is entered between the foul ground that extends 1.5 miles S from Islote Montague and Grupo Vorposten, 8 miles to the S. The gulf extends 8 miles E and is clear of dangers, except those on each side of the entrance and the foul ground on the S side between Grupo Vorposten and Rompiente Stortebecker.

Canal Ladrillero is entered from Gulfo Ladrillero between Punta Piedras (49°16'S., 75°28'W.) and the NW extremity of Peninsula Wharton, 2.5 miles to the S. The canal trends NE for about 28 miles to Paso The Knick, which connects to the S end of Canal Fallos. The depths in the fairway which lead past Isla Stubbenkammer, Isla Hansa, and Isla Staude are deep everywhere. The channel SE of these islands has not been surveyed. There are several inlets and smaller channels on both sides of Canal Ladrillero. A light and racon are shown from Punta Piedras.

Estero Desengano (49°21'S., 75°16'W.), on the SE side of Canal Ladrillero, extends SSE for about 15 miles. There is good anchorage at the head of the inlet for vessels with local knowledge, in a depth of 31m, mud. Estero Klippen, on the W side of the entrance to Estero Desengano, is narrow and encumbered with islets and rocks. SSE of Estero Klippen, four small inlets have been reported to afford anchorage to vessels of moderate size.

Punta Piramide lies 2 miles W of the N end of **Isla Stosch** (48°58'S., 75°18'W.). The point forms the S entrance point of the E entrance to Canal Covadonga, which joins Canal Riquelme and affords a good passage to the ocean.

8.11 **Canal Fallos** (48°20'S., 75°10'W.) is the continuation of Canal Ladrillero N of Paso The Knick (48°57'S., 75°00'W.). The channel trends N for 29 miles to Puerto Jasmund, on the E shore, and then NNW for 31 miles to Cabo Bynoe, the NW entrance point of the canal. The S part of the canal has a least width of about 1 mile and its N part about 2 miles. Canal Fallos

is deep throughout and is clear of dangers, except near the shore in places and at its N entrance.

This canal has the great disadvantage of not affording any anchorages near its N end to large vessels if meeting a NW gale when approaching Golfo de Penas. Within the canal there are many inlets and channels, some of which can be used by vessels of moderate size. The principal channels are Canal de Castillo, on the W side, and Canales Adalberto, Albatross, and Barbarossa, connecting with Canal Messier to the E. Many of the smaller channels and inlets have not been fully surveyed and should not be entered without local knowledge.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before commencing navigation in the Canal Fallos on VHF channel 70. DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SECURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Canal Fallos is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. The ETA of passing Paso The Knick (48°57"S., 75°00"W.).

Puerto Kaiser (48°43'S., 74°50'W.), on the SE side of Canal Erhardt, affords anchorage 0.3 mile wide near its head, in depths of 15 to 22m.

Puerto Grande, on the W side of Canal Fallos, is entered 5 miles N of the entrance to Canal del Castillo. The cove is quite spacious and sheltered, but during the predominant NW winds, violent squalls descend from three deep ravines at its head. The cove is very deep, but cannot be recommended as an anchorage.

Seno Cruz del Sur (48°30'S., 75°04'W.) is entered 2 miles N of Puerto Grande and has three arms branching S, W, and N, 1.5 mile within its entrance. Puerto Maldonado, at the head of the N arm, affords the best anchorage in Canal Fallos, with depths of 29 to 45m, mud. The anchorage is well-sheltered and easy of access. When approaching the anchorage keep nearer to the W shore, so as to avoid a reef which extends into the middle of the N arm from an inlet on the E side of its entrance. The S and W arms are useless to navigation, as their entrances are rocky and foul.

Puerto Escampavia is a cove 2.5 miles NNW of the entrance to Seno Cruz de Sur. It is well-sheltered from all except NE winds, but is a little more than 183m wide. Small craft can obtain anchorage near the W shore, in depths of 6 to 9m, sand and stone, protected by a rocky point.

Seno Mac-Vicar is entered S of Punta Saliente (48°23'S., 75°08'W.). Isla Nestor, close within the entrance, divides the inlet into two arms. Brazo Sur, the S arm, extends 4.5 miles SW with a width of about 0.3 mile. Puerto Sporer, at its head, affords anchorage to vessels with local knowledge, in a depth of 20m, mud. Brazo Norte, 2.5 miles long, is narrow and difficult to navigate.

8.12 Canal Miramar (49°34'S., 75°30'W.) is entered between Punta Baja and the foul ground off the SW side of Isla Taggart. Foul ground on both sides of the entrance reduces its width to about 0.2 mile. As the channel is intricate, it should only be entered by small craft with local knowledge. The channel trends E for about 6 miles and leads to the N end of Canal Picton. Puerto Nuevo is a small inlet in Isla Mornington near the E end of Canal Miramar and affords anchorage, in a depth of 27m, thick mud. The anchorage is best approached from Canal Picton.

Anchorage may also be obtained off the SE end of Isla Taggart, 5 miles NNW of Puerto Nuevo.

Cabo Pakenham, the NW extremity of Isla Mornington, lies about 5.5 miles SW of Punta Baja. Pico Spartan stands 3 miles ESE of Cabo Pakenham and is very prominent from seaward. Foul ground, showing breakers, extend 3 miles W from the cape. A rock, position doubtful and which breaks, lies 4.5 miles WSW of the cape.

Cabo Primero (49°52'S., 75°35'W.), the S extremity of Peninsula Corso of Isla Mornington, lies 12.5 miles S of Cabo Pakenham. The cape is a long low shelving point off which numerous islets and rocks extend 1.2 miles, there are breakers as much as 3.5 miles S and 4.2 miles ESE of the cape This vicinity is exceedingly dangerous and should be avoided. A light and racon are situated at the cape.

Golfo Trinidad—North and South Shores

8.13 Bahia Bossi (49°50'S., 75°26'W.) is entered between Cabo Primero and Cabo Gamboa, 10.5 miles to the E. The bay is shallow and encumbered with bare islets and rocks. During SW gales, breakers extend the whole distance across the bay. Several hills, tower-shaped and thickly wooded, rise from the shores of the bay.

A shoal, with a depth of 10.5m, lies 8 miles SE of Cabo Primero and is marked by AIS. Rocas Seal (49°55'S., 75°19'W.) are located about 3.5 miles S of Cabo Gamboa. The sea always breaks over three of the above-water rocks. A rock, which dries, lies 0.4 mile SE of Rocas Seal and a below-water rock lies 1 mile E. Two shoals, with depths of 9.7 and 18.3m, lie 2.4 and 1.4 miles W,respectively, of Rocas Seal; a shoal with depth of 15.5m lies close SE of the breakers. Rocas Seal can be passed on either side, but the S passage is wider and recommended.

A ridge extends across Golfo Trinidad at the W entrance to Canal Trinidad, but has not been thoroughly examined. The least charted depth of 26m lies 7 miles S of Cabo Primero and there are a number of extensive areas with depths of less than 30m.

The S shore, from the W entrance point to Cabo Hawksworth (50°05'S., 75°23'W.), is fronted by Rocas Vidette, consisting of many low islets and rocks, some of which lie nearly 3 miles offshore. Numerous breakers have been observed extending 3 miles NW of Cabo Rugged and probably some rocks remain to be charted. This part of the coast should not be approached within 5 to 6 miles.

Cabo Rugged (50°02'S., 75°23'W.) is a detached mass of rock, of a pyramidal form, at the base of Cerro Tudor. The cape is not easy to distinguish from W, but from S or N it appears as a round-topped island; it can be further identified by a peculiar

shoe-shaped mass of rock on the slope of Sierra Tudor. Pico Horn stands 1 mile E of Cabo Hawksworth and resembles a horn. It is very prominent from the NW.

Punta Tudor (50°00'S., 75°21'W.), the N extremity of Sierra Tudor, marks the S entrance to Canal Trinidad. The point is marked by a light situated on a glass reinforced tower, 4m in height standing on the point. The light is equipped with a racon and AIS equipment.

Canal Trinidad (49°59'S., 75°05'W.)

8.14 Canal Trinidad provides an exit to the Pacific Ocean for those vessels too long to pass through, or do not wish to wait for slack water at Angostura Inglesa. The canal trends ESE from Golfo Trinidad for about 19 miles and then SE for about 15 miles, where it intersects with Canal Concepcion. The canal is deep and free of dangers in the fairway. The S shore of the canal is bordered by high hills and mountains, and is indented by several inlets, most of which are deep. The N shore is comparatively low and wooded, but high hills rise 1 or 2 miles inland. Most dangers are marked by kelp, but this should not be relied on.

The weather and sea experienced in the approach to the canal are generally more moderate than farther S. Therefore, the canal offers a favorable alternative route to that through the W approach to Estrecho de Magallanes.

Canal Trinidad—North Side

8.15 **Puerto Alert** (49°52'S., 75°14'W.) is easy of access and affords good anchorage. The entrance to the inlet is easily identified by Punta Castle, a steep white limestone cliff, with a wooded summit. Roca Fairway is bare, rugged, and lies in the middle of the entrance. Rompientes Challenger is a group of rocks, above and below-water, and lie about 0.8 mile SW of Roca Fairway. Puerto Alert inlet consists of islets and rocks that can best be seen on the chart. A disused light structure stands near the middle of Roca Fairway.

Anchorage may be obtained in Puerto Alert, in depths of 20 to 42m, mud or sand, between Islote Knocker and Punta Currant, 1.7 miles to the NNW. A good berth for a large vessel is in a depth of 40m, mud, with Roca Fairway seen between Isla Knocker and Isla Button, bearing 162°, and the small islet 183m N of Punta Fielden, 1.7 miles NNW of Punta Castle, bearing 090°.

Fondeadero Mackerel, at the head of the inlet, is a good anchorage for small vessels, it has good holding ground, in depths of 20 to 30m, mud. The approach channel is narrow and tortuous, and is not recommended for vessels drawing more than 3.4m.

Islas Van lie 3.7 miles SSE of Roca Fairway and consists of a number of islets and rocks extending 1 mile N and 3 miles WNW. Vessels should not attempt to pass between the islets. Punta Sakkarah lies 2 miles N of Islas Van and is on the W side of the E entrance to Canal Picton.

Canal Picton (49°45'S., 75°12'W.)

8.16 The canal is entered from Canal Trinidad, E of Punta Sakkarah, the SE end of Isla Mornington. The canal extends 38 miles to Golfo Ladrillero and has an average width of 1 mile and is deep for the first 30 miles.

The E shore of the canal is bold and formed by Peninsula Wharton and several small islands. A number of inlets penetrate the peninsula. The W shore is also bold, with a few coves and Estero Payne, a small inlet, N of Isla Mornington. The canal should only be used by vessels with local knowledge.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before entering Canal Picton on VHF channel 70. DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group, through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SECURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Angostura Guia is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. ETA abeam Peligrosa Headland.

Paso Picton (49°26'S., 75°27'W.), the narrowest part of Canal Picton, has a least depth of 9m over a width of 0.1 mile. During W and NW winds, the passage should not be used by vessels drawing more than 7.6m.

Puerto Payne (49°42'S., 75°16'W.), off the entrance to Estero Payne, is sheltered from W winds and affords good anchorage out of the tidal currents. Hills on each side serve to identify the entrance. Estero Payne is generally shallow, and boats may ground in many parts on the W side of Canal Picton. Punta Verde, the N entrance point, is steep-to on its E side but has some rocks close S of it.

Anchorage is available, in a depth of 15m, sand and shells, with Punta Verde bearing 000°.

Puerto Beresford is in the N part of Bahia Beresford, on the E side of the canal. Anchorage may be obtained in the NE corner of the port, in depths of 10 to 12m, mud.

Canal Trinidad—North Side (continued)

8.17 **Islas Malaspina** (49°57'S., 75°01'W.) lies between the S entrance to Canal Picton and the entrance to Brazo del Norte, and consists of many islets and rocks extending 2 miles E and W. The S side is free of dangers and can be passed at a distance of 0.5 mile.

Brazo del Norte (Fiordo del Norte) is entered to the E of Islas Malaspina. The inlet extends 23 miles N, then 18 miles NE. On both sides of the inlet there are many deep arms, four of which offer anchorage to small vessels. There is anchorage 2 miles within the entrance to Seno Parque, which branches E 8 miles from the head of the inlet.

The E shore of Brazo del Norte is backed by lofty mountains and the W shore is low. Monte Catedral is a prominent peak on the E side of the inlet and is usually hidden by clouds, but in clear weather it is visible from Gulfo Trinidad.

Islitas Antonio (50°01'S., 74°52'W.) lies on the E side of the entrance to Brazo del Norte, and consists of a chain of rocks

and islets. Islotes Petley lie about 2.5 miles SSE of Islitas Antonio. Isla Burges lies about 2 miles ESE of Islotes Petley. The channel N of this island is not navigable.

Isla Topar divides the E entrance to Canal Trinidad into Paso Caffin and Paso Brassey. The shores of the island are free of dangers, except close off its N point and part of the NW coast. Bahia Loveless, on the W side of the island is deep, but open to the prevailing W wind. Paso Brassey leads N of Isla Topar and is deep with no known dangers. Paso Caffin leads S of Isla Topar and is also deep. Isla Medio shows a light from a tower, 8m high, on the W extremity of the island.

Canal Trinidad—South Side

8.18 Punta Brazo Ancho (50°09'S., 74°46'W.) is the NE extremity of Isla Madre de Dios, and borders on the S side of Paso Caffin. Monte Vereker is prominent and lies 1.2 miles to the NW. Islotes Mabel lies close off Punta Brazo Ancho.

Islotes Redbill lies 6 miles NW of Punta Brazo Ancho, and consists of a group of rocks and low islets off the entrance to Seno Delgado. There is foul ground between the islets, but the fairway N of them is free of dangers and they can be passed at a distance of 0.5 mile.

Seno Delgado (50°09'S., 74°51'W.) lies 2 miles SE of Punta Dinwoodie (50°04'S., 74°57'W.). The inlet can be identified by Cerro Pan de Azucar, 1 mile S of Punta Dinwoodie. The inlet is not suitable as an anchorage for vessels of moderate size.

Isla Pilot, 3 miles NW of Punta Dinwoodie, is one of the most prominent features in Canal Trinidad. The island is the largest and highest in the canal. Cabo Candelaria is the NE extremity of the island and appears as a conical hill, wooded at the base only.

Puerto del Morro (50°04'S., 75°01'W.) is an indentation on the E side of Isla Pilot and is fronted by Isla Grant. The harbor is about 1 mile long and from 0.1 to 0.2 mile wide; depths are from 11 to 34m over a bottom of mud. Though safe in fine weather, the anchorage is subject to squalls which blow with extreme violence in bad weather. The NE entrance, which is recommended, is 91m wide, with a least depth of 11m in the fairway. The most sheltered berth is in a depth of 24m, sand and rock, with the SW extremity of Isla Grant bearing 162° and the NW extremity bearing 058°.

Caleta Cockle, 3.8 mile S of Cabo Candelaria, is a snug anchorage for vessels up to 50m long and a 4.6m draft. It is largely free from the squalls experienced at Puerto del Morro. Local knowledge is required.

Islas Hernando (50°02'S., 75°05'W.), an island and a number of islets and rocks, lie in the entrance to Seno Lamero. The island has a remarkable square cleft in the summit and slopes down to a low projecting point on the N shore, which is free from off-lying dangers. A light, 6m high, is exhibited on the N point of the island. There is no anchorage between these islands.

Seno Lamero extends to the SE for about 7 miles and is used by boats only. Near the NW entrance are two conspicuous peaks, Monte Silvertop and Monte Graham, the former composed of limestone and the latter has a black summit.

8.19 Puerto Rosario (50°01'S., 75°09'W.) lies about 2 miles W of Seno Lamero and has general depths of 35 to 46m. The best anchorage is in 35m, with Punta Short bearing 297°, and the E extremity of Isla Baker bearing 038°. The space here is confined, but it is sheltered from furious squalls.

Seno Wolsey, about 4 miles W of Puerto Rosario, is a deep fjord 3 miles long in a S direction and about 0.5 mile wide. East of this inlet, 1.5 miles distant, is the entrance to Seno Cranmer. These inlets are connected on the SW side of Isla Latimer by a channel which has numerous islets and rocks in it. There is no ship passage between the two inlets and Seno Cranmer affords no anchorage. Seno Wolsey affords an indifferent anchorage, in depths of 16 to 31m, rock, among a number of islets and rocks at the NW end of the channel SW of Isla Latimer. This anchorage is subject to violent squalls and a bad holding ground.

Puerto Henry (50°00'S., 75°20'W.) is entered between Islotes Seymour and Islote Low, the E islet of Islotes Arragon, 0.7 mile to the WSW. The inlet is somewhat restricted and is only suitable as a temporary anchorage in good weather. During storms the squalls are severe and a heavy swell runs in.

Cabo Boleyn lies about 0.3 mile W of Islote Low. A light is shown from a tower, 8m high, standing on the cape. A racon is situated at the light tower.

Anchorage may be obtained, in depths of 13 to 25m, sand, with fair holding ground, 0.2 mile N of Punta Bluff, with Islote Low bearing 009°, distant 0.5 mile.

Golfo Trinidad to Bahia Salvacion

8.20 Estuario Barros Luco (Fiordo Barros Luco) (50°09'S., 75°17'W.) is entered between Islote Redonda (50°08'S., 75°25'W.) and Cabo Hawksworth, 3 miles NNE. It extends 13 miles ESE and is from 1 to 2 miles wide. The inlet is deep, with two good anchorages and several coves in its shores. When making the inlet, the first objects seen will be Cabo Rugged, Islotes Rugga, and Cabo Vertical with its conspicuous white cliffs. The inlet leads to a large bay in which lie the Islas of Ramon and Renato.

Grupo Fortunata lies 5.5 miles W of Estuario Barros Luco and consists of two small islets. Below-water rocks and foul ground extend 1.5 miles NNW from the islets.

Seno Desconocido (50°15'S., 75°24'W.) lies about 6.5 miles SSE of Grupo Fortunata. The inlet extends 2.5 miles to the E and consists of some above-water rocks in the middle of its inner part, which reduces the width of the channel to 183m.

Between Seno Desconocido and Cabo North, 9.5 miles to the S, the coast is steep and foul, and has not been completely surveyed. There are a number of below-water rocks and small islets up to 3 miles off it.

Canal Oeste is entered between Cabo North (Head) and Punta Sur, 5 miles S. Cabo North is the S extremity of Isla Tarlton, which extends 6 miles N, and is separated from the SW part of Isla Madre de Dios by a narrow channel that is unsurveyed. Islote Conejo (50°28'S., 75°28'W.) lies between Cabo North and Punta Sur. A reef, which breaks, extends 2.5 miles W and 4 miles NW from Islote Conejo.

Paso Metalero, the S approach channel to Canal Oeste, lies between Islote Conejo and Roca Camila. Paso Goleta, the N approach channel, lies between Islote Conejo and Cabo North. Vessels should only use the S channel when entering Canal Oeste.

Seno Eleuterio (50°22'S., 75°21'W.) extends 10 miles from Ca-

bo North and Isla Angel, 2.5 miles E. The inlet is very foul and unfit for navigation. The inlet connects with Seno Contreras through Bahia Corbeta Papudo, 5 miles within the entrance.

Seno Contreras is entered between the foul ground extending SE from Isla Angel and Islote Entrada, 0.7 mile SE. The inlet is about 10.5 miles long and free of dangers in the fairway. Islote Entrada shows a light. A beacon stands close off the N entrance point of a small inlet on the E side of Seno Contreras. Isla Guarello and Isla Angel form the S half of the W shore of the inlet.

It is reported that an aeronautical radiobeacon is situated on Isla Guarello.

Punta Garate, the NE extremity of Isla Guarello, lies 4.5 miles NNE of Islote Entrada. Islote Bascunan, 183m long, lies 1 mile ENE of Punta Garate. A light is shown from the S end of the islet.

Bahia Corbeta Papudo (50°22'S., 75°20'W.) is located on the N shore of Isla Guarello, about 2 miles WSW of Islote Bascunan Light. Range lights and beacons lead to the anchorage and a small concrete pier on the SW side of the bay.

8.21 Guarello Ore Terminal (50°22'S., 75°20'W.) is situated on the SW shore of Bahia Corbeta Papudo. The terminal is used by ore carriers loading limestone from a quarry nearby. The approach is through the outer part of Seno Contreras, then through Bahia Corbeta Papudo.

Vessels up to 200m in length and a 9.7m draft can be accommodated.

Winds from NW can make berthing difficult. Berthing and unberthing of vessels are not carried in winds above force 3.

Depths—Limitations.—The berth consists of a short concrete loading pier projecting from the shore, 780m WSW of Baliza Este. The tower of a loading appliance on the pier has a white stripe on the upper part of its base.

Three short concrete piers project from the shore 25m NW, 25m SE, and 55m SE of the loading pier, respectively. A hauling-off buoy lies 180m E of the loading pier. An underkeel clearance of at least 0.6m must be maintained during loading.

Pilotage.—Pilotage is compulsory. The pilot remains on board during loading. Tugs are not available. The terminal is equipped with VHF.

Anchorage.—The recommended anchorage for vessels waiting to berth at Guarello Ore Terminal is in depths of 25 to 50m, stones and pebbles, with Islote Bascunan Light bearing 073°, distant 0.4 mile. At this berth, vessels have ridden out NW winds of force 7 to 8 in safety.

Caution.—Grupo Guia is a chain of many small islets and below-water rocks. These islets lie close to the S edge of a large are of foul ground extending S from the N shore of Canal Oeste. A light is shown from Islote Guia.

8.22 Seno Palo (50°30'S., 75°16'W.) is the largest inlet on the S side of Canal Oeste, and is free of dangers. Near its head there is a landslide on the E side, where the inlet widens and depths increase to 40m. There is anchorage in the middle of the channel with the ends of the landslide bearing 056° and 108°, over a bottom of hard mud. The berth is well-sheltered from E and W winds and the swell does not reach it. The berth is used as a temporary anchorage for medium-sized vessels requiring shelter from bad weather in Canal Oeste.

Puerto Caracciolo (50°28'S., 75°11'W.) lies on the SW side of Isla Caracciolo. Anchorage may be obtained in the middle of Puerto Caracciolo, in a depth of 36m, gravel, 0.5 mile SE of Punta Santa Rosa, the NE extremity of Isla Santa Rosa. There is a second anchorage, in a depth of 25m, 0.1 mile ENE of Punta Santa Rosa.

Canal Pasaje is located on the N side of Canal Oeste, about 2.5 miles E of Puerto Caracciolo. The canal has not been surveyed, but is reported to be suitable for small craft. A shoal, with a depth of 12m, marked by kelp, lies in the middle of the entrance.

Canal Oeste, on its E end, is entered from Canal Concepcion, between Punta Anunciada and the S extremity of Isla Escribano. A light is shown from Punta Anunciada.

8.23 Cabo West Cliff (50°40'S., 75°31'W.) is located about 10 miles SSW of Punta Sur, the S entrance point to Canal Oeste. The cape is the W extremity of a promontory forming the N side of an inlet, at the head of which is Puerto Morales. The cape consists of a remarkable dark-colored cliff, the top of which is nearly level and a waterfall which is visible a fair distance.

Puerto Morales lies in an inlet 5 miles E of Cabo West Cliff. The entrance is bordered by dangers marked by breakers, and has a navigable width of 0.5 mile. Below-water rocks extend 0.5 mile from the N shore. Roca Negra, above-water, lies in the middle of the channel, 0.7 mile from the head of Puerto Morales. Vessels with local knowledge may obtain anchorage in the middle of Puerto Morales, with good holding ground, in a depth of 8m, mud, with Roca Negra bearing 308°, distant 0.3 mile. The swinging radius is 0.3 mile.

Islote Yunque (50°44'S., 75°28'W.) is located about 5 miles SSE of Cabo West Cliff. A rock, with a depth of less than 2m, lies 1.5 miles W of the islet. Foul ground extends 2 miles NW from the islet. Roca Sur, awash, is a detached rock lying 0.5 mile N of this foul ground. Breakers have been seen 1.5 miles SW of this rock.

Rocas Scout is a group of above-water rocks, on which the sea breaks with great violence, that lie about 6 miles SSW of Islote Yunque. It is common to see these rocks covered with seals.

8.24 Cabo Ladrillero (50°49'S., 75°19'W.) is the S extremity of Isla Duque de York and forms the N side of Bahia Salvacion and the W entrance to Canal Concepcion. The Cape lies in foul ground and should be given a wide berth.

Bahia Salvacion is exposed from the W and is encumbered by Roquerio Davila and other dangers. Canal Farrel is entered at the head of Bahia Salvacion, and separates Isla Farrel from Isla Hanover. It extends 10 miles E and is narrow in places. The canal then turns N for 14 miles, where it unites with Canal Inocentes Many arms and inlets branch off from Canal Farrel, but the whole area is unsurveyed.

Canal Concepcion is entered between Cabo Ladrillero and the S extremity of Isla Donas, 12 miles E. The S part of the canal separates the NW end of Archipielago de Hanover from Isla Duque de York and extends to Punta Anunciada, the E entrance point to Canal Oeste. The best anchorage in the S part of Canal Concepcion is Puerto Shergall, 6 miles NNE of Cabo. Ladrillero. The inlet can be identified by Isla Negra and Pico Shergall, 1.5 miles NW. The inlet is narrow and has a sharp

bend, and there are several dangers. The anchorage is near the head of the inlet, in a depth of 22m, mud, good holding ground.

Seno Francisco (50°35'S., 75°16'W.) is entered 6.5 miles N of Isla Negra, extending 5.5 miles to the NW. The inlet is reported to afford anchorages in a number of places over a bottom of mud. When entering it is necessary to keep the SW shore, in order to avoid shoals lying off the opposite shore. Local knowledge is required.

Bahia Salvacion to Estrecho Nelson

8.25 Isla Solar (51°00'S., 75°00'W.) lies with Punta Stokes, its SW extremity, 15 miles SE of Cabo Landrillero. Isla Aristides lies close NE of Isla Solar. Both these islands are high and barren and are separated from Isla Hanover by Canal Santas, which is narrow and foul. Foul ground extends 2 miles S from Isla Solar.

Canal Elena is entered 4 miles SE of Punta Stokes and extends 5.5 miles NE, thence 6 miles SW to join Canal Ignacio. Paso Anao, is the narrowest part of the canal and is free of dangers. Puerto Queto, on the N side of the canal 4 miles NE of the W entrance, affords anchorage to small vessels at the head of the small inlet.

Canal Ignacio is entered between Isla Solar and Isla White Horse, 9 miles to the SSW. The canal has a least width of 1 mile for the first 8 miles, but N of Isla Armonia it is narrow and intricate, making it impassable except for small craft.

Isla White Horse (51°09'S., 75°06'W.) lies on an extensive area of foul ground. The island is high on both ends and appears as two islands when seen from a distance. This is an excellent mark, visible from a distance of as much as 50 miles. On the E side of the island is a small cove which affords anchorage to small vessels with local knowledge, in a depth of 22m, sand, good shelter from all winds.

Canal Guadalupe is entered between the foul ground S of Isla White Horse and Isla Augusta, 2.3 miles S. The canal extends 7 miles ENE between Isla Dagnino and Isla Valenzuela. The canal continues E, separating Isla Armonia from Isla Jorge Montt, and connects with the N end of Canal Castro. Caleta Patos lies close within the W entrance of the canal and affords anchorage to small vessels with local knowledge, in a depth of 26m, sand and gravel.

8.26 Canal San Blas (51°14'S., 74°55'W.), between Isla Agustin and Isla Dangnino, is entered 1.5 miles E of Isla Augusta (51°15'S., 75°05'W.). The channel extends 6.5 miles E then turns SW and S, on the W side of Isla Jorge Montt, where it is narrow. The canal connects with Estrecho de Nelson E of Isla Diego de Almago. Paso Pascua connects Canal San Blas with Canal Guadalupe.

Isla Duncan lies 6 miles WSW of Isla White Horse. Isla Conica lies 0.5 mile S of Isla Duncan. Foul ground, over which the sea breaks in stormy weather, extends 1.5 mile SSE from Isla Conica.

Arrecife Cordillera, a reef with a depth of less than 2m, lies 8 miles NNW of Isla Duncan. The sea breaks violently over this isolated reef.

Punta Huemul (51°16'S., 75°07'W.) lies 6 miles S of Isla White Horse. Foul ground extends almost 2 miles off the N and W side of the point. The point forms the N extremity of Isla Diego de Almagro.

From Punta Huemul the coast of Isla Diego de Almagro trends 22 miles SSW to Cabo Santa Lucia. This stretch of coast should be given a wide berth, as foul ground extends up to 1 mile offshore.

Cabo Jorge (51°39'S., 75°17'W.) is the S extremity of Isla Diego de Almagro and forms the N entrance point of Estrecho de Nelson. Monte Lucia rises 3 miles N of the cape.

Estrecho de Nelson

8.27 Estrecho de Nelson (51°42'S., 75°07'W.) is entered between Cabo Jorge and Cabo Isabel, 12 miles SSE. The strait extends 44 miles ENE to Paso Tarleton, which leads to Canal Sarmiento. The strait is deep, and easy to access from the W, but vessels should keep N of its center.

The strait is reduced 15 miles within the entrance, to a width of 4.5 miles between Cabo Charlton, the N extremity of Isla Contreras, and Cabo Virtudes, the S extremity of Isla Virtudes. East of these capes the strait opens out into an extensive basin, divided into channels and passages by numerous islands, islets, and rocks. Estrecho de Nelson, especially its E part, is imperfectly charted and should be navigated with the utmost caution.

Estrecho de Nelson—South Shore

8.28 Rocas Bahamonde (51°45'S., 75°11'W.) lies in the entrance of Estrecho de Nelson, about 4 miles NNW of Cabo Isabel. It consists of three below-water rocks on a reef which extends 2 miles N. The rocks only break in bad weather. Roca Milward, with a depth of 2m, lies 2.5 miles NE of Rocas Bahamonde, and breaks in bad weather.

Canal Vidal Gormaz is entered 1 mile W of Punta Lucas (51°40'S., 74°55'W.). Islets and rocks extend 0.5 mile off the point. Seno Vargas is entered about 7.5 miles S of Punta Lucas. Caleta Torres, on the W side of Canal Vidal Gormaz, affords anchorage, in a depth of 30m, but is not recommended as the depths are great and the bottom is rocky. Caleta Lopez, on the W side of the narrow part of the canal, affords anchorage, in a depth of 28m, off its S side.

Canal Noqueira is entered 5 miles ESE of Cabo Charlton between some islets close off the NE end of Isla Contreas and Islotes Verdejo, 1.5 miles E. Puerto Cornejo, on the W side of the canal, is entered 1.5 miles SW of Isla Sombrero (51°43'S., 74°45'W.) and extends 2 miles SW. Roca Tinta lies in the entrance, but is well-marked by kelp. Anchorage may be obtained, in depths of 20 to 25m, with a prominent beach bearing 240° and Islote Ester bearing 025°. To reach the anchorage, pass 183m off Punta Octavo the S entrance point, and E of Islote Ester. The swinging radius is 0.3 mile and it is possible to lie to a single anchor.

Estrecho Nelson—North Shore

8.29 Puerto Diego de Almagro (51°36'S., 75°10'W.) is entered about 5 miles ENE of Cabo Jorge. It affords temporary anchorage for small vessels, but should only be used in good weather; local knowledge is required. The best berth is in the entrance, clear of a rock awash lying off the NE entrance point. The head of the harbor is encumbered with rocky islets.

Cabo Virtudes, 11 miles ENE of Cabo Carolina (51°38'S., 75°12'W.), is high and steep with some white patches on its lower part which can be seen from a considerable distance. Several above-water rocks lie on a bank, extending 0.5 mile SW of the cape.

Puerto Virtudes (51°31'S., 74°54'W.) lies on the E side of Isla Virtudes and is the best sheltered harbor in the area. The harbor is divided into three coves, with an anchorage in each one. The outer anchorage has a depth of 36m in its center. On the W side of the outer anchorage is a passage 137m wide, which has a depth of 22m. North of this anchorage is the inner cove, where small vessels can anchor, in a depth of 11m.

Estrecho de Nelson—East Part

8.30 **Grupo Lobos** (51°33'S., 74°44'W.) lies 5 to 12 miles E of Cabo Virtudes. The W and largest island of the group rises to a very prominent hill, which is easy to identify from a distance. A reef extends 1 mile W and N and 1.5 mile SW from this island, and is usually marked by breakers. Islas Cueri-Cueri lie 2.5 miles SE of Grupo Lobos.

Canal Uribe is entered from the N, about 12 miles ESE of Cabo Charlton. The entrance is about 2 miles wide between Cabo Dispatch (51°42'S., 74°31'W.) and Cabo MacPherson, the NE extremity of Isla Torres. The fairway is nearer Islas Rennel, and E of all the islets lying near mid-channel. Navigation of the channel is safe and easy, as the depths are considerable and the few dangers are mostly visible. Abra Honda is a small bay on the W side of Islas Rennel, 8 miles SSE of Cabo Dispatch. Small vessels can find anchorage in the bay on its N side. Canal Smyth, on the NE side of Islas Rennel, will be discussed beginning in paragraph 8.35.

Grupo Gomez Carreno (51°39'S., 74°19'W.) lies, with Isla Alfredo, the W islet, 6.7 miles NE of Cabo Dispatch. The group is separated from the islets and rocks off the W end of Isla Piazzi by Paso Heywood, a channel 1.5 miles wide. This channel should not be entered without local knowledge.

Islas Angelotti, 8.5 miles NE of Cabo Dispatch, are separated from Grupo Gomez Carreno SE by a channel 1.5 miles wide. An isolated rock lies 2.5 miles NNE of the islands. Islotes Sin Nombre lie 7 miles SW of Cabo Kendall (51°28'S., 74°07'W.), the S extremity of Isla Vancouver; 2.5 miles NE of these islets is Grupo Lopez, with Grupo Becerra 0.5 mile farther N. These three groups are surrounded by foul ground.

8.31 **Paso Tarleton** (51°28'S., 74°07'W.), between Cabo Kendall and Punta Oeste, leads into Canal Sarmiento. Islotes Loco form a small group 2.5 miles SSW of Cabo Kendall. There is a shoal 2.5 miles WSW of the cape. Surgidero Relief lies among some islets close off Isla Vancouver, 1.7 miles NW of Cabo Kendall.

Grupo Carmela lies 3.5 miles NE of Grupo Lobos. Midway between these groups is Islote Negro (51°29'S., 74°38'W.), which is black in color. Grupo Solari is separated from Grupo Carmela by Canal Elena, which has a least width of 1.2 miles. Monte Richard and Monte Coronel Madrid, on the two larger islands, are prominent.

Canal Castro (51°22'S., 74°28'W.) extends NE from the W end of Grupo Lobos for 25 miles to Paso Sharpes. The canal has a least width of 2 miles. The channel is very deep and a straight course can be steered throughout, however, caution should be used due to the imperfect nature of the survey. The N end of Canal Castro leads into the S end of Canal Esteban, between Isla del Medio and the NW extremity of Isla Vancouver.

Canal Esteban extends 25 miles from Isla del Medio to the NW end of Canal Sarmiento, and has a least width of 1 mile at the N end. The canal is reported to be deep and clear of dangers, but has not been surveyed. It should not be used without local knowledge.

Estrecho Nelson to Golfo Sarmiento

8.32 **Isla Beagle** (51°55'S., 75°08'W.) is a precipitous grayish-colored island, lying 5.5 miles S of Cabo Isabel. It can be seen at a distance of 10 miles. Rocks, with depths of less than 2m, marked by breakers, lie 3 miles WSW and 3.5 miles SW of the island. A group of above-water rocks lie 2 miles NNW of Isla Beagle.

Rompiente Styrer, on which there are breakers, lies 8.5 miles SSW of Isla Beagle. Roca Galicia are two above-water rocks, 4.2 miles SSE of Rompiente Styrer. Rocas Holborn, marked by breakers, lies 3 miles ESE of Roca Galicia.

A rock, position doubtful, with a depth of less than 2m, lies about 4 miles NW of Rompiente Styrer; this rock is the western most danger located between the entrances of Estrecho de Nelson and Estrecho de Magallanes.

Golfo Sarmiento (52°13'S., 75°00'W.) is entered between Cabo Brigstock (52°07'S., 75°00'W.) and Cabo Victoria, 10 miles SSE. A light with a racon is shown from Grupo Evangelistas (52°23'S., 75°06'W.) lying about 9.5 miles SW of Cabo Victoria. The gulf forms the approach to four channels, Canal Silva Varela, Canal Huemul, Canal Montt, and Canal Nogueira. Several below-water rocks lie in the entrance to the gulf and can best be seen on the chart.

Canal Silva Varela, with its NW end 1.2 miles NNE of Cabo Victoria, separates Isla Victoria from the W part of Isla Pacheco. The canal has breakers in its entrance and is almost useless to shipping. Canal Huemul, between the N side of Isla Pacheco and the SW end of Islas Chaigneau, is entered E of Islote Cantuaria. The canal is intricate and foul, and should be avoided.

Puerto Cholguas is entered 1.5 miles SSE of Islote Cantuaria and is deep. Vessels, with local knowledge, may obtain anchorage off the W shore, in a depth of 36m, sand and stones. There is a mooring buoy at the anchorage. It is advisable to moor.

Canal Montt (52°06'S., 74°41'W.) is entered 2 miles ENE of Islote Cantuaria. The center of the canal is free from dangers, except at the NE end where it is foul. Paso Nuevo is entered from the S end of Canal Montt and branches NE for 14 miles to join Canal Uribe.

Puerto Overend (52°08'S., 74°44'W.) lies on the SE part of Canal Montt. Vessels, with local knowledge, may obtain anchorage in the middle of the cove, in a depth of 16m, good holding ground. It is advised to moor with anchors laid in a N to S direction with 140m of cable out on each.

Note.—For details of the approaches to Estrecho de Magallanes, S of Golfo Sarmiento, see Pub. 124, Sailing Directions (Enroute) East Coast of South America.

Archipelago Reina Adelalida

8.33 Archipelago Reina Adelalida extends from Cabo Phil-

lip (52°45'S., 73°55'W.) for 76 miles NNW to Estrecho de Nelson. It is up to 45 miles wide and includes all the islands W of Canal Smyth. Four channels connect Canal Smyth with the interior of Archipielago Reina Adelalida, the principal of these being Canal Viel, entered 28 miles NNE of Cabo Phillip.

Isla Bordes (52°05'S., 74°21'W.) is high and wooded, and clear of dangers on its NE coast which is steep-to. Puerto Bordes, off the W side of the island, affords anchorage to vessels with local knowledge. The N end of the island forms the S side of Paso de la Golondrinas.

Canal Ballena is the fairway through Seno Ballena, from Paso de la Golondrinas to Canal Anita, which separates Isla Cornejo (52°16'S., 74°35'W.) from Isla Pacheco. Numerous islets and rocks make navigation difficult, but with caution is sufficiently safe for vessels. A triangular beacon stands on the summit of Isla Cornejo.

Canal Bertrand (52°20'S., 74°34'W.) extends about 8.5 miles from the E side of Isla Cornejo to the E side of Isla King where it joins Canal Esmeralda. The least width of Canal Bertrand is about 1 mile, but local knowledge is necessary for passage.

Canal Wilson trends parallel to Canal Bertrand, on the E side of the islets and rocks lying up to 2.5 miles E of Grupo Djenana (52°21'S., 74°30'W.) and close to the SE part of Isla Summer. The canal joins Canal Esmeralda 6 miles E of Paso Lamire. Canal Wilson has not been fully explored and should be avoided.

Canal O'Higgins (52°25'S., 74°04'W.) extends 7 miles WSW from Seno Membrillar, along the S coast of Isla Juan Guillermos, and NW of Isla Escobar. The canal is deep in the fairway, but has not been surveyed and should not be entered without local knowledge.

Seno Membrillar lies in the E entrance to Canal O'Higgins. Grupo Membrillar lies in the middle of the sound. Islita Estrella, the N islet of the group, is covered with vegetation, with no trees, and is a good landmark.

8.34 **Canal Pacheco** (52°14'S., 74°03'W.) separates Isla Barros Arana and Isla Pedro Montt from Isla Juan Guillermos. The canal is about 20 miles long and runs parallel to Canal Molinas and Canal Viel. Although generally deep, the canal should be navigated with great care, due to its narrowness and the existence of rocks. In Paso Juan Bravo it is only 160m wide, with a least depth of 13m. There is a constant SE flow through the channel.

Canal Virgenes is entered from the NE side of Canal Pacheco and separates Isla Barros Arana from Isla Pedro Montt. Only the NE part of the canal is navigable. Small boats use the SE part and have some difficulty due to the narrowness of the channel.

Canal Molinas (52°04'S., 74°14'W.) extends from the S end of Canal Uribe to Seno Enjambres, at the NW end of Canal Viel, a distance of about 19 miles. The narrowest part of the canal is NW of Seno Meteoro. The SE entrance, N of Punta Ceres, is 1.2 miles wide. There are no known dangers in the fairway. Paso Diana, in the N end of the canal, is the main passage to Canal Uribe and Canal Cutler.

Canal Viel extends from Seno Enjambres to Isla Orlebar, 12 miles SE. The fairway is deep and free of dangers. Rocks lying near the shores are invariably marked by kelp. Winds from the NW blow strongly through Canal Viel. Paso Toro, 2 miles N of the NW end of Canal Viel, enters into Canal Cutler. The pass is reported to be navigable, but is unsurveyed and should not be entered without local knowledge.

Canal Cutler (52°05'S., 74°00'W.) extends 30 miles SE between Paso Cutler and Isla Cutler. The channel is unsurveyed and completely unexplored, but is reported to have a least width of 45m at Angustura Bannen at the NW end.

Canal Smyth—South to North

8.35 Canal Smyth connects Estrecho de Magallanes with the E end of Estrecho de Nelson, and lies E and NE of Archipielago Reina Adelaida. The channel extends 45 miles N along the W side of Peninsula Munoz Gamero, from Islotes Fairway to the SW entrance of Paso Victoria, then it trends NW for 40 miles and is unsurveyed, separating Islas Rennell to the SW from Isla Hunter, Isla Taraba, Isla Palermo, and Isla Piazzi to the NE. Navigation is not normally authorized in the NW part of the canal. The local authority should be contacted for further information. When navigation is temporarily authorized, pilotage is mandatory.

Caution.—Chilean surveys have shown the chart of the area to be inaccurate in many places, therefore, caution is advised when navigating this channel.

Bahia Sholl (52°45'S., 73°53'W.) lies 1.5 miles NE of Cabo Phillip, the W entrance point of Canal Smyth. Pico Sainte Anne stands 1.5 miles N of the bay and is a conspicuous landmark for entering the bay. Anchorage is afforded in the NE part of the bay, but caution must be used to avoid rocks close S of the anchorage. Much of the bay is filled with kelp. There are rocks about 1.1 and 1.9 miles ESE and E, respectively, of Cabo Phillip. Local knowledge is required.

Islotes Fairway lies about 3.8 miles ENE of Bahia Sholl and consist of four islets. A light is shown from the W end of the largest islet. A light is shown on Isla Oscar, about 2 miles E of Islotes Fairway Light. A light is shown on an islet about 1.3 miles N of Islotes Fairway Light.

Roca Lynch (52°44'S., 73°47'W.), 0.5 mile NNE of Islotes Fairway Light, is awash and surrounded by kelp. A dangerous wreck lies close N of the rock. Rocks, also marked by kelp, with depths of 3m, lie from 0.3 mile N to 0.8 mile NE of Roca Lynch.

Puerto Profundo, on the W side of the channel, is entered S of Islote Carreta (52°41'S., 73°45'W.). The entrance is 0.3 mile, wide with patches of kelp. Anchorage may be obtained 0.5 mile inside the port, off the entrance to a lagoon, in depths of 54 to 64m. Two narrow inlets extend 2 miles SW and N from the anchorage; both are fronted by rocks.

Islas Viel (52°41'S., 73°42'W.) form a large group of islands, islets, and rocks on the E side of the channel, extending 6.5 miles NNE from Isla Oscar. The group is generally low and appear from the SW as one large island. The highest island is in the N part of the group.

8.36 Bahia Burgoyne, on the E side of the channel, is entered close S of Cabo Walker (52°37'S., 73°40'W.). A light is shown from Cabo Walker. The entrance is less than 183m wide, but the bay is easily accessible to vessels of moderate size. A shoal, with a depth of 2.7m, lies 0.1 mile ESE of Punta

Sudweste; a buoy marks the shoal.

Good anchorage may be obtained at the head of the bay, 0.7 mile from the entrance, in a depth of 32m. The berth is between a rock, 1m high, which lies off the N shore and an islet, 5m high, in the SE corner of the bay.

Isla Green (52°36'S., 73°41'W.) lies on the W side of the channel, 1.5 miles NNW of Cabo Wilson. This group of islands can be identified from the S by its green appearance against the barren background of Isla Renouard. A light is shown from an islet close E of Islas Green.

Bahia Pylades lies on the E side of the channel, abreast Islas Green. The bay affords anchorage off its S shore between two islands, in a depth of 29m. The bay is sheltered from all winds except those from the W.

Isla Renouard (52°34'S., 73°40'W.), about 1.5 miles NNE of Islas Green, is high, rugged, and barren. A light is shown from Punta Buckley, the E extremity of the island. Bahia Goods and Bahia North are coves on the W shore, 1 mile W of Isla Renouard. The two bays are suitable for small craft with local knowledge. The entrance to Bahia Goods is almost closed by rocks.

Paso Shoal (52°32'S., 73°38'W.) is that part of Canal Smyth which continues N for 7 miles from Punta Cecil, 1.5 miles NE of Cabo Walker on the E side, and Islas Green, 1.2 miles W on the W side. It leads, with three sharp bends and a least width of 0.3 mile, between a number of islets and rocks.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before commencing navigation in the Paso Shoal on VHF channel 70. DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SECURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Paso Shoal is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. The ETA of passing Punta George (52°31'45"S., 73°37'19"W.) and of passing Isla Shoal (52°32'56"S., 73°38'01"W.).

8.37 **Isla Shoal** (52°33'S., 73°38'W.) lies about 1.3 miles N of Punta Buckley Light. The E side of the island is foul and fringed with kelp. A beacon stands on the summit of the island. A light is shown from the W side of the island.

Grupo Adelaida, a chain of islets and rocks on the E side of the channel, lies about 1 mile NE of Isla Shoal. A wreck is stranded on one of the islets and can clearly be seen when approaching Paso Shoal from the N.

Isla Richards (52°31'S., 73°39'W.) lies on the W side of the channel with its SE extremity, Punta George, 1 mile NNE of Isla Shoal. The island is rugged, barren, and of grayish color. A light is shown from Punta George. To vessels approaching from the N, the two high hills on the island appear as two hummocks.

Islotes Shearwater, on the E side of the channel, lies 1 mile N of Islote Isabel (52°31'S., 73°37'W.). They are five islets with several rocks between them, some awash and some above-water. Roca Pearse, about 0.3 mile SW of Islotes Shearwater, shows a light. Roca Alert lies 0.7 mile N of Roca Pearse and is marked by a beacon.

Seno Aguila (52°30'S., 73°30'W.) is entered 1.7 miles E of Roca Alert. Caleta Amelia, at the head of the inlet, consists of two small coves 0.5 mile apart. Anchorage may be obtained in the N cove, in a depth of 8m. Estero Clapperton extends NNE from the entrance to Seno Aguila, but it has not been surveyed.

8.38 Bahia Retreat, on the W side of the channel, is entered 1.5 miles NNW of Cabo Colworth (52°29'S., 73°39'W.). The bay is well-sheltered, but the depths are too great for a good anchorage. A conspicuous white patch, close N of the bay, is visible from the N on the side of a hill near the shore. Islotes Sparkes lies in the entrance to the bay.

Caleta Tandy (52°25'S., 73°38'W.) lies on the E side of the channel, about 3.8 miles NNE of Bahia Retreat. Small vessels with local knowledge can obtain anchorage off the N shore of the cove. A beacon stands on the S side of the mouth of the cove. Islotes Connor lies 2.5 miles WNW of Caleta Tandy, and on the W side of the channel. The islets are dark in color and appear as stacks of hay. A light stands on the largest islet.

Cresta de Otter, a narrow ridge of sand and stones with some patches of kelp and depths of less than 35m, extends S 1.2 miles from Isla Cunningham and Isla Bedwell. Anchorage may be obtained on Cresta de Otter. Because of its size and accessibility, this is the best temporary anchorage for vessels in the area. The recommended berth is in depths from 12 to 13m, with Islote Pollo Light bearing 313°, distant about 0.7 mile. Although the bottom is rock, the holding ground is good.

Small vessels can anchor, in depths of less than 10m, on the bank extending S from Isla Cunningham.

8.39 **Islas Otter** (52°22'S., 73°40'W.) consists of five islands and several islets separating Canales Mayne and Gray at their S end. Isla Campbell, the highest, lies in the middle of the group. Foul ground, with a depth of 5m at its outer end, extends about 0.3 mile E from the N end of Isla Bedwell.

Caleta Otter, which is well-sheltered but confined, lies between Islas Cunningham and Bedwell. It affords good anchorage for small vessels just within the entrance, in depths of 10 to 16m, or near its head under the lee of Isla Campbell, in depths of 11 to 13m. When entering Caleta Otter, keep nearer to the SE side of Isla Cunningham until well inside the cove. When the islets between Islas Bedwell and Campbell are visible, steer for them and anchor when the NE end of Isla Cunningham is in line with the SW extremity of Isla Campbell.

Vessels then continue N through Canal Smyth by transiting either Canal Mayne or Canal Gray.

Recommended routes through Canal Mayne and Canal Gray are shown on the chart.

Canal Mayne is about 8 miles long and leads E of Islas Otter and Summer, though shallower than Canal Gray, it is preferred for vessel not drawing more than 6.7m.

Islote Bradbury, lies about 2 miles NE of Isla Bedwell and on the E side of Canal Mayne. A light is shown from the islet.

Isla Summer (52°20'S., 73°39'W.) lies 1.7 miles NW of Islote Bradbury, on the W side of Canal Mayne. Anchorage can

be found, in 20 to 25m, on the S side of Isla Summer between Isla Pemberton and Bajo Summer Sur. A lighted buoy is moored about 0.8 mile NE of the NE extremity of Isla Summer. Vessels should pass about 91m W of this buoy.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before commencing navigation in the Paso Summer (52°18'S., 73°39'W.) on VHF channel 70. DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SECURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Paso Summer is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. The ETA when abeam of Summer Shoal (52°19'04"S., 73°38'29"W.).

Roca Barrie, with a depth of 9m, lies on the W side of the fairway, about 0.8 mile WNW of Islote Bradbury and is marked by kelp.

Isla Larga is located on the E side of the N end of Canal Mayne. The island consists of a range of reddish hills, extending from the S point to about 0.8 mile from the N point. Isla Istmo lies close off the S end of the island. A vessel should not approach nearer than 0.8 mile off the island. A lighted buoy marks San Juan Shoal off the NW end of Isla Larga; vessels pass W of the buoy.

8.40 Puerto Munoz Gamero (52°20'S., 73°33'W.) is located in the inner part of Bahia Munoz Gamero, 2.5 miles E of Isla Istmo. The recommended anchorage is in a depth of 32m, sand and shells, 0.3 mile off the S shore, with Punta Herrera bearing 278°, distant 1 mile.

Ensenada Searle, on the N side of the harbor, is too foul and shallow to be of any use.

Canal Gray, which leads W of Islas Summer and Otter, offers a narrower and more intricate yet deeper passage than Canal Mayne. The channel, which has a least depth of 12.7m, is unlit and more tortuous than Canal Mayne. The kelp, which marks all the dangers, is only visible at slack water. The tidal currents are very strong in the channel, and in general follow the direction of the channel axis. Between Islas Hoskyn and Orlebar, a velocity as great as 5 knots has been noted. If transiting Canal Gray the following regulations must be adhered to.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before entering Canal Gray on VHF channel 70. DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SECURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Canal Gray is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. The ETA when abeam of Vereker SE Shoal (52°22'21"S., 73°41'59"W.).

Islas Vereker (52°22'S., 73°43'W.) lie on the W side of Canal Gray and consists of Isla Vereker Mayor and numerous islets and above-water rocks surrounded by kelp. A beacon stands on the SW extremity of Isla Vereker Mayor. The recommended track in the fairway of Canal Gray is well-marked by beacons on both sides.

Isla Orlebar (52°19'S., 73°43'W.) lies on the W side of the N end of Canal Gray. Three leading beacons are situated on the E side of the island. Anchorage may be obtained, in a depth of 55m, 0.4 mile ENE of the rear beacon. The anchorage is sheltered from the swell and W winds, and the holding ground is good.

Bajo Guacolda, with a least depth of 5.5m, marked by kelp which is only visible under favorable conditions, lies 0.5 mile E of the E side of Isla Orlebar. Roca Cutter lies 0.2 mile NW of Bajo Guacolda and is marked by kelp.

Canal Hernandez (52°18'S., 73°45'W.), W of Canal Gray, separates Isla Orlebar from Isla Pedro Montt. Only the N part of the canal has been surveyed. The S part is encumbered with dangers and should not be entered. Bahia Adriana, on the W side of Canal Hernandez, affords good anchorage to small vessels. The best anchorage is in 14m, with Roca Estacion shut in by Punta Tirsa bearing 045°.

8.41 Isla Baverstock (52°14'S., 73°44'W.) lies about 1.5 miles N of Isla Orlebar and forms the S entrance to Canal Viel and Canal Cutler. The island is 5 miles long with Monte Scherbakoff its highest point. A fair anchorage for small vessels may be obtained in Bahia Fortuna, in a depth of 13m, 183m W of the N extremity of Islote Low, situated on the SE side of Isla Baverstock.

Canal Viel, which has already been described in paragraph 8.34, branches NW from Canal Smyth and is entered N of Isla Orlebar. It separates Isla Pedro Montt from Isla Baverstock and Isla Munoz. The fairway is deep and free of dangers. Rocks lying near the shores are marked by kelp.

Isla Cutler (52°14'S., 73°40'W.) lies 1.2 miles E of the E extremity of Isla Baverstock, on the W side of Canal Smyth. Roca Simm, awash, and the two Islotes David lie close off the S and N ends, respectively, of the island. A light is shown on the SE end of the island.

Canal Cutler extends 30 miles NW to Paso Cutler. The canal lies NE of Isla Baverstock, Isla Munoz, Isla Huemul, and Isla Silva Renard, and SW of the larger island of Islas Rennel. The channel is unsurveyed and completely unexplored, and is reported to have a least width of 45m at Angustura Bannen at the NW end.

Cabo Palmer (52°13'S., 73°40'W.), the SE extremity of Islas Rennel, lies 1 mile N of Isla Cutler, on the W side of Canal Smyth. The cape is low and covered with trees and backed by high land. There are several flat-topped islets off the cape. Bahia Carnatic lies 2.5 miles E of Cabo Palmer and is incompletely surveyed and should be avoided.

Bahia Welcome, on the W side of Canal Smyth, is entered 3.7 miles NW of Cabo Palmer. Small vessels, with local knowledge, may obtain anchorage here, in a depth of 16m, about 0.4 mile SW of an islet on the N side of the entrance to the bay.

Bahia Isthmus lies on the E side of Canal Smyth, 3.5 miles NNE of Cabo Palmer. This small bay is one of the best anchorages in the vicinity, and is safe for large vessels. The best anchorage is in depths of 25 to 29m, in the inner part of the bay, but its width is only 0.1 mile. The dangers in the bay are marked by kelp and markers. When entering the bay, keep to the E of the markers and dangers where a clear channel 0.2 mile wide will be found.

Bahia Sandy (52°07'S., 73°41'W.), on the E side of Canal Smyth, is entered 3.5 miles NNW of Bahia Isthmus. A bank of kelp, with a depth of 7m, extends across the entrance E to W. Within the kelp there are depths of 36m, but the bay is not recommended for large vessels. Small vessels with local knowledge can anchor close S of the kelp.

Promontorio Stanley, 4 miles N of Bahia Sandy, projects 0.5 mile from Peninsula Zach to within 0.7 mile of Islas Rennel. A light is shown on a small islet close off the SW side of the promontory.

8.42 Paso Victoria (52°00'S., 73°43'W.) is entered 2 miles N of Promontorio Stanley and joins Canal Smyth to Estrecho Collingwood. This is part of the normal route followed by shipping bound N and S. At the S end of the pass Canal Smyth continues NW for 40 miles to join Estrecho de Nelson. This part of Canal Smyth is mainly unsurveyed.

Roca Bessel lies on the E side of the fairway in Paso Victoria. The rock is 3m high. A light stands on its summit.

Isla Brinkley (51°59'S., 73°41'W.) lies at the NE end of Paso Victoria and has a well-defined peak. The island is brownish in color and has a few small trees on it. A light is shown from Punta Cork, the W extremity of the island. Arrecife Cloyne lies 0.7 mile WNW of Punta Cork and is marked by a beacon and a light.

Seno Union extends 20 miles SE from Isla Brinkley and is 1.5 to 4 miles wide. Bajo Bordes (52°05'S., 73°31'W.) has a reported depth of 5.7m and lies 7 miles SE of Isla Brinkley. Roca Crater, with a depth of 5.5m, lies 1 mile ENE of Bajo Bordes.

Puerto Fontaine (52°03'S., 73°29'W.) lies 8.5 miles ESE of Isla Brinkley. Islote Rosaura, with a rock which dries close W, lies 0.1 mile E of the W entrance point. The cove, 0.4 mile wide, affords anchorage 0.2 mile NNE of Islote Rosaura, in a depth of 29m. The W side of the cove appears to be less deep than the E side and its head should not be approached closer than 0.1 mile. The cove affords temporary anchorage for vessels.

Bahia Oracion lies on the S side of Seno Union, 9.5 miles SSE of Isla Brinkley. Islotes Thomson lies 1.5 miles NE of Bahia Oracion. Cabo Ano Nuevo is located 2.5 miles E of Islotes Thomson.

8.43 Bahia Ano Nuevo (52°10'S., 73°32'W.) is entered 2.5 miles WSW of Cabo Ano Nuevo. The bay is about 3 miles long and 1.5 miles wide. The bottom is naturally level with a mean depth of 30m, soft black mud, and good holding ground. It is divided into two bays, E and W. The W bay affords anchorage to all size vessels. The E bay affords anchorage for small vessels. A fair amount of sea enters the bay from Seno Union during N and NW winds, but vessels will be well-sheltered if anchored near the W shore. There is little shelter from SW winds as the S shore is low.

Paso Sin Nombre is entered E of Cabo Earnest, 7 miles E of Cabo Ano Nuevo. The pass trends N for 2.5 miles and is 1 mile wide. There are two small coves on the E side of the pass. Bahia Leeward, close to the E entrance point has not been examined, but Caleta Whale Boat, situated 1 mile farther N, affords anchorage to small craft.

Estero de las Montanas (52°00'S., 73°18'W.) extends 30 miles N from Paso Sin Nombre, and is 0.5 to 2 miles wide. The inlet is bordered on both sides by steep mountains, covered with snow. At its N end are two bays, with sandy beaches, rising to the mountains 2 miles inland.

Canal Morla Vicuna leads from the N end of Paso Sin Nombre, 4 miles E, where it divides into Canal Santa Maria and Canal Kirke. The shores of the channel have not been surveyed, but there are no known dangers, although the tidal currents are strong.

8.44 Canal Santa Maria (52°00'S., 73°07'W.) and Canal White, its continuation, trend N and NE for 18 miles between Peninsula Roca and Isla Diego Portales. Both sides of the channel are high, steep, and thickly wooded. Canal Santa Maria is very deep, in places exceeding 275m, but Canal White is shallower. The channel is very liable to sudden heavy squalls, especially in summer, when Canal White is frequently a mass of spray.

Puerto Condell is a cove formed by the S side of Isla Margarita and the W shore of the S end of Canal Santa Maria. It provides excellent temporary anchorage for vessels up to 50m in length, and is often used by vessels waiting for the tide to slacken in Canal Kirke. The anchorage, which is easy to leave at night, is in a depth of 30m, 183m offshore in the NW corner of the cove.

Islote Fernandez and Islote Vial lie near mid-channel, 0.5 mile N of Isla Margarita. A rock, awash, lies close N of Islote Vial. Vessels should pass E of Islote Vial or W of Islote Fernandez, the latter passage being much wider and deeper.

Canal White (51°55'S., 73°00'W.) is much encumbered with islands and islets and can best be seen on the chart. Vessels transiting this channel should preferably be equipped with twin screws. This channel is not recommended for vessels over 1,000 gt. Many drifting icebergs have been reported in the channel. Vessels transiting the channel are also limited to a maximum length of 140m and a maximum draft of 7m. Transits should only be done in favorable weather conditions during daylight hours.

Pilotage is compulsory for all vessels navigating Canal White.

8.45 Canal Kirke leads ENE from the E end of Canal Morla Vicuna for 5 miles to the S end of Canal Valdes. The channel has a least navigable width of about 40m in Angostura Kirke at its E end. There are three groups of islands, 1 mile apart, in the E half of the channel. The fairway lies S of these islands and is clear of dangers except in the narrows. There are several anchorages for small vessels, with local knowledge, out of the tidal cur-

rents.Vessels up to 150m long, with a maximum beam of 23m and a maximum draft of 6.3m, can transit the narrows.

Canal Valdes (52°00'S., 72°57'W.) extends NNE from the E entrance of Canal Kirke for 10 miles to the SW end of Golfo Almirante Montt. The channel is deep and from 1 to 3 miles wide. The only known dangers are in the N part and are not more than 0.3 mile offshore. Peninsula Morgan lies 1.5 miles E of the entrance to Canal Kirke, with Punta Lavapie, its N extremity.

Bahia Ladrillero lies E of Peninsula Morgan. It affords a well-sheltered anchorage to small vessels, with local knowledge, in a depth of 6m, mud. Caleta Fog, on the W side of Canal Valdes, affords anchorage 3 miles NNW of Punta Lavapie (52°03'S., 72°57'W.).

Bahia Cameron (51°57'S., 72°56'W.), on the W side of Canal Valdes, is a cove 6 miles N of Punta Lavapie.

Bahia Easter is on the E side of the N end of Isla Diego Portales (51°55'S., 72°54'W.). Bajo de Afuera, with a depth of 3m, and marked by kelp, is S of several dangers in the entrance to the bay. Vessels, with local knowledge, can anchor in the SW part of Bahia Easter, in a depth of 12m, sand.

Caleta Estancia Montes (51°58'S., 72°52'W.) lies 6 miles NNE of Punta Lavapie and can be identified by several white houses which are the only buildings in the vicinity. There is a small wooden pier with a depth of 1m at the head. Small vessels can anchor off the pier, but are exposed to NW winds.

Estero Worsley extends from the NW part of Golfo Almirante Montt, 3 miles N of the entrance to Canal White. It extends 20 miles NW and is mostly unsurveyed. Isla Ballesteros is the largest of several islands in the inlet. Estero Resi branches 10 miles SW of this island. Seno Borcosky lies N of Estero Resi.

8.46 Golfo Almirante Montt (51°53'S., 72°40'W.) is entered from the W through either Canal White or Canal Valdes. It extends 15 miles E and is 5 miles wide. The W part of the gulf is deep, but there are moderate depths E of Isla Focus. Estero Obstruction leads S from the S side of the gulf, and Canal Senoret leads from its NE end into Estero Ultima Esperanza.

Islas Focus (51°55'S., 72°44'W.) is 114m high and steep on its W side, and is usually uninhabited. A rocky bank, with a depth of 4m over its outer edge, extends 2 miles ESE from the SE point of the island. This bank almost closes the passage between it and the mainland to the S and E. There are well-sheltered anchorages, for vessels with local knowledge, 0.3 mile E of Isla Focus, in a depth of 12m, or farther E, in a depth of 27m.

Bajo Virginia, with a depth of 7m, lies in the middle of the passage between Isla Focus and Isla Ismael, 1.2 miles to the N. A buoy is moored close E of the rock in the middle of Bajo Virginia.

Grupo Coruna (51°52'S., 72°45'W.), N of Isla Focus, consists of four islets extending 1.5 miles S from close N shore of the gulf. All the islets are steep-sided and rocky with some vegetation. Passage between the islets and between the group and the N shore should not be attempted.

8.47 Bahia Coruna (51°51'S., 72°44'W.) is protected from SW and NW winds, and affords anchorage for small vessels. A rock, with a depth of 1.5m, lies off the NE shore. The recommended berth is in depths of 18 to 20m, mud, SW of Bajo Nielson. Local knowledge is required.

Puerto Riquelme (51°50'S., 72°39'W.), on the N side of the gulf, is situated 4.5 miles NE of Isla Focus. The cove is reported not to be a good anchorage as vessels are liable to drag anchor when the wind exceeds 20 knots.

Caleta Delano, on the N side of the gulf, is entered W of Morro Jorge (51°50'S., 72°37'W.). The cove affords good anchorage to small vessels with local knowledge off the W side of Morro Jorge. The entrance should be approached with caution as foul ground, marked by kelp, extends S from the S entrance point and also SE from Morro Jorge.

Puerto Natales

Seno Obstruccion is entered 3 miles E of Punta Obstruccion (51°57'S., 72°49'W.). Grupo Escampavia, a chain of islets and

rocks, lie in the entrance to Seno Obstruccion and penetrates the middle of the inlet for 5 miles. The inlet is mostly unsurveyed, but there is an anchorage in a cove on the E side of the inlet, 6 miles within the entrance. There is anchorage in Caleta Dora, on the W side of the inlet, in a depth of 18m.

Puerto Lastarria (51°58'S., 72°37'W.), on the S side of the gulf, is entered between Punta Cuevas, 4.5 miles ESE of Isla Focus, and Punta Linacre, 1 mile farther ESE. The port affords the best anchorage in the gulf to vessels with local knowledge, in depths of 9 to 12m. There are, however, several shoals with depths of 5m in the fairway.

Puerto Demaistre is a cove on the E side of the gulf, 3.5 miles NNE of Punta Desengano (51°51'S., 72°32'W.). It affords a good, but unsheltered, anchorage to small vessels with local knowledge, in depths of 6 to 8m, mud.

8.48 Canal Senoret (51°43'S., 72°37'W.) is about 9 miles long and is entered between Punta Bordes (51°47'S., 72°34'W.), which is low, and the N entrance point of Puerto Demaistre. Islotes Cisnes are three low islets covered with vegetation. A light is shown on the E islet. A buoy marks the shoal water on the E side of the canal, 0.7 mile NE of Islotes Cisnes Light.

Punta Galpon lies on the E side of the Canal, about 2.5 miles NNE of Punta Bordes. It is easily distinguished by the corrugated iron warehouses which stand on it. Rodal Liberona, a bank which dries, extends 0.2 mile S from the point.

Puerto Natales (51°45'S., 72°32'W.) lies 0.5 mile NNE of Punta Galpon. The prevailing W and NW winds affect berthing and unberthing.

Puerto Natales Home Page
http://www.pnatales@epaustral.cl

Puerto Natales

Depths—Limitations.—The deepest and longest berth is Muelle Terminal Maritimo, a ro-ro pier. It is an L-shaped pier projecting 115m from Punta Galpon. The head of the pier is 32m long and 10m wide with a depth of 9m alongside. Vessels up to 135m in length and maximum draft of 8.2m can be accommodated. Three berthing dolphins lie off the S end of the pier. A mooring buoy, 0.1 mile SW of the pier, is for the use of ferries.

Muelle Arturo Prat, 133m N of Muelle Terminal Maritimo, is a T-headed pier projecting 108m from the shore at the end of the main street of the town. The pier has a berthing face 35m long and can be used by vessels drawing up to 4.26m. It is illuminated at night and a light is exhibited at its head. No cargo handling equipment is available. It is advisable for vessels to berth bows N. There are no mooring buoys at the berth.

Pilotage.—Pilotage is compulsory for vessels berthing alongside at Puerto Natales. The pilot boarding place is 0.4 mile ENE of Islotes Cisnes Light.

Tugs are not available.

Regulations.—The vessel's ETA should be initially sent 5 days prior arrival, then once every day thereafter at 0800 until arrival. The ETA message must contain the following information:

1. Confirm that all cargo gear is in proper working order.
2. If any cargo shifting is expected.
3. If there is dangerous cargo onboard.
4. Expected arrival draft.

Contact Information.—Port contact information can be found in the table titled **Puerto Natales—Contact Information**.

Puerto Natales—Contact Information	
Port Authority	
Telephone	56-61-271-1250
E-mail	info@epo.co.cl
Port—Port Radio	
VHF	VHF Channels 9, 14, and 16
Port Radio Call Sign	CBM22
RT Frequency (kHz)	2182 kHz and 2738 kHz
Telephone	56-61-241-1570
Facsimile	56-61-241-1570
MMSI	007250340
Harbormaster	
Telephone	56-61-241-1570
E-mail	cppuertonatales@directemar.cl

Anchorage.—Vessels awaiting a berth can anchor, in a depth of 30m, mud, in mid-channel NW of Muelle Arturo Prat.

8.49 Puerto Bories (Puerto Graseria) (51°43'S., 72°33'W.) lies 2 miles NNW of Puerto Natales. The port is the terminal for a large cold storage plant situated 2 miles NNW of Puerto Natales. The buildings of the plant are prominent.

Depths—Limitations.—The terminal consists of a 200m-long T-headed pier fronting the plant; the head of the pier is 60m in length and 9m wide, with depths of 7.72m at LW alongside the pier head. Vessels usually berthing starboard side-to, letting go both anchors. No cargo can be discharged at this pier and vessels must use their own gear for loading.

Pilotage.—Pilotage is compulsory for vessels berthing alongside. The pilot boarding place and contact information is all the same as Puerto Natales. See paragraph 8.48 for details.

Anchorage.—Anchorage, in depths of 10 to 12m, stones and mud, can be obtained 0.2 mile WNW of the head of the pier. The anchorage is completely exposed to the prevailing winds.

Estero Eberhardt extends 5.5 miles N from the NW end of Canal Senoret. It should only be entered by small vessels with local knowledge, as much of it is shallow. A bank, with depths of less than 5m, continues NW from Bajo Choros across the entrance to the inlet. There is a least depth of 3m E of Punta Jamon. The depths increase to 8m, 1 mile within the entrance.

Puerto Condor (51°40'S., 72°40'W.) lies on the E side of the entrance to Estero Eberhardt. It affords an anchorage, in a depth of 3.5m, 183m SW of a pier. A warehouse and hotel are good landmarks.

Puerto Prat is on the E side of the inlet, 1 mile N of Puerto Condor. There is a well-sheltered anchorage, in depths of 7 to 8m, with a flagstaff in line with the hotel at Puerto Condor. There are two piers, a warehouse, and a shed in the port.

8.50 Estero Ultima Esperanza (51°35'S., 72°56'W.) extends 26 miles WNW from Isla Guanaco. The inlet has steep cliffy shores, but has not been surveyed. The passage leading into the inlet is 0.2 mile wide and deep. There are probably many shoals in the inlet, which is reported to be dangerous. It can be navigated only by vessels with local knowledge, and having a draft of not more than 2m for a distance of about 20 miles from the entrance.

Puerto Bellavista lies on the N side of the head of the inlet. A beacon stands at the S end of Bajo Topar, 0.4 mile NE of **Punta Emma** (51°28'S., 73°19'W.). There is a pier for small craft, 0.2 mile NW of the beacon and close to a sawmill. The pier is 40m long with a depth of 3m at its head. The cove affords a well-sheltered anchorage either E or W of the beacon, with good holding ground.

Tidal currents in Estero Ultima Esperanza are weak, and mainly influenced by the winds.

In Estero Eberhardt, the tide is greatly influenced by the winds, with as many as four high waters being experienced in one day shortly before a gale. Conversely, in continuous calm weather, there may be no rise or fall of the tide for 2 or 3 days at a time.

Estrecho Collingwood to Canal Inocentes

8.51 Estrecho Collingwood, the continuation of the charted smooth water route N from Paso Vitoria, separates **Isla Newton** (51°52'S., 73°45'W.) and Isla Carrington, 1 mile to the N. Paso Farquhar, between the two above islands, leads sharply W for 4 miles to the S end of Canal Sarmiento.

The N part of Estrecho Collingwood is not recommended as it has not been examined. It is narrow, with varying depths, and bordered by dangers. The channel between Isla Newton and Isla Hunter, to the SSW, has not been surveyed. The channel between Isla Newton and Isla Taraba is narrow and foul.

Islote Catalina (51°58'S., 73°41'W.) lies 0.5 mile W of the fairway. Grupo La Place, 1 mile N of Islote Catalina, extends NW to the S extremity of Isla Newton. The islets are low, flat-topped, and covered with trees and bushes.

Caleta Dixon (51°57'S., 73°42'W.), between Grupo La Place and Isla Newton, can be entered either from the N or S, but during strong N winds it is advisable to enter from the S. Local knowledge is required. When approaching from the S, Caleta Dixon opens as soon as Punta Ross, the E extremity of Isla Hunter, is passed. When approaching from the N, follow the coast of Isla Newton to the entrance between that island and Isla La Place. If the N wind is blowing strongly, it is better to pass E of Grupo La Place and enter the cove from the S, head to wind.

Anchorage may be obtained, in depths of 30 to 43m, clay, sand, and mud, good holding ground.

Caleta Columbine is entered S of Peninsula Ward, 3 miles N of Grupo La Place. The cove is fairly well-sheltered, but strong squalls sometimes descend the steep mountainside, and the holding ground is bad. A beacon stands on a small islet in the middle of Caleta Columbine. Another beacon stands on a hill on the W entrance point. Anchorage may be obtained, in a depth of 14m, with the SE extremity of Peninsula Ward bearing 062°, distant 1 mile. Caleta Columbine has been reported to be a poor anchorage even during normal weather.

Seno Profundo (51°55'S., 73°35'W.) is located on the E side of Estrecho Collingwood, 5 miles SE of Peninsula Ward. The sound is deep, but anchorage may be found, in depths of 25 to 35m, 0.5 mile from its head near the N shore. The anchorage is only 183m in extent, but is well-sheltered. A vessel in the anchorage can secure their stern to trees on the shore. When entering the sound, pass through the entrance in mid-channel, with a large dip in the hills at the head of the sound bearing 120°.

8.52 Isla Quena (51°49'S., 73°42'W.) lies on the NE side of Estrecho Collingwood and in the middle of the entrance to Bahia Stewart. The island shows a light on is SW extremity. Bahia Stewart lies NNE of Isla Quena and is deep and free of dangers. Isla Young lies 1.5 miles NE of Isla Quena and in the entrance to Seno Taraba, which branches SSE from Bahia Steward for 20 miles. There is anchorage in a cove on the W side of Seno Taraba, 5 miles within its entrance.

Seno Yuseff lies at the N end of Bahia Stewart, and is free of dangers to a creek at its head. Seno Llorente is 2.5 miles E of Seno Yuseff, extends in a N direction, and has a river at its head. There is anchorage, in a depth of 45m, 0.2 mile S of the river mouth. Seno Benavente is entered close E of Seno Llorente and between two groups of islands. It is free of dangers. A bay, at its head, may afford anchorage, but has not been examined.

Bahia Islas lies 2 miles N of the N extremity of Isla Newton. The bay affords emergency anchorage for vessels up to 80m in length. The bay is well-sheltered from all winds, and no sea or swell comes in. The anchorage is on a large rocky shelf, in depths of 15 to 30m. The least depth reported in the bay was 8.2m. To reach the anchorage, steer 290° in mid-channel

through the NE entrance, which leads in a least depth of 30m.

Bahia Gregg (51°49'S., 73°52'W.) is a small but deep bay with much kelp around its shores. In emergency, small craft can obtain temporary anchorage, in depths of 40 to 45m, with shelter from the SW and NW quarters, within 68m of the head of the bay. A light is shown on the N entrance point of Bahia Gregg, but it is not visible from the anchorage.

Canal Sarmiento

8.53 Canal Sarmiento extends from Bahia Gregg, 67 miles NNW, to Angostura Guia and is from 0.5 to 2 miles wide. During the winter months, ice and drifting icebergs render navigation hazardous at night and in poor visibility.

Bahia Wodehouse (51°47'S., 73°56'W.) lies on the W side of the canal, about 3.8 miles NW of Bahia Gregg. Two small islets, almost joined together, lie in the middle of the entrance to the inlet, within which the inlet narrows to a width of 0.2 mile before opening out to form a bay. Good temporary anchorage, for vessels up to 120m in length, can be obtained, in depths of 30 to 35m, good holding ground.

Abra Lecky Retreat has an entrance 0.7 mile wide, but opens out to a width of 1.5 miles within the entrance. It is located on the W side of the canal, about 4.5 miles NNW of Bahia Wodehouse. Anchorage in Abra Lecky Retreat is precluded by its great depths. Caleta Ocasion lies on the N side of Abra Lecky Retreat, at the foot of Cerro Alfredo. There is temporary anchorage for small vessels in the cove during good weather. A light is shown on a point 2.7 miles NNW of the entrance to Abra Lecky Retreat.

Close N of Isla Piazzi Light, a well-sheltered cove affords anchorage to vessels with local knowledge, in depths of 27 to 37m. When entering the cove, keep close to the N shore to avoid a patch of kelp near the middle.

Bahia Moore (51°46'S., 73°52'W.) is on the W side of the canal, about 2 miles NE of the entrance to Bahia Wodehouse. Good anchorage may be obtained in the outer part of the bay, in a depth of 50m. Local knowledge is necessary for entering the bay as it has not been surveyed.

Bahia Pascoe is entered 1.5 miles N of Bahia Moore by a narrow channel with a least width of 0.1 mile. In the channel, depths decrease toward the inner end where a depth of 19m has been obtained. Anchorage with good holding ground may be obtained in the middle of the bay, in a depth of 55m, clay and mud. When entering the inlet steer 005°, parallel to the W side of the channel and 91m off it, until the point projecting from the E side has been passed, when course may be shaped for the anchorage.

Punta Oeste (51°32'S., 74°04'W.), on the W side of the canal, is the N extremity of Isla Piazzi. Islotes Locas form a small group 4 miles NW of Punta Oeste and near the middle of Paso Tarleton. This passage separates Isla Piazzi from Isla Vancouver, and leads into Estrecho Nelson.

Punta Don Pedro lies 5 miles NNW of Punta Oeste. It is the SE extremity of Isla Vancouver, which extends 10 miles NNW. A light is shown on an islet 1.7 miles N of Punta Don Pedro. Abra Themis is an inlet 5 miles NNW of Punta Don Pedro and is entered close S of Punta Anderson (51°22'S., 74°07'W.). Vessels with local knowledge can obtain anchorage W of the islets off Punta Anderson.

8.54 **Cabo San Mateo** (51°24'S., 74°02'W.), on the E side of the canal, lies 3.2 miles SE of Punta Anderson. It is the S extremity of Isla Evans. Puerto Mayne lies 4.5 miles NNW of Cabo San Mateo and consists of an inner and outer anchorage. Both anchorages are perfectly safe, but only suitable for small vessels as the space is limited. Large vessels can obtain anchorage outside Puerto Mayne, midway between Punta Richard and Isla Eclipse, in a depth of 47m, but there is very little shelter.

Isla Evans is separated from Peninsula Staines by Paso Childers, and from the unnamed peninsula to the N by Paso Stewart. Paso Blanche, entered from Paso Childers, 7 miles NE of Cabo San Mateo, separates Isla Evans from Isla Owen to the E.

Isla Whidbey (51°17'S., 74°10'W.), on the W side of the canal, lies close off the NE end of Isla Vancouver. A shoal, the charted position of which is doubtful, lies 0.5 mile ENE of the N extremity from Isla Esperanza, leads 4 miles W into Canal Esteban, but has not been surveyed. Grupo Hays form a chain of islets extending 3.5 miles S from the SE end of Isla Esperanza to within 1 mile of Isla Whidbey. A rock, with a depth of less than 2m, marked by kelp, lies 0.7 mile N of the N extremity of Isla Whidbey.

Islote Edelmira (51°08'S., 74°12'W.) lies on the W side of the canal close to Isla Esperanza. A shoal, with a depth of 5m, lies close E of the island's N end and is marked by kelp.

Isla Lucia lies on the W side of Canal Sarmiento, and 5 miles NNW of Cabo Brassey, the NW end of Isla Evans. A light is shown on the SW point of the island. Islotes Paget, which are low, extend 1.7 miles N from Isla Lucia.

8.55 **Puerto Bueno** (51°00'S., 74°13'W.) lies on the E side of the canal and is entered between Punta Hankin and Islote Pounds, 0.3 mile to the NW. A light is shown on Islote Pounds. The port consists of an inner and outer anchorage. Both anchorages are safe, but the inner is more sheltered. The outer anchorage affords a good berth 183m NNE of Islote Pounds, in a depth of 12m, mud. The inner anchorage is 0.1 mile NE of Isla Paynter, in a depth of 18m, sand and shells.

Islote Bonduca (50°56'S., 74°17'W.) lies on the E side of the canal, 4.7 miles NNW of Islote Pounds. An above-water rock lies on a reef close S of the islet. A light is shown on the SW side of the islet. Isla Sombrero Ladeado lies on the E side of the canal, 1.2 miles N of Islote Bonduca.

Regulations.—All vessels using Canal Sarmiento, when approaching the narrows of Islote Bonduca, are required to make a general call on 2182 kHz and VHF channel 16 when 4 miles from the island.

Vessels approaching the narrows from the S should reduce speed and, if necessary, wait for southbound vessels to pass before proceeding.

8.56 Estero Peel, E of Canal Sarmiento, is entered between Cabo San Antonio, 3 miles ENE of Islote Bonduca, and the S side of Isla Chatham, 3 miles N. Estero Peel extends 12 miles E, 15 miles NNE, and 12 miles NE. This inlet should not be entered without local knowledge.

Canal Pitt (50°40'S., 74°12'W.) leads NNW from Estero Peel for 25 miles to Estero Andres. Isla Peel is separated from the SE end of Isla Chatham by a narrow channel, 4 miles long, which is deep and clear of dangers.

Estero Asia is entered 6 miles E of Isla Peel. The inlet ex-

tends 30 miles NNE and forms Peninsula Wilcock to the W. Estero Calvo branches 15 miles E, 12 miles within Estero Asia. Many glaciers descend to both these inlets, which reach the foot of Cordillera de los Andes.

Caleta Amalia (50°56'S., 73°51'W.) lies 2.5 miles from the head of Estero Peel, on the W side. The cove affords a well-sheltered anchorage to vessels with local knowledge, in a depth of 27m. An islet lies in the middle of the entrance to the cove, with a passage on either side. The deeper and wider passage is S of the islet, which should be given a wide berth as there is a rock, awash, 91m S of it. The cove appears to be easy to access and clear of dangers except for floating ice.

Caleta Goicolea (50°48'S., 74°16'W.) is a small cove on the W side of an inlet on the S side of Isla Chatham. Small vessels can obtain good sheltered anchorage, in a depth of 12m, good holding ground. The cove is free from dangers apart from some rocks close inshore, and a vessel anchored in the middle of the cove has 137m of swinging room.

Isla dos Canales lies 1.5 miles S of Cabo Carlos (50°51'S., 74°20'W.). The island is the junction point of Canal Sarmiento and Canal Esteban, which leads S on the W side of Isla Esperanza.

Angostura Guia (50°45'S., 74°29'W.), between Isla Hanover and Isla Chatham to the NE, connects Canal Sarmiento with Canal Inocentes. The narrows extend 4 miles WNW and have a least width of 0.2 mile at the NW end between Punta Porpoise and Isla Guard, an islet close off the NE shore. There are no known dangers and the shores on either side are steep-to.

8.57 Caleta Latitud (50°52'S., 74°24'W.), on the W side of the canal, is entered between Punta Laura and Punta Blanca, 0.1 mile to the NW. The navigable width of the entrance is reduced to 91m by shoals, with depths of 3.5 to 4.9m, which extend from the shore S and SE of Punta Blanca. A shoal, with a depth of 11m, lies in the middle of the navigable channel SE of the point. Anchorage may be obtained, in depths of 32 to 36m. When entering the cove, keep to the S side to avoid the shoals off Punta Blanca, and when inside the cove, steer to pass 183m N of Punta Elisa to the anchorage.

Tides—Currents.—Tidal currents in Angostura Guia run SE and NW at rates of 2 to 3 knots at springs, but a maximum rate of 8 knots has been experienced between Punta Porpoise and Isla Guard (50°44'S., 74°31'W.). Strong overfalls occur on the NW current at springs, just outside the NW entrance to the narrows. While the current is running S in Canal Sarmiento, the corresponding current NW of Angostura Guia runs N; the place of separation is not known.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before entering Angostura Guia on VHF channel 70. DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SECURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Angostura Guia is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. The ETA when abeam of Punta Porpoise (50°44'19"S., 74°31'07"W.) and Isla Escala Alta (50°46'17"S., 74°25'41"W.).

Caution.—Icebergs have been reported occasionally in Angostura Guia, and in Canal Inocentes as far as Punta Don. Caution is therefore necessary when navigating in this vicinity, especially at night and in poor visibility.

Isla Escala Alta (51°47'S., 74°26'W.) is prominent from the approaches to both ends of the narrows. There is a small cove on the E side of the island, but the bottom is foul and it is not recommended. A light is shown on the NE extremity of the island.

Isla Bonny lies close off the N shore of the narrows, 2.7 miles WNW of Punta Passage. Isla Guard lies 1 mile NW of Isla Bonny. Punta Porpoise, on the S side of the NW entrance to the narrows, is low and sharp. A light is shown on the point.

Canal Inocentes

8.58 Canal Inocentes leads NW from Angostura Guia for 18 miles to Canal Concepcion, where it is 10 miles wide. There are many islands and islets on both sides, and some large islets which have not been surveyed. The S side of the channel is formed by a succession of high coves, sloping NW, and terminating in Grupo Clements and Isla Froilan. On the N side are three precipitous headlands, with deep inlets between them, the land then trends N, and the foreground consists of fairly high islands.

Mariners are warned that the channels in this area are usually obstructed due to drifting icebergs. Extreme caution should be used, especially at night.

Caleta Rayo (50°45'S., 74°32'W.), on the SW side of Canal Inocentes, is entered W of Punta Porpoise. It is a narrow and deep inlet extending 3 miles S. Anchorage can be obtained 1 mile within the entrance, in depths of 50 to 60m, but it is not recommended. The W side of the cove has depths of 10 to 23m, but it is too close inshore for vessels to swing. A vessel, when entering, should keep close to the E shore.

Puerto Ochovario, on the NE side of Canal Inocentes, is entered 1.5 miles N of Punta Porpoise, and extends 2.5 miles E between lofty mountains. Anchorage may be obtained at the head of the inlet, in a depth of 40m, off a remarkable bluff on the S shore, but should only be used in case of necessity. A patch of kelp extends across the inlet within the entrance.

8.59 Bahia Wide (50°39'S., 74°36'W.) is a cove at the head of a bay which is formed by Islotes Long and Isla Juan. The bay is deep, with a rocky bottom, and well-sheltered from N gales. Anchorage may be obtained in Bahia Wide, in depths of 27 to 31m, with Islote Green bearing 023°, distant 0.1 mile, and a low hill in the NE part of Isla Juan bearing 289°. When entering the bay, keep close to Isla Juan to avoid Roca Ramses and the dangers N of it. Bahia Wide is not recommended as a good anchorage.

Isla Robert, on the NE side of the canal, lies with its S end 4 miles NNW of Punta Don (50°40'S., 74°38'W.). The island is double-peaked, shaped like a saddle, and is very prominent

when seen from the N. No anchorages have been found on the S and E sides of the island.

Islotes Wheeler (50°34'S., 74°44'W.) lie on the E side of the Canal, 4 miles NW of the S point of Isla Robert. When approaching from NW, the islets appear as one long islet, covered with stunted trees. The islets are useful in thick weather for making the entrance to Canal Inocentes, as they are often seen when the higher land is hidden. A light is shown from the W side of the islets.

A shoal bank, with depths of less than 18m and a least known depth of 8m on its SE side, lies 1.5 miles NW of Islotes Wheeler. In case of emergency, the S side of this bank affords anchorage, sheltered from moderate W and NE winds, with a bottom of soft mud.

Canal Artilleria, entered 3.2 miles NE of Roca Taylor (50°32'S., 74°45'W.), separates Isla Chatham from Isla Figueroa to the NW. The channel, which is only navigable by small craft, is less than 20m wide in its narrowest part and has depths of from 10 to 14m. On the NW side of the channel, 2 miles from its NE end, a deep inlet extends NW to the foot of Pico Sungular.

Isla Inocentes (50°33'S., 74°51'W.) lies at the NW end of Canal Inocentes, at its junction with Canal Concepcion. Islotes Hope, which are low, and some rocks extend 0.5 mile off the SE end of the island. It has been reported small craft could anchor during N winds in a cove at the S end of the island. A light is shown on the E side of the island.

Canal Concepcion—East Side

8.60 Canal Concepcion (50°18'S., 74°49'W.) commences at Isla Inocentes and terminates at Paso Brassey, the junction of Canal Trinidad and Canal Wide. This part of the canal is about 30 miles long, with an average width of 5 miles in the S part and 2.5 miles in the N part. A number of good anchorages are found on the W side of Canal Concepcion.

Mariners are warned that the channels in this area are usually obstructed due to drifting icebergs. Extreme caution should be used, especially at night.

Punta Tapering (50°29'S., 74°47'W.) is located on the E side of the canal, 4.5 miles NNE of Isla Inocentes Light. The point is low and wooded. Islotes Chance, 1.5 miles N of Punta Tapering and close offshore, are low and wooded, and difficult to distinguish from the W. Vessels should not approach this shore within a distance of 2 miles.

Bahia Eardley is entered about 1.3 miles N of Islotes Chance. Depths of 42m, with a rocky bottom, have been obtained at the head of the bay, but it is an exposed and confined situation. A narrow channel leads from the N end of the bay to a basin, and is used only by small craft.

Bahia Hugh (50°24'S., 74°45'W.), on the E side of the canal, is entered 2.7 miles NNE of Cabo Childers. The entrance is encumbered by a group of islets and rocks, dividing it into two passages. Either passage can be used, but Entrada Norte is the preferred entrance as it is the wider and straighter of the two. Anchorage may be obtained in the bay S of Islas Middle, in depths of 31 to 54m. The anchorage is sheltered from all but NW winds, and even during these no sea is felt.

Cabo San Andres is the W extremity of Isla Canning and is located 5 miles N of Bahia Hugh. The cape is a low promontory, with a flat top. It forms the N entrance point to Canal Andres, which has not been fully examined. The cape may be passed safely at a distance of 0.5 mile.

Canal Andres is entered between Bahia Hugh and Cabo San Andres. Islas Kentish lie near the middle of Canal Andres, about 12 miles ESE of Cabo San Andres. Seno Fuentes, entered 3 miles E of Islas Kentish, extends 10 miles N. Seno Guillardi, 9 miles E of Islas Kentish, branches ENE for 9 miles. Large blocks of ice, which descend from a glacier at the head of Seno Guillardi, render navigation in Canal Andres dangerous.

8.61 Isla Jorge (50°15'S., 74°42'W.) lies 3.5 miles N of Cabo San Andres. It is separated from Isla Canning by a channel, 1 mile wide, which has not been surveyed. The island can be identified from the S by a round summit, on its E side. Isla Portland lies with Punta Green, its SE end, 0.5 mile SSE of the W extremity of Isla Jorge. Bahia Portland is the SE part of the channel between Isla Jorge and Isla Portland.

Good and convenient anchorage for small vessels may be obtained, in depths of 16 to 20m, with Punta Green bearing 212° and Roca Entry (50°16'S., 74°44'W.) bearing 138°. Vessels lie comfortably here at single anchor, but if intending to remain, it is recommended that a vessel drop both anchors 183m farther WNW.

Seno Tres Cerros is entered between Cabo Bentinck, the NW extremity of Isla Jorge, and Cabo Clanricarde (50°12'S., 74°42'W.). It separates Isla Jorge from the mainland, 1 mile NE, and is unsurveyed. A rock lies close S of Cabo Clanricarde.

Estero Lecky is entered S of Punta Squire (50°06'S., 74°36'W.). No anchorages have been found in Estero Lecky. There is a depth of 18m, mud, in a very confined position in a small cove on the N shore, 2.5 miles NE of Punta Squire.

Canal Concepcion—West Side

8.62 Punta Anunciada (50°30'S., 75°03'W.) is the NE extremity of Isla Duque de York, 7 miles WNW of Isla Inocentes. The point is prominent, having three islets close N which are covered with dark trees of triangular shape, and stand out against the high ground backing the point. A light is shown from an islet close off the point. Canal Oeste is entered between Punta Anunciada and Cabo Cortes, the SE end of Isla Escribano.

Seno Landslip is entered S of Punta Snout (50°27'S., 75°00'W.) and extends 2.5 miles N between Isla Hocico and Isla Escribano. Isla Garcia lies close off the NE part of Isla Escribano. Seno Landslip should not be entered without local knowledge.

Canal Monteith (50°25'S., 75°01'W.) leads 5.5 miles WNW from the N end of Seno Landslip. Canal Pasaje, which is only fit for small craft, branches SSW from the middle of Canal Monteith for 5 miles to Canal Oeste, separating Isla Escribano from Isla Caracciolo to the W. There is good anchorage in the canal, 1.5 miles from the E entrance, but the approach is intricate. Vessels with local knowledge may obtain anchorage, in depths of from 27 to 36m, mud, with Monte Sunday bearing 000°, distant 0.7 mile.

Bahia Walker is entered between Islote Wake and Punta Fox

(50°22'S., 74°55'W.), 1.5 miles N. The inlet is deep and extends 5 miles to the W. The best anchorage may be obtained in the N part of the bay. Small vessels with local knowledge can anchor in Caleta Wilson, 183m W of Islote Wake, in a depth of 40m. The anchorage is exposed to the N and cannot be recommended.

8.63 Seno Molyneux (50°17'S., 74°53'W.) is entered between Punta Rogers and Punta San Miguel, 1 mile N. The inlet extends 4 miles NW where a channel, which is clear of dangers, leads 1 mile N to the W end of Estero Temple. About 3.5 miles within the entrance to Seno Molyneux, Canal Grove branches SW for 15 miles to Canal Oeste.

Tidal currents in the fairway run NNW and SSE at rates of 2 to 3 knots.

Puerto Molyneux is 1 mile NNW of **Punta San Miguel** (50°18'S., 74°52'W.). A light is shown on the point. A buoy marks a rocky patch, 0.3 mile S of Punta San Miguel. Islote Romulo lies close off the NE shore of the inlet, 1 mile NNW of Punta San Miguel.

Anchorage may be obtain in Puerto Molyneux, in a depth of 36m, mud, with the S extremity of Islote Romulo bearing 275°, about 0.2 mile distant. This anchorage is the easiest of access in Canal Concepcion and is suitable for all types of vessels.

Isla Drummond-Hay (50°15'S., 74°49'W.) consist of two summits on its N side and is cone-shaped on its S side. Estero Temple and Estero Don Pedro, separated by Isla Chaine, are entered N of Isla Drummond-Hay, and unite with the head of Seno Molyneux. Good anchorage may be obtained by vessels with local knowledge off the N shore of Estero Temple, 2.5 miles within the entrance, close to the W end of Isla Chaine, in a depth of 27m, mud. It is not generally used because of the dangers in the approach channel. Estero Don Pedro affords anchorage 1 mile within the entrance, in a depth of 49m, mud.

8.64 Bahia Tom (50°12'S., 74°48'W.) is entered between Islote Devinish, 5.5 miles NNE of Punta San Miguel and Punta Mehegan, 1.7 miles NE. The bay consists of many small inlets affording anchorages near the main channel. When approaching from the N, Bahia Tom can be identified without difficulty.

Strong winds from seaward are seldom felt in these anchorages, which are more sheltered than others in the vicinity. Tidal currents in Bahia Tom never exceed 0.5 knot.

Estero Henderson is the N inlet of Bahia Tom and is entered between Isla Stratford and Punta Mehegan. This inlet is strongly recommended for vessels requiring to anchor in this vicinity, as it has the easiest access. Anchorage may be obtained, in a depth of 27m, sand and rock, with the W extremity of Islote Fletcher (50°11'S., 74°48'W.) bearing 177°, distant 0.1 mile. Isla Stratford, the S entrance point to Estero Henderson, shows a light.

Bahia Day (50°09'S., 74°47'W.) is entered N of Punta Whale, 1.2 miles NNE of Punta Mehegan. The bay has a confined anchorage, in a depth of 33m. Islita Cecil lies close offshore 0.5 mile N of Punta Whale.

Punta Brazo Ancho, the NE extremity of Isla Madre de Dios, is low, but the land within rises steeply to Monte Vereker, 1.5 miles NW. This mountain is prominent from the N or S. Islotes Mabel lies close off the point. Isla Topar lies 1.5 miles NE of Punta Brazo Ancho.

Canal Wide

8.65 Canal Wide is the continuation of the smooth water route N from Isla Topar, at the junction of Canal Concepcion and Canal Trinidad. The canal separates the S part of Isla Wellington from the mainland, and has a least width of 1.7 miles. From Cabo Somerset, the S extremity of Isla Wellington, the canal extends 10 miles NE and then 20 miles N to Punta Averell, the S end of Isla Saumarez.

Regulations.—Vessels must send a safety alert using DSC techniques 1 hour before commencing transit through either Abismo Passage or Piloto Pardo Passage. on VHF channel 70 DSC is a Digital Selective Calling System using digital codes which enable a radio station to communicate with other stations, either individually or as a group through HF, MF, or VHF bands.

After the safety alert has been sent, the safety signal (SUCURITE) must be broadcast in English and Spanish on VHF channel 16. Along with the safety signal, the information in the following list must be included in the broadcast and repeated every 15 minutes until the passage through Angostura Guia is completed:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. the ETA when abeam of Centro Islet in the N and Entrada Headland in the S.

Caution.—This canal was reported (1938) to be inaccurately charted.

Navigation in Canal Wide is often impeded by drift ice from Seno Eyre. Numerous large pieces of ice have been seen in the canal in June. In August (1934), icebergs were reported on both sides of the recommended track as far N as Estero Ringdove.

Estero White, on the W side of Canal Wide, is entered 6.5 miles NE of Cabo Somerset and extends 6 miles NW. The inlet is unsurveyed. Seno Europa, on the E side of the canal, is also unsurveyed.

8.66 Estuario Gage (49°54'S., 74°26'W.), on the W side of the canal, is entered SW of Punta Cameron, 12.5 miles NE of Cabo Somerset. The inlet is deep and the tidal currents strong. This inlet is not recommended as an anchorage. A light is shown on Punta Snell, 0.7 mile NE of Punta Cameron. Caleta Refugio, about 1.3 miles NNW of Punta Snell, affords anchorage to small vessels with local knowledge, in depths of 11 to 12m.

Seno Penguin, on the E side of the canal, is entered 3.5 miles E of Punta Snell Light. It has not been surveyed and in the spring is usually obstructed by ice. About 12 miles within the entrance, Seno Jarpa branches NE for 9 miles.

Glaciers descend to the head of both Seno Penguin and its tributary Seno Jarpa; both inlets are encumbered with floating ice for much of the year.

Caleta Sandy (49°47'S., 74°24'W.) lies 7 miles N of Punta Snell Light, on the W side of the canal. Small vessels can obtain anchorage in the middle of the cove, in a depth of 15m, but it is not recommended, as it is too restricted. A below-water rock, marked by kelp, lies in the N part of the cove; a rock,

awash, lies close offshore in the S part.

Seno Antrim, entered between Caleta Sandy and Punta Beresford (49°46'S., 74°23'W.), extends 4 miles WNW. At its head, a narrow passage leads into Seno Interior. This inner part of the inlet forms two basins, connected by a boat passage. Both passages contain whirlpools. Caleta Elena is a sheltered anchorage on the S side of Seno Antrim, near its head. Vessels anchor, in 26m, between the entrance points to the cove. It is necessary to keep NE of a rocky ledge, marked by kelp, extending from the SE shore to the middle of the cove.

Estero Ringdove (49°45'S., 74°11'W.) on the E side of the canal, is entered 4.5 miles ENE of Seno Antrim. On the S side of the entrance, Caleta Richmond and Caleta Chacaburo afford anchorage for small vessels. There is a propane gas terminal at Caleta Chacaburo.

Islote Mason lies midway between Punta Averell, the S extremity of Isla Saumarez and Punta Baja (49°38'S., 74°19'W.). A light is shown on the S side of the island.

Isla Saumarez to Paso del Indio

8.67 At Isla Saumarez, which extends 13 miles N from Punta Averell, the charted route divides, the two parts unite again at the S end of Paso del Indio, N of Isla Saumarez. Isla Angle lies close W of the SW part of the island, the passage between these two islands has not been surveyed. Estero Backout is entered close S of Punta Patch (49°37'S., 74°27'W.). The inlet, which is narrow and tortuous, should be avoided.

Paso del Abismo (49°34'S., 74°28'W.) is entered 1 mile N of Punta Patch and extends 4.5 miles NNW between Isla Angle and Isla Wellington. The passage is deep and clear of dangers, but, owing to its narrowness, passage by night is not recommended. In autumn, when ice from the glaciers at the head of Seno Eyre comes down in large lumps, this passage is to be preferred to Canal Icy.

Estero Veto extends 2.5 miles W of the N end of Paso del Abismo and has not been surveyed. A flat reef of rocks, awash and marked by kelp, lies on the N side of the entrance. On the E side of the fairway, a below-water rock lies 0.6 mile SW of Punta Curle.

Regulations for Paso del Abismo.—Every vessel approaching Paso del Abismo from the S or N should sound one prolonged blast 0.5 mile before reaching Punta Patch or Estero Veto respectively, the signal should be answered in a similar manner by any vessel approaching from the opposite direction. The N bound vessel should wait until the S bound vessel has passed.

Vessels should establish communications on radio, on reaching the vicinity of the above positions.

8.68 **Canal Escape** (49°27'S., 74°27'W.) leads NNE for 7 miles from the N entrance point of Estero Veto. The canal is deep and clear of dangers, except in the vicinity of Punta Barclay (49°30'S., 74°27'W.). Roca Corn, with a depth of 5.2m, lies on the W side of the canal and is marked by a buoy. On the E side of the canal, foul ground extends 0.5 mile off Punta Barclay.

Canal Icy (49°36'S., 74°17'W.), which extends 7 miles NE, appears to be clear of dangers, but is less used than Paso del Abismo, due to the quantity of ice from Seno Eyre. Bahia Cascada on the SE side of the canal, affords anchorage to small vessels, but is exposed to the prevailing winds and is not recommended.

Seno Eyre is entered at Punta Chill, the SE end of Promontorio Exmouth. The inlet has very irregular depths, 7m being found near its head, where there are two large glaciers. Seno Falcon is entered at the S end of Seno Eyre, 3 miles E of Punta Chill. It also has several glaciers at its head. There are two coves on the N shore of Seno Falcon, with anchorages for small vessels, 1.5 and 7 miles within the entrance. Seno Exmouth branches 13 miles SE from Seno Eyre, 17 miles from Punta Chill.

Canal Grappler (49°29'S., 74°17'W.) is entered between Morro Escarpado and Cabo Colorado, 1 mile E. The canal is 10 miles long and appears to be free of dangers. The canal has a least width of 0.2 mile off Punta Hayman, the N extremity of Isla Saumarez. A light is shown on Cabo Colorado.

Puerto Micaela, on Isla Saumarez, is entered 2.7 miles NNW of Morro Escarpado. Anchorage may be obtained in the middle of Puerto Micaela, in depths of 42 to 50m, 0.1 mile offshore. A light is shown on the NE extremity of Isla Saumarez.

Puerto Grappler (49°25'S., 74°19'W.) is an excellent, well-sheltered harbor in the Exmouth Promontory, opposite the NE side of Isla Saumarez. Isla Cloue, in its entrance, shows so distinctly that it is impossible to mistake the position of this island. There is passage on either side of the island, but the E passage is the wider and better. The best anchorage for a large vessel is 0.3 mile inside Isla Cloue, in 14 to 16m, but small vessels can anchor, in 10m, about 183m E of Islote Diamante. The holding ground in all parts of the harbor is good. A beacon stands on the summit of Isla Cloue. A light is shown on Punta Hayman, the N extremity of Isla Saumarez.

Paso del Indio

8.69 Paso del Indio, which separates Isla Wellington and Promontorio Exmouth, is the continuation of the charted route N from the junction of Canal Escape and Canal Grappler. It extends 17 miles N to Islas Harwood, which lies W of the fairway at the S end of Angostura Inglesa. There are several islets and rocks in the middle of the channel, with considerable depths between them. The least navigable width E and W of these dangers is 0.2 mile. The position of the beacons and buoys cannot be depended upon.

Puerto Horacio (49°21'S., 74°26'W.) lies on the W side of the fairway, 4.2 miles NNW of Punta Hayman. The port is narrow, deep, and affords anchorage to small vessels at its head.

Calata Grau lies about 0.8 mile E of Puerto Horacio. Vessels are afforded good anchorage in the middle of the cove, with depths of 30 to 34m, stones. The shores of the cove are free of off-lying dangers, except for Arrecife Dolores, which lies 0.2 mile ESE of the SW entrance point; the reef is marked by kelp, and the greater part of it is below-water or dries.

Islote Fantome (49°18'S., 74°24'W.) lies 0.2 mile off the W shore of Paso del Indio. Anchorage can be obtained close S of the islet, with its extremities bearing 343° and 016°, in a depth of 51m, sand, shells and rocks. It is feasible to anchor nearer the islet.

Islotes Covadonga consist of several islets, rocks, and shoals located in mid-channel, 0.8 to 2 miles N of Isla Crossover

(49°17'S., 74°24'W.), which shows a light. A light is shown near the middle of Islotes Covadonga, on Islote Bouquet. A beacon stands on Islote Perch, 0.5 mile E of Punta Falsa (49°16'S., 74°25'W.).

8.70 **Roca Vaudreuil** (49°13'S., 74°22'W.) lies in mid-channel and is very dangerous to navigation. The rock is only slightly marked by kelp and is marked by a metal beacon. A patch of kelp is reported to lie 0.3 mile W of the rock.

Islotes Guia, on the NE side of Paso del Indio, consist of two low islets. A light marks the N islet. Estero Reindeer is entered E of Islotes Guia. It extends 2.5 miles ESE and has not been surveyed. Arrecife Gorgon, which dries, lies about 1.3 miles SW of Islotes Guia. A beacon stands on the reef. A below-water rock, marked by kelp, lies close NNE of the beacon.

Puerto Eden (49°08'S., 74°25'W.) lies on the W side of Paso del Indio, about 3.5 miles NW of Arrecife Gorgon. The port affords several good anchorages for all size vessels. The entrance is divided into two channels, Paso Sur and Paso Este, by Isla Carlos and Islote Dulce.

Caleta Lackawana is entered by a narrow channel on the S side of the approach to Puerto Eden. Small vessels, with local knowledge, can anchor in the middle of Caleta Lackawana, 0.2 mile inside the narrows, in a depth of 12m. The cove is landlocked and well sheltered, but is very restricted.

Arrecife Hammond, on the S side of Paso Sur, is awash and marked by kelp, and lies about 0.3 mile W of Isla Carlos Light. A lighted buoy is moored close NE of the reef.

Islote Eden (49°09'S., 74°27'W.) lies in the middle of the approach to the main anchorage in Puerto Eden, and shows a light. A beacon stands on a rock close E of a point 0.1 mile NNE of Islote Eden. Three radio masts and a building stand near the W shore, 0.5 mile WNW of Islote Eden. A rock, with depth of 5.3m, lies close NW of Islote Eden. A white cross stands on the summit of an islet, 0.7 mile NNW of Islote Eden. This mark is useful when anchoring. There is a mooring buoy 0.1 mile NW of Islote Eden.

The best anchorage in Puerto Eden is 0.2 mile NE of the radio masts, in depths of 22 to 26m. Vessels can also anchor, in depths of 15 to 38m, from 0.1 to 0.2 mile E of the mouth of a stream located 0.3 mile WSW of Islote Eden.

Anchorage may also be obtained SE of Puerto Eden, with Islotes Guia Light (49°10.5'S., 74°23.4'W.) bearing S, distant 1,000m, in depths of 30 to 40m, mud and shingle bottom. This anchorage is suitable for vessels of up to 180m in length, but is not recommended during N winds in excess of 25 knots.

Large vessels, not wanting to enter Puerto Eden, can anchor on the W side of Paso del Indio, 0.6 mile E of Isla Carlos Light, in a depth of 55m. The holding ground is good, and the berth is out of the swell. A lost anchor and cable lie near the berth.

A pilot boarding station is established about 0.6 mile ENE of Isla Carlos Light.

Caletita Malacca is entered by a narrow channel close E of Punta Oldfield, located about 0.6 mile N of Islote Eden. This small cove is landlocked, but confined. There is anchorage for small vessels, with local knowledge, in a depth of 13m, mud, 0.2 mile NE of Punta Oldfield (49°08'S., 74°26'W.).

Islas Harwood (49°07'S., 74°22'W.), at the N end of Paso del Indio, are two islets, close together, with their NE extremity 1.5 miles N of Islotes Eva. Isla Salamandra lies close N of Isla Morton, and Isla Henry lies between Isla Salamandra and Islas Harwood. The narrow channel between these islands should not be entered. Temporary anchorage can be obtained in the main channel E of Islas Harwood, where the depths vary from 25 to 65m, but the tidal currents here run strongly.

Approach to Angostura Inglesa

8.71 Angostura Inglesa, with its approach from the S, connects Paso del Indio with the S end of Canal Messier, 11 miles N. The approach is entered between Islas Harwood and Punta Halliday, 0.5 mile NE.

Bajo Capac (49°07'S., 74°22'W.), with a depth of 3m, lies W of the fairway, 183m NNE of Islas Harwood, and is marked by kelp and a lighted beacon, 6m high. A buoy is moored close NNE of Bajo Capac. Bajo Valverde, another rock with a depth of 3m, lies 0.1 mile WNW of Bajo Capac. Roca Pascua, with a depth of 5.5m, lies 0.2 mile W of Punta Halliday and is marked by a lighted beacon.

Seno Duque de Edimburgo is entered between Punta Pascua and Punta Paradise, 0.7 mile NW. This inlet is relatively free of dangers. No anchorages have been situated off its shores. The hills in the vicinity of the inlet rise to 202 to 300m, except at its N end where the land is low.

Islotes Ollard, a cluster of small islets and dangerous rocks with depths less than 10m, lies 0.7 mile N of the N extremity of Isla Salamandra and is marked with a beacon. Another rock lies 0.3 mile SW of Punta Paradise.

Bajo Memphis (49°05'S., 74°23'W.), a rock with a depth of 2.3m, lies over 0.5 mile WNW of Punta Paradise (49°06'S., 74°24'W.); it is steep-to and marked by a lighted buoy. A 14m patch is reported to lie 0.3 mile S of the shoal. North of Isla Adan, the approach to Angostura Inglesa is 1 mile wide as far as Isla Chinnock.

Isla Kitt, located 0.5 mile SSW of Punta Nickoll (49°01'S., 74°28'W.), the W extremity of Isla Chinnock, is fronted by kelp on its W side extending up to 183m offshore. An above-water rock lies 114m W and a shoal, with a depth of 4m, lies 183m SW of the W extremity of Isla Kitt. A beacon stands on the rock.

8.72 **Caleta Lucas** (49°00'S., 74°24'W.), E of Isla Chinnock, is entered through a narrow channel SE of the inlet. The channel is encumbered with kelp extending from the S end of the island, but there is a depth of 7m in the fairway, which lies close to the SE shore. Good anchorage for small vessels may be obtained in the middle of the cove, in depths of 18 to 20m, mud; large vessels anchor outside the entrance in a depth of 36m.

Estero Beauchamp is entered N of Punta Pemberton (49°01'S., 74°26'W.) on the W side of the channel. It is divided into two parts by a narrow channel between Punta Enrique and Punta Roberto.

The outer part of the inlet is deep, with depths of 16 to 20m, with a bottom of mud near the narrows. Its shores are fronted by kelp, which extends up to 183m offshore. Banco Florida, with a rock with a depth of less than 2m on its SE edge, lies 0.3 mile NE of Punta Roberto.

Puerto Simpson (49°01'S., 74°29'W.) is the inner part of

Estero Beauchamp. Roca Elena, with a depth of 4.8m, lies close to the S end of a split extending 91m S from Punta Roberto (49°01'S., 74°28'W.). The entrance channel has a least width of only 68m, and is unsafe for vessels of more than 100m long and a 4.5m draft.

Puerto Simpson affords anchorage to vessels with local knowledge, 183m SE of the remarkable white patch, in a depth of 44m, mud, or, in a depth of 15m, 1.7 miles WNW of Punta Elena.

Angostura Inglesa

8.73 Angostura Inglesa (48°58'S., 74°24'W.), the narrowest part of the channel between Isla Wellington and the mainland, extends 4 miles NNE to Canal Messier. The entrance is between Isla Chinnock and Islitas Croft, close off the W shore 0.4 mile NW. Angostura Inglesa has a least width of 183m W of Islote Zealous, but it presents no great difficulty. As the narrows are tortuous, it is always advisable, at spring tides, to await slack water. Large vessels proceeding N should do it at Puerto Eden, or Puerto Gray if proceeding S. When proceeding with the wind and tide, passage should not be attempted if the wind is strong. This passage is suitable for vessels up to 180m in length. Time of passage is in daylight only.

Bajo Lookout, with a depth of 2.1m, and marked by kelp, lies W of the fairway 0.3 mile NW of Punta Nickoll, the W extremity of Isla Chinnock. A lighted buoy is moored close E of the shoal. A patch, with a depth of 12m, lies 0.4 mile WNW of Punta Nickoll.

Banco Mindful, with depths of 4 to 7m, is an area of foul ground extending 0.2 mile E of Islitas Croft. A buoy is moored close off the E end of the bank, 0.5 mile N of Punta Nickoll. Islote Wallace, 0.2 mile NNE of Islitas Croft, is an islet, surrounded by kelp, off Bahia James, a deep cove.

Regulations.—Vessels must inform the Maritime Traffic Control Station in Puerto Eden of their time of entry to the Angostura Inglesa and whether entering from the N or S. This must be carried out as soon as possible prior to entering in order to find out about other traffic in a timely manner and maneuver accordingly.

Vessels must send a safety alert using DSC techniques on VHF channel 70, 1 hour before commencing navigation in the Angostura Inglesa.

On completion of the safety alert vessels must then broadcast the safety signal (SECURITE) in Spanish and English on VHF channel 16. The following information must be transmitted and repeated every 15 minutes until completion of the passage:

1. Vessel name.
2. Vessel position (updated as transit progresses).
3. Direction of transit, including the passage through which the vessel will be navigating.
4. The ETA between Cedar Headland or Clio Islet.

Islote Zealous (48°59'S., 74°24'W.) lies on the E side of the fairway, 1.5 miles NNE of Punta Nickoll. Roca Zealous, with a depth of 4.5m, lies 91m WSW of Bajo Zealous. The rock forms the edge of Bajo Zealous, a shallow rocky bank marked by kelp, extending SW from the islet and 0.1 mile N to the shore. A buoy is moored close W of Roca Zealous.

8.74 Punta Cedar (48°59'S., 74°27'W.) lies on the E side of the fairway. A buoy is moored 91m W of the point on the NW edge of the bank, covered with kelp, which extends from the E shore close S of the point.

Isla Medio-Canal (48°58'S., 74°24'W.) lies 183m W of Punta Cedar, with Roca Hall, awash, close off its SW end. Two beacons stand on the N and S extremities of the island. The island can be passed on either side, but large vessels should use the channel W of the island, as it is wider, deeper, and less affected by the tidal currents.

Islote Clio, NW of the fairway, lies 0.3 mile N of Punta Cedar. The islet is easily identified by a prominent white cross standing in its center. A shoal, depths less than 6m, lies about 137m E of the islet. Bajo Caution Norte, a rocky pinnacle with a depth of 7.4m, lies 0.2 mile E of Islote Clio. A shoal, with a depth of 3.4m, lies close NW of the rock. The kelp on this shoal is run under by tidal currents and is not always visible.

Two leading beacons on the E side of the narrows stand 183m apart near the SW end of Isla Disraeli. The beacons form the course to clear the above shoals.

Isla Cavour lies with Punta Hume, its NW extremity, 1.7 miles NNE of Punta Cedar. Kelp extends up to 183m offshore from the W and SW shores of the island. A beacon stands on the summit of the island. A beacon stands on Punta Hume.

8.75 Caleta Hoskyn (48°57'S., 74°26'W.), on the W side of the N entrance of Angostura Inglesa, is formed on its N side by Isla Lamarmora, joined to the mainland at low water. Anchorage may be obtained in the middle of the cove, in a depth of 24m, mud, 0.1 mile WSW of Punta John. Although a considerable tidal current is felt near HW, a vessel can lie here in perfect safety. The approach between the kelp on either side, S of Punta John, which is steep-to, is 137m wide. Care must be taken when entering or leaving as the tidal currents sweep very strongly across the approach S of Islote Loney.

Tides—Currents.—The tidal currents in Angostura Inglesa attain rates of 6 to 8 knots at springs. The N current begins about 45 minutes after HW, and the S current about 45 minutes after LW, by the shore.

Predicted times of slack water are given in Chilean tide tables. The actual time of slack water occasionally differs by as much as 30 minutes, and in special circumstances by as much as 1 hour, from the predicted time.

When N winds are blowing in Canal Messier, the S current in Angostura Inglesa continues for 2 or 3 hours after HW, and the N current is only of short duration. Strong N winds can cause the S current to attain a rate of 8 or 9 knots near springs.

Regulations.—Passage through the narrows can only be made during daylight hours. Vessels are limited to a maximum length of 150m, a maximum beam of 23m, and a maximum draft of 6.3m. Vessels over 120m long should request assistance from a support vessel. Vessels proceeding from the W have priority.

Vessels should give 1 hour advance notice of passing through the narrows on 2182 kHz and VHF channel 16. From 1 hour before the expected time of passing though Angostura Inglesa, in either direction, and also on sighting other vessels, a radio watch is to be kept, and masters are to broadcast every 15 minutes, the time they will pass Isla Medio-Canal, their position relative to a well-known object and the prevailing weather conditions

When navigating Angostura Inglesa, vessels must observe strictly the International Regulations for Preventing Collisions at Sea, especially the provisions regarding sound signals.

Signals.—As it is advisable to wait for slack water to pass through Angostura Inglesa, vessels bound in opposite directions, being unable to see each other, might meet at the critical part of the narrows. To avoid this, vessels proceeding S, when abeam of Punta Maude, off the N entrance, should sound one long blast on the whistle or siren, a second long blast should be sounded when Isla Disraeli is abeam. A vessel hearing a reply to her signal should wait off Isla Disraeli until the vessel from the S has passed.

Vessels proceeding N should make a similar signal when off Punta Nickoll, at the S entrance, and a second long blast should be sounded when Islote Zealous is abeam.

Warships shall discharge a gun instead of the whistle signal.

Assistance in estimating slack water is provided on request by the radio station at Puerto Natales.

Canal Messier

8.76 Canal Messier extends N from the N end of Angostura Inglesa for 72 miles to Bahia Tarn, on the S side of Golfo de Penas. The canal lies E of the N part of Archipielago Wellington, and is from 2 to 5 miles wide. There are several bold headlands and the land within the shores is mountainous, with lofty snow-capped peaks on either side. The channel is open and free from dangers, except for Bajo Cotopaxi. There are numerous inlets which can be entered with perfect safety, but the depths in most of them are too deep for anchoring.

Islote Haycock (48°56'S., 74°23'W.), on the E side of Canal Messier, is located close N of the N end of Isla Cavour. Roca Entrada, above-water, lies a little more than 0.5 mile NE of Islote Haycock. This rock forms a good mark for identifying the N entrance to Angostura Inglesa.

Bahia Magenta is entered between Islote Haycock and Roca Entrada. The bay extends 3 miles S and has not been completely surveyed. Isla Barton, near the head of the bay, is surrounded by foul ground, marked by kelp, which extends 0.2 mile N and SW of the island.

Isla Thomas (48°56'S., 74°24'W.) lies on the W side of the S entrance to Canal Messier. When seen from the N, it can be identified by a well-defined peak near its center. Isla Moat, about 0.3 mile NW of Isla Thomas, has three peaks which lie in a N and S direction, the center peak being the highest. Isla Isabel lies on the E side of the canal, 0.7 mile ENE of Isla Thomas.

Bahia Liberta, on the E side of the canal, is about 1 mile wide at its entrance, and lies N of Isla Isabel. It has not been completely surveyed. Bajo Durban, with 10m over it, lies on the S side of the entrance to Bahia Liberta. Bahia Flindt, a deep cove, lies on the S side of the bay.

Puerto Gray (48°55'S., 74°19'W.) lies on the E end of Bahia Liberta. The recommended anchorage is in a depth of 30m, mud. The anchorage is only 0.2 mile wide, and it is necessary for all but very small craft to moor. Large vessels can moor at the anchorage. A large lagoon lies at the head of the harbor and can be entered by boats at HW. Roca Talisman, awash, lies about 0.5 mile within the entrance to the harbor, on the E extremity of a shallow spit with depths of less than 5.5m. A beacon stands close NW of a light shown from the N summit of the peninsula, which forms the W side of Puerto Gray.

8.77 Bahia Halt is entered NW of Punta Halt (48°55'S., 74°22'W.) and extends about 0.8 mile E. It has irregular depths including an 8m patch located 0.1 mile NNE of Punta Halt. Small craft can obtain anchorage, in a depth of 47m, in the inner part of the bay, which is only 91 to 183m wide. A coaster might be able to obtain anchorage in the outer part of the bay where depths vary from 36 to 75m.

Isla Daly (48°52'S., 74°29'W.), an islet on the W side of Canal Messier, lies 3 miles NNW of Isla Moat. When seen from the N, the outline of the islet has a rounded aspect near the center, and its E and W extremities appear as bluff points. Estero Seymour is entered 1 mile SSW of Isla Daly and is of little importance. Estero Denman is entered 2 miles E of Isla Daly and is also of no importance.

Bajo Cotopaxi (48°46'S., 74°28'W.), a rock with a depth of 4m, lies near mid-channel on the W side of the canal. The kelp on this danger is only visible when the sea is smooth. There is a depth of 5m, 0.5 mile N of the rock. A stranded wreck, marked by a light, lies on the S end of the rock.

Bahia Tribune is entered between Punta Lautaro, 2.5 miles SE of Bajo Cotopaxi, and Punta Yeleho, 3.5 miles NNE. Isla Williams lies across the entrance to the bay and shows a light on its S end. Anchorage may be obtained in the bay, in depths of 24 to 58m, good holding ground. The depths in the bay are very irregular and the N part is too deep for anchoring. With N winds, the recommended berth is 0.3 mile SSW of the light in a depth of 37m, and with the NW winds, 0.2 mile SE of the light, in a depth of 38m. A foul area lies about 0.3 mile, bearing 182°, from the light. A cove, close E of Punta Lautaro, affords anchorage for small craft.

Caution.—The channel between Bajo Cotopaxi and Isla Williams has been reported (1991) to be 0.28 mile narrower than charted.

8.78 **Islotes Direccion** (48°41'S., 74°26'W.) lie near a deep channel, 5 miles N of Isla Williams. A light is shown on the S extremity of Islotes Direccion. Anchorage may be obtained about 0.4 mile NE of Islotes Direccion Light, in a depth of 47m. Strong E sets towards the islets have been reported.

Seno Iceberg is entered between Punta Yelcho, 3 miles SE of Islotes Direccion, and a point 2.2 miles N. The inlet extends 12.5 miles E to the foot of a glacier. The inlet is deep and no anchorages have been found. Three miles within the entrance on the S side, a shallow arm branches 7 miles SE. Estero Farquhar, 2 miles within the entrance on the N side, leads 5 miles NE, and another arm branches 3 miles N, both these arms are unsurveyed.

Abra Search (48°42'S., 74°32'W.), on the W side of Canal Messier, is entered S of Cabo Nelson, 2.5 miles W of Islotes Direccion. It is 1 mile wide and extends 4 miles WSW to Punta Glucks, where it joins Canal Adalberto.

Seno Wald extends 9 miles S from the junction of Abra Search and Canal Adalberto. Isla Schroder is an islet in the entrance to the inlet, 1.7 miles S of Punta Glucks (48°43'S., 74°36'W.). The inlet affords anchorage, in a depth of 18m, 183m offshore.

Punta Bremmer (48°39'S., 74°28'W.), 2.5 miles NNE of

Cabo Nelson, is the E extremity of Peninsula Thornton, which is steep and rugged. A flat-topped mountain rises 2 miles NNW of Punta Bremmer. Two points lie at the N end of Peninsula Thornton, about 5 miles NNW of Punta Bremmer; two rocks lie off the W point. A large bay lies between the N extremity of Peninsula Thornton and a point 5 miles NNW. The bay is deep, but has not been surveyed.

Canal Farquhar lies on the E side of Canal Messier and is entered SE of Isla Boxer (48°33'S., 74°21'W.). Estero Bernardo is the continuation of Canal Farquhar from its N end, and extends 12 miles SE to the foot of a glacier. Canal Farquhar and the inlets and channels leading from it have not been surveyed and should only be entered with local knowledge.

8.79 Bahia Lion (48°33'S., 74°25'W.), off the S side of Isla Farquahar, forms the W end of the narrow channel between Isla Boxer and Isla Farquahar, and is almost entirely unknown. Caleta White Kelp lies on the N side of the bay, but is very restricted and does not serve as a good anchorage.

Isla Middle, on the E side of Canal Messier, lies 1.5 miles NW of Punta Caffin (48°31'S., 74°27'W.). The island has two peaks which are very prominent from the N and visible as soon as a vessel enters Canal Messier from Bahia Tarn. The two peaks are not seen separately until the island is almost abeam. A light is shown from a square concrete tower, 3m high, on the W extremity of the island.

Caleta Connor (48°30'S., 74°26'W.) is entered 1 mile NNE of Punta Caffin. Anchorage may be obtained in the middle of the cove, in a depth of 24m, NE of the beacon on Punta Goulden. If required, a hawser can be secured to a conspicuous tree, with notice boards on it, standing on the SE side of the cove near its head. The anchorage is well-sheltered from the NW and has good holding ground. Violent squalls are not experienced, even when there are strong winds in Canal Messier.

Abra Cuthbert, on the W side of the canal, is entered 1.5 miles SW of Islotes Arturo (48°25'S., 74°35'W.). It extends 3.5 miles W and has not been surveyed. There are two islets in the S half of the entrance, and two islets, close offshore, 1 mile W of the N entrance point.

8.80 Isla Van de Meulen (48°15'S., 74°29'W.) lies with its S extremity 1.7 miles N of Morro Hens. It is separated from Isla Caldeleugh, SE, by an unnamed channel which extends 8 miles NE to Isla Justiniano, a small island off its NE entrance. Three miles within the entrance a narrow inlet branches SE for 8 miles, almost dividing Isla Caldeleugh into two parts. From Isla Justiniano, a channel on the NE side of Isla Caldeleugh extends 7 miles SE to Isla Ofhidro, and then continues between these islands for 5.5 miles to join Canal Farquhar. Seno Horacio, entered 1.5 miles NW of Isla Ofhidro, extends 12.5 miles E. The channel leading NW from Isla Justiniano, separating Isla Van de Meulen from Peninsula Swett on the mainland, extends 12 miles to the W end of Seno Rowley. None of these channels and inlets have been surveyed, and should not be entered without local knowledge.

Morro Cock forms the W extremity of Isla Van de Meulen. The headland appears from the S as a steep cliff with a smooth top. When seen from the N, it is very remarkable because of its peculiar shape. A light is shown from this headland.

Estero Van de Meulen (48°15'S., 74°32'W.) is entered close E of Morro Cock and extends 7 miles NE. The inlet affords a very indifferent anchorage with little shelter. The inlet has not been surveyed and should not be entered without local knowledge.

Seno Hornby, on the W side of Canal Messier, is entered between Peninsula Negra and Isla Schafer, 2 miles NNW. Seno Otto is entered S of Isla Hornby and extends 11 miles WNW. This inlet is deep, but no anchorages have been found. Canal Albatross is approached from the N through Seno Hornby, but is unsurveyed and should not be used without local knowledge.

Canal Barbarossa is approached through Seno Hornby and Paso Schlucht, a narrow channel entered NW of Isla Schlucht. The canal leads WNW for 15 miles to Canal Fallos. The canal is unsurveyed and should not be used without local knowledge.

Rada Bachem (48°08'S., 74°50'W.) is located at the NE end of Paso Schlucht and should not be approached without local knowledge. Anchorage may be obtained 0.5 mile within the entrance to the channel, in a depth of 25m, 0.1 mile E of Punta Bachem.

Isla Millar, on the W side of Canal Messier, lies with its E extremity 9 miles N of Peninsula Negra, and extends 8 miles N to S. The summit of Isla Millar is prominent from the N. A range of mountains run the whole length of the island. A light is shown on the E point of the island.

8.81 Seno Rowley (48°04'S., 74°28'W.), on the E side of Canal Messier, is entered N of Peninsula Henry, and extends 10.5 miles NE, but has not been fully explored. Two arms branch off from the inlet, 3 and 6 miles from the W extremity of Peninsula Henry.

Puerto Island is a landlocked harbor, with good holding ground, extending 0.5 mile NE from Punta Fleuriais, located 3.7 miles NNW of Peninsula Henry. Islote Phipps lies 183m off Punta Fleuriais. Anchorage may be obtained in a depth of 35m, mud, 183m NNE of Islote Phipps. Small vessels can anchor 250m from a large waterfall, which descends at the head of the harbor, in a depth of 18m, securing the stern to trees on the shore as there is not room to swing. Large vessels can anchor outside the harbor in a depth of 27m, with Punta Fleuriais bearing 353° and the S end of Islote Phipps bearing 059°.

Paso Pluddemann (47°59'S., 74°48'W.) leads 6 miles S between Isla Millar and Isla Juan Stuven. As the pass is unsurveyed, it should not be used without local knowledge. From the S end of Paso Pluddemann, a narrow channel leads 15 miles WNW and then N between Isla Juan Stuven and Isla Jung Frauen to Paso del Sud-Oeste.

Bahia Fatal, a narrow inlet on the W side of Paso Pluddemann, is entered 1.2 miles WSW of the N end of Isla Millar. A small cove, with a narrow entrance and deep inside, lies within the inlet Bahia Fatal; it is not recommended as an anchorage.

Isla Penguin (47°49'S., 74°48'W.) is located off the NE end of Isla Juan Stuven and extends 1 mile NW. The island, which forms the W entrance point of the N end of Canal Messier, can be approached within a distance of not less than 0.5 mile. The island has a flat summit and is difficult to distinguish from N. Paso Tate separates the island from Isla Juan Stuven, 183m wide and obstructed by rocks, marked by kelp, with depths of 5m. A light is shown on the NE extremity of the island.

Caleta Austral (Puerto Austral) lies between Isla Penguin and Isla Juan Stuven, W of Paso Tate. The cove affords the best an-

chorage in the vicinity. The holding ground is good, the depths are convenient, and it is well-sheltered. The recommended anchorage lies 0.3 mile SE of the W end of Isla Penguin, in a depth of 24m, hard white mud. The cove can be entered by Paso Occidental, SW of Islote Home, or by Paso Oriental, between Isla Penguin and Islote Patricia. Paso Oriental should be used in preference to Paso Occidental, as it is 0.2 mile wide and less water than charted may exist in the latter.

8.82 Grupo Baker, on the E side of the N end of Canal Messier, occupies the greater part of the entrance to Seno Baker, between Peninsula Swett and Peninsula Larenas, 15 miles NNW. The group consists of Isla Orlebar, Isla Zealous, Isla Porcia, and smaller islands and islets separated by narrow and deep channels.

Isla Orlebar (47°57'S., 74°36'W.) lies 3 miles E of Isla Millar and is separated from Peninsula Swett by Canal Somerset, which leads 5 miles NE of Canal Baker and has a least width of 0.7 mile. Isla Tito lies off the N side of Isla Orlebar and is separated from it by Canal Tito, which is 2 miles long and very narrow. An islet and some rocks lie close off the E end of Isla Tito (47°55'S., 74°36'W.).

Caleta Hale lies on the W side of Isla Orlebar and is entered 2 miles N of the SW end of the island. Anchorage may be obtained for moderate size vessels, in a depth of 30m, 0.4 mile W of Monte Orlebar. This anchorage is sheltered except during strong NW winds, when fierce squalls from between NW and NE may be experienced. Anchorage may also be obtained in the entrance to the cove, 0.1 mile NNE of Islotes Billiard, in a depth of 64m. There is a rock, with a depth of 13m, 183m N of this anchorage. A below-water rock has been reported to lie 45m NW of this anchorage.

Canal Kruger (47°56'S., 74°39'W.) separates Isla Orlebar and Isla Tito from Islita Alert, Islita Scylla, and Isla Scout to the W, Isla Zealous to the NW, and Isla Porcia to the N. The channel enters Canal Baker at Punta Joubert, the SE point of Isla Porcia. The fairway is clear of dangers and deep. Islotes Origen, 1m high, lie near mid-channel NW of Isla Tito. These two rocks can be passed on either side, but the passage S of them is wider.

Isla Zealous lies with Punta Braua, its NW extremity, 7 miles NNW of Islita Alert. Above and below-water rocks extend 0.5 mile from the point. A beacon stands on the SW extremity of the island. Canal Cronje extends 4.5 miles N from Canal Kruger to Punta Canarro, the NW point of Isla Porcia. Anchorage may be obtained, in case of necessity, among the several islets at the S entrance to the canal in a depth of 18m, but is exposed to N winds. Local knowledge is necessary both for the anchorage and Canal Cronje.

Isla Sombrero (47°48'S., 74°42'W.), N of Isla Zealous, is the N island of Grupo Baker. The channel between Isla Zealous and Isla Sombrero has a least width of 0.5 mile, and is clear of dangers. When passing through, a mid-channel course should be maintained. Anchorage, providing shelter from NW, may be obtained in a small bay with good holding ground on the SE side of Isla Sombrero, with the island mountain peak bearing 330° and the NE extremity of Isla Zealous bearing 097°. The depths in this bay decrease suddenly to 5m close to the kelp which fringes the shore. During E. winds, vessels should anchor farther E, in a depth of 55 to 73m.

8.83 **Bahia Tarn** (47°44'S., 74°47'W.), on the S side of Golfo de Penas, is the N approach to Canal Messier and also the approach to Seno Baker. Islas Ayautau lie on the E side of the bay about 4 miles off the mainland. They serve as an excellent mark to steer for in making Canal Messier from Golfo de Penas. The passage between the islands and the mainland appears to be foul. Bajo Sakkarah, with a least depth of 7.8m, lies 3 miles NW of Punta Oscar.

Isla Schroder, the SE island of Archipielago Guayaneco, lies with its E end 3 miles NW of Isla Penguin. Puerto Ballenas lies on the SE side of Isla Schroder and affords anchorage off its entrance, in a depth of 20m, 183m from the W shore with the SE end of Islote Jaures bearing 023°, distant 0.1 mile. The cove is foul.

Caleta Ideal (47°47'S., 74°55'W.) is located on the SW side of Isla Schroder. Anchorage is afforded 0.1 mile NNW of Isla Porvenir, in a depth of 13m, or near the middle of the cove, in a depth of 18m, but the holding ground is poor.

Isla San Pedro lies 6.5 miles NW of Isla Penguin. A light is shown from the NE side of the island. San Pedro Naval Radio Station, situated adjacent to the light tower, maintains watch on VHF. A small pier, marked by a wooden cross, is situated 0.5 mile NE of the S end of the island. Vessels with local knowledge can anchor, in 15m, about 1 mile WSW of the S end of Isla San Pedro.

Bahia Acosta (47°44'S., 74°45'W.) lies SW of Isla San Pedro and Isletas Albertina, N of the foul ground extending from Isla Schroder. The bay is easily approached and has anchorage space for several vessels of moderate size. The bottom is very even, consisting entirely of sand. Although strong winds are felt here, they are generally constant in direction, while the squalls within the bay are less violent than those harbors surrounded by higher land. Some sea is said to reach the bay through the NW entrance. The best entrance to Bahia Acosta is between Isla San Pedro and Isletas Albertina. The SE entrance, between Isla Schroder and Isletas Albertina, is not recommended as rocks and other dangers lie off it.

Puerto Escondido is entered from Bahia Acosta, between Isla Guillermo and the coast of Isla Wager, 183m W. The cove affords good anchorage for small vessels, sheltered from all winds and with good holding ground, 0.4 mile S of Isla Guillermo, in a depth of 18m, where the channel is 0.5 mile wide. The entrance is not easy to identify as the coast of Isla Wager is low and wooded, and similar in appearance to Isla Guillermo.

8.84 **Seno Baker** (47°48'S., 74°38'W.) is entered N of Isla Sombrero and extends 9 miles ESE to Punta Jilguero, where it divides, N to Canal Martinez, and S to Canal Baker. Estero Eloisa is entered 2.5 miles NNE of Isla Sombrero and has not been surveyed. Estero Nicholas, entered 3 miles NW of Punta Jilguero, is 11 miles long and also has not been surveyed.

Puerto Francisco is a small cove on the N side of the Seno Baker, midway between Estero Eloisa and Estero Nicholas. At the head of the cove, a very narrow channel, with a least depth of 4.1m, leads into a landlocked basin. Anchorage may be obtained either N or S of the rocky patches on the bank extending SE from the W entrance point, in depths of 15 to 26m. The S berth is exposed NW to the seas coming in from Golfo de Penas.

Canal Baker, which has a least width of 1.5 miles, is entered

W of Punta Jilguero and leads S as Canal Joubert for 5 miles, and then turns ESE at Punta Baker, the W extremity of Isla Merino Jarpa. Drifting logs often obstruct the canal and adjacent channels. Care is necessary particularly when navigating at night.

Large masses of ice are constantly calved from Ventisquero Jorge Montt (48°20'S., 73°35'W.), which descends to the S side of the head of Canal Baker.

Caleta Dewett (47°52'S., 74°33'W.), on the W side of Canal Joubert, is entered 3 miles SW of Punta Jilguero. Caleta Dewett affords temporary anchorage for coasters in good weather. The recommended berth is in a depth of 31m, stones, about 275m NNW of the S entrance point.

Isla Merino Jarpa extends 28.5 miles from Punta Baker, and attains an elevation of 1,092m at its E end. The coast of the island is clear of dangers, steep-to, and indented by small inlets. It is separated from Isla Vicente by Canal Sierralta, which extends 8 miles NE from Punta Baker to join Canal Martinez. The channel has a least width of 0.2 mile, and can safely be navigated in mid-channel. Puerto Larenas affords the only anchorage on the S side of the island. Small vessels with local knowledge, can anchor in the middle of the cove, in a depth of 46m, good holding ground.

Estero Nef (48°07'S., 74°16'W.), on the S side of Canal Baker, is entered 10 miles ESE of Punta Baker, between Punta Stony and Punta Carpa, 1 mile E. The inlet divides into two arms at its S end. Brazo Terminus, the W arm, leads 4.5 miles S, and Brazo Codo, the E arm, trends SSE for 3.5 miles and then turns ENE for 4 miles.

8.85 Puerto Tres Meses (48°12'S., 74°16'W.), on the W side of the entrance to Brazo Terminus, is entered 0.5 mile W of Punta Castaneda. The cove has depths of 35m, 0.3 mile from its head, but the W part of its head is shallow. The outer part of the cove is too deep for anchoring, but anchorage may be obtained in the middle of the cove, 0.1 mile SW of the passage between the two islets, in a depth of 35m, mud and stone.

Puerto Cueri-Cueri, on the S side of Canal Baker, is entered 1.7 miles E of Punta Carpa (48°01'S., 74°18'W.). Anchorage may be obtained 0.4 mile from the head of the inlet, where it is 0.2 mile wide in a depth of 13m, mud, good holding ground and sheltered from all winds. In the approach to the anchorage the inlet has a least width of 0.1 mile, with a least depth of 12m. With N winds greater than force 5, strong currents develop in the entrance to the cove setting inward and heavy rip tides form forcing a vessel off her track and making handling difficult. Estero Amengual and Estero Casma, entered 4.5 and 6 miles, respectively, E of Punta Carpa, are very deep and narrow, being useless as anchorages.

Canal Troya (47°56'S., 73°49'W.), between Isla Alberto Vargas and Isla Merino Jarpa, trends NNE to join Canal Martinez, and is 4 miles long and 1 mile wide. The greatest depths in this channel are off the W shore. During a falling tide the tidal current runs S at a rate of 3 knots, and at this time the water is nearly fresh, being fed from the Rio Baker. After entering Canal Baker, the tidal current sets towards Punta Llay-Llay on the S shore.

Puerto Brown, on the S side of Canal Baker, is situated at the N end of a bay between Punta Payaso (48°01'S., 74°02'W.) and Punta Laura, 6.5 miles ESE. Anchorage may be obtained, in a depth of 45m, with moderate shelter, in the middle of the bay formed by Punta Teresa, the SE entrance point, and an islet, 0.3 mile SW. During strong W or SW winds, the squalls are very heavy here.

Between Punta Laura (48°03'S., 73°53'W.) and Punta Llay-Llay, 3.7 miles E, there is a deep bay with Estero Angamos at its head. This inlet has not been surveyed, but has been entered and reported that navigation presents no difficulty. Anchorage can be obtained, in a depth of 42m, 0.1 mile offshore on the E side of the inlet near its head.

Puerto Valdes (48°05'S., 73°51'W.) is a cove on the E side of the entrance to Estero Angamos. Foul ground, with depths of 1 to 6m, extends 0.1 mile N from the small peninsula on the S side of the cove. Anchorage may be obtained, in depths of 33 to 43m, mud, 0.1 mile SE of the N end of the peninsula. Small vessels can anchor 0.2 mile farther SSW, toward the head of the cove, in depths of 11 to 18m.

Puerto Alvarez is an anchorage off the NE side of Islote Alvarez, which lies close off the SE side of the entrance to the unsurveyed Estero Landgren. Anchorage may be obtained, in a depth of 16m, with the outermost rock N of Islote Alvarez bearing 321°, distant 0.3 mile or farther off the islet. The best berth is just S of the alignment of the rock with a prominent waterfall on the NW shore of Estero Landgren.

8.86 Canal Plaza (47°58'S., 73°41'W.), E of Isla Alberto Vargas, separates the island from Peninsula Videau. The canal is 6 miles long and leads to Canal Martinez. The canal is tortuous, with a least width of 0.3 mile in the middle, with its greater depth towards the E shore.

Puerto Contreras is situated on the E side of Isla Alberto Vargas in the middle of Canal Plaza. Its position can be identified by a remarkable waterfall on the E side of Canal Plaza, 0.7 mile E of Punta Obscuro. The fairway in the entrance is deep, but an 8m shoal patch lies about 0.1 mile SSW of Punta Obscuro. Anchorage may be taken, in depths of 18 to 20m with Punta Obscuro bearing 056°, distant 0.2 mile. Vessels up to 60m in length and a draft of 4.5m can enter the bay 1 mile W of Punta Obscuro, where they can anchor, in a depth of 12m, over a bottom of mud. When approaching Puerto Contreras keep nearer to the S shore to avoid a rocky shoal, with a depth of less than 2m, lying 0.7 mile W of Punta Obscuro.

Estero Montegro, on the N side of Canal Baker, is entered 6 miles E of Punta Llay-Llay. It extends 4.5 miles ENE, but has not been surveyed.

Isla Francisco (48°07'S., 73°39'W.) lies near mid-channel, 4 miles ESE of Punta Llay-Llay. The channel SE of the island has not been surveyed. Tenedero Fuentes affords anchorage on a bank extending 0.5 mile offshore, close N of the E extremity of the island, but local knowledge is necessary.

Fondeadero Pedreros lies between the two S islets of the chain extending from Isla Francisco, 0.7 mile NW of Isla Faro. It affords anchorage to small vessels with local knowledge, in depths of 20 to 30m, good holding ground of mud, and a swinging radius of 0.1 mile. The anchorage is exposed and is not recommended in bad weather. Small icebergs drift down to the anchorage during the season of the thaw. Large pieces of ice fill the area S of Isla Faro.

8.87 Tenedero Rio Pascua (48°15'S., 73°26'W.), on the S

side of Canal Baker, lies close E of Punta Pisagua, 2 miles WSW of Punta Steele. The anchorage is W of the S end of the delta of the Rio Pascua, having depths of 40 to 60m with Punta Pisagua bearing 311° and Punta Steele bearing 057°. A small vessel can anchor 183m from a tree, with a notice board on it, in a depth of 18m, mud.

Estero Steele forms the head of Canal Baker. The shores are steep and wooded, with depths of more than 50m in the middle of the inlet. Two miles S of the head of the inlet, there is a narrows, 70m wide with depths of 13 to 16m, and a bottom of mud. Anchorage may be taken immediately S of the W entrance point to these narrows in a depth of 30m, 183m offshore. If necessary, the vessels stern can be secured to trees on the shore.

Caleta Buzeta (48°11'S., 73°19'W.), the best anchorage at this end of Canal Baker, lies on the E side of Estero Steele, 4 miles ENE of Punta Steele. The channel SE of Isla Julia (48°12'S., 73°20'W.) is shallow and should not be used. The general depths within the cove are from 8 to 12m, mud bottom.

Two anchorages are recommended, although a vessel can anchor anywhere in Caleta Buzeta according to draft. The N berth is with an above-water rock close of Punta Vasquez bearing 001°, distant about 0.1 mile, in a depth of 11m. A better and more spacious anchorage is with the same rock bearing 009°, distant 0.3 mile. This anchorage is suitable for vessels drawing less than 7m, the sterns of which can be secured to the S shore.

8.88 Canal Martinez, the N portion of Seno Baker, is entered between Punta Jilquero, on the W side of Isla Vicente, and Isletas Boers, 1 mile N. The canal is tortuous and extends E for 42 miles, where it is prolonged E by Estero Mitchell for another 14 miles. The channel is less than 1 mile wide for a great part of its length. The narrowest part is Paso Termopilas, which is only 0.1 mile wide, 14 miles within the entrance. The tidal current in this pass runs at a rate of 4 knots.

Isletas Boers (47°49'S., 74°30'W.) form the N entrance point to Canal Martinez and must be passed to the S when entering the canal. A rock, 2.5 miles NE of Isletas Boers, is the only danger in the W part of the canal. Many of the inlets in the W part of the canal are unsurveyed and should be avoided.

Paso Termopilas branches NE at the W end of Isla Irene (47°50'S., 74°04'W.). From the W entrance to the passage, Estero Gonzalez extends ESE for 7 miles, but is deep and of no use to shipping. The channel trends E from the pass for 4.5 miles to Punta Vicente, the NE end of Isla Irene, where it turns S for two miles.

Puerto Merino Jarpa is entered 1 mile NE of Punta Vicente, and is the best anchorage in Seno Baker, being well-sheltered with good holding ground. The inlet extends 1 mile N and forms two coves. The channel leading to the inner cove has a navigable width of 183m between shoals on either side. Anchorage may be obtained in the middle of the outer cove, in depths of 12 to 16m, with Punta Merino, the E entrance point, bearing 140°. Small vessels can anchor in the inner cove, which is 0.2 mile wide, in a depth of 13m, mud. When entering the inner cove, keep closer to the W side of the channel, as there are rocks, which dry, 91m off the E shore.

Puerto Bordali (47°49'S., 74°03'W.), on the E side of the channel, is entered 1.2 miles SSE of Punta Merino Jarpa. Two small islets lie close of the W entrance point, which is formed by a small peninsula extending SW. There is anchorage on the W side of the N of two coves at the head of the inlet, in depths of 12 to 16m. The head of this cove is shallow and should not be approached.

Caleta Gallardo is a small cove on the N side of the channel, midway between Punta Ninfa and Punta Baal (47°52'S., 73°56'W.). The cove affords anchorage to a single small vessel.

Caleta Espinoza (47°54'S., 73°54'W.) lies in the narrow channel between Islote Lucano and Isla Merino Jarpa. Small vessels with local knowledge, may obtain anchorage here, in depths of 25 to 29m, mud, with the SE point of Islote Lucano bearing 043°.

Estero Steffen, on the N side of Canal Martinez, is entered E of Punta Steffen (47°49'S., 73°46'W.), 7.7 miles ENE of Punta Baal. It extends 11 miles N and NE and is deep as far as the mouth of the Rio Huemules, 8 miles from the entrance on the NW side.

8.89 **Caleta Maria Elena** (47°46'S., 73°44'W.) is a cove on the E side of Estero Steffen, 2.7 miles NNE of Punta Steffen. In good weather, anchorage may be obtained SW of the creek which flows into the center of the cove, 0.1 mile offshore, with good holding ground.

Puerto Sargento, in Estero Steffen, lies between sandbanks which project SE from the mouth of the Rio Huemules, and the E side of the inlet. The anchorage is 0.3 mile from the edge of the banks, in a depth of 40m, with the SW extremity of low and swampy ground, extending S from the N entrance point of the river, bearing 311°. Local knowledge is necessary.

Surgidero Raul (47°49'S., 73°42'W.) is an open roadstead 1 mile SE of Punta Lucia, the E entrance point to Estero Steffen. It lies close on Bajo Raul, which has depths of from 10 to 24m, good holding ground. The anchorage can be identified by a white landslide on the side of a mountain, rising 1.7 miles NE of Punta Raul (47°49'S., 73°43'W.). Vessels with local knowledge can anchor 0.1 mile offshore with the white landslide in line with a small rocky point, bearing 043°, in depths of 10 to 15m, mud.

The Rio Baker, the principal river in the vicinity, flows through a delta into the E end of Brazo Norte. The river is navigable by small craft for 38 miles from its mouth. A pilot should be obtained locally.

Surgidero Arturo (47°50'S., 73°39'W.), the best anchorage off the delta of the Rio Baker, lies on the E side of Punta Casas. Vessels with local knowledge can obtain anchorage 0.3 mile offshore, in depths of 16 to 20m. The seaward edge of the delta is steep-to, and soundings give little warning when approaching it. There are some storehouses and dwellings near the anchorage.

Ensenada Tortel, which is deep, lies on the S side of the delta of the Rio Baker and is entered N of Punta Acosta (47°51'S., 73°36'W.), the N entrance point of Canal Montalva. Caleta Tortel, which forms the N end of Ensenada Tortel, is entered E of Punta Mancilla, 0.7 mile NNE of Punta Acosta. A light stands on the highest point of Punta Mancilla, while a beacon stands on Punta Gisela, about 0.3 mile SW of Punta Mancilla. Anchorage may be obtained 183m NE of Punta Mancilla, in a depth of 22m. A better anchorage in bad weather is in a cove, outside Caleta Tortel, between Punta Mancilla and a naval sig-

nal station, where a vessels stern can be secured to the shore. Both anchorages are well sheltered.

8.90 Puerto Gunther (47°55'S., 73°30'W.) is entered 0.5 mile E of the SE end of Isla Barrios. Vessels with local knowledge can obtain anchorage 0.5 mile inside the entrance, in a depth of 20m.

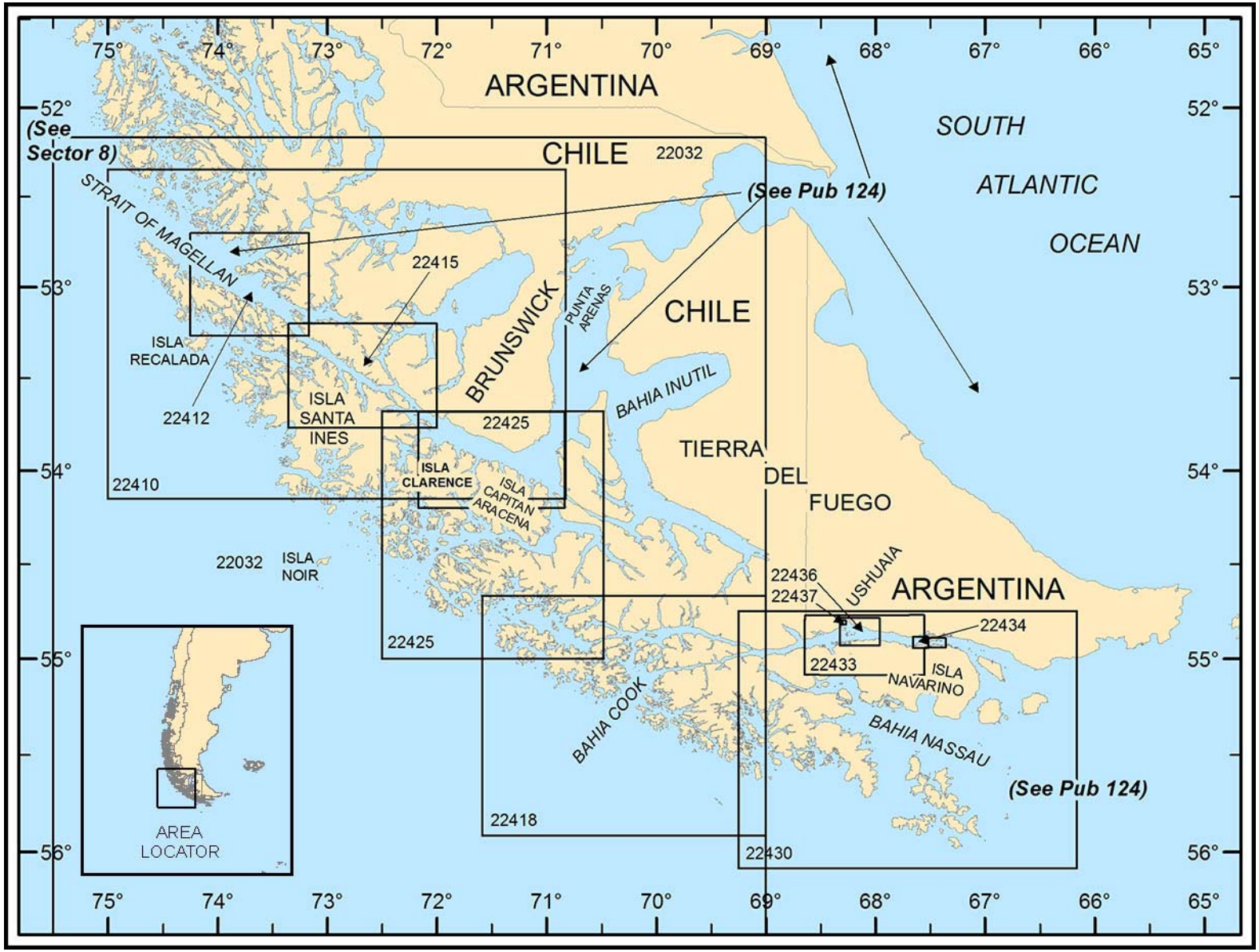
Estero Mitchell, on the N side of Peninsula Videau, is entered between Punta Lindero (47°55'S., 73°34'W.) and Punta Quillota, 1 mile SE. The inlet extends for 12 miles ESE to the mouth of the Rio Brava. The inlet has a least width of 0.5 mile and is deep throughout.

Puerto Velenzuela (47°56'S., 73°32'W.) is entered 1 mile E of Punta Lindero, and lies NE of Punta Quillota. Anchorage may be obtained towards the S shore in the entrance, in depths of 31 to 44m, mud. Depths of less than 11m extend 0.5 mile from the head of the cove and 0.2 mile from the NE shore. The holding ground is good, but during NW and W winds, anchorage in Puerto Gunther is to be preferred. A shoal, with a depth of 1.2m, lies in the middle of the cove, 0.2 mile from its head.

Caleta San Miguel lies on the NE side of Estero Mitchell, 1.5 miles SE of Punta Lindero. It affords an anchorage to small vessels 91m SSW of the creek, which flows into the cove, in a depth of 27m, mud.

Caleta Laguera (48°01'S., 73°28'W.), on the S side of Estero Mitchell, is entered 6.5 miles SE of Punta Lindero. Small vessels can anchor in the middle of the outer part of the cove, where it is 0.2 mile wide, in a depth of 35m. When approaching the anchorage, keep SE of a mid-channel line to avoid a dangerous rock, which is awash.

Caleta Yungay, 2 miles NE of Caleta Laguera, affords anchorage to small vessels. There is also an anchorage for one small vessel, with local knowledge, in Surgidero Freddie, on the S side of the head of Estero Mitchell, off the mouth of the Rio Bravo in a depth of 51m, but it is not recommended.



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

SECTOR **9** — CHART INFORMATION

SECTOR 9

COASTS OF CHILE AND ARGENTINA SOUTH OF ESTRECHO DE MAGALLANES AND TIERRA DEL FUEGO

Plan.—This sector describes the archipelago S of the W part of Estrecho de Magallanes (Strait of Magellan) and the waters S of Tierra del Fuego. From Cabo Deseado SE to Cabo Falso de Hornos, then NE to Cabo San Pio and the E entrance to Canal Beagle, then W to Canal Cockburn and its adjacent islands and inlets.

General Remarks

9.1 See Pub. 124, Sailing Directions (Enroute) East Coast of South America for a description of the approaches to Estrecho de Magallanes.

The SW coast from Cabo Deseado to Cabo Falso de Hornos, 300 miles SE, is composed of a large number of islands. It is generally high, bold, and free of shoals and banks, but there are many rocks, nearly awash, some of which lie 6 miles from the nearest coast.

From a distance this coast appears high, rugged, covered with snow, and continuous as if there were no islands, but on a near approach, many islands are seen which intersect the land in every direction, and open into large gulfs or sounds within the seaward islands. The high land, covered with snow, now disappears behind the coastal hills, the latter being thickly wooded toward the E, though barren, on their W sides, owing to the prevailing winds. These hills are seldom covered with snow.

Ice.—In coastal waters, sea ice is not normally encountered, but on rare occasions it may form in the shallow portions of some inlets, during abnormally cold spells in mid and late winter. The SE flowing currents off the W coast of Chile tend to keep the water temperature in the various inlets and channels above freezing.

Some of the channels and inlets possess glaciers, which calve and produce ice which is a danger to navigation. Channels prone to this problem will be identified in the text.

Tides—Currents.—Little detailed information is available concerning the currents along the S coast of Chile. It would seem that S of about latitude 50°S., the current is predominantly S and then SE following the coast. From the few observations available it would seem that the tidal currents off the coast between Cabo de Hornos and Cabo Pillar appear to be weak in relation to the coastal current. Tidal currents will be described along with the feature they affect.

Anchorage.—The best anchorages, where good holding ground exists, are on the W side of high land, protected from the sea by low islands. Good anchorages on the E side can be found, but they are usually exposed to heavy squalls from the high land. Where the land is chiefly composed of sandstone or slate, anchorages abound, but where it is composed of granite it is difficult to strike soundings.

The difference between the granite and slate and sandstone hills can be distinguished by the former being very barren and rugged, and of a grey or white appearance, whereas, the latter are dark colored, covered with vegetation, and have smoother outlines.

Cabo Deseado to Cabo Tate

9.2 **Cabo Deseado** (52°45'S., 74°43'W.) forms the NW extremity of Isla Desolacion. The cape is low and submerged rocks extend 0.7 mile from it. Pico Adam, 3 miles SE of Cabo Deseado and 847m high, is prominent and makes a good landfall. Rocas Apostoles, from 1 to 15m high and fringed with breakers, lie on a reef which extends 2 miles off the cape.

Caution.—A submarine exercise area, the limits of which are shown on the chart, is centered about 27 miles NW of the cape in the approaches to the W entrance of Estrecho de Magallanes.

Caleta Mataura is entered between Cabo Mataura (52°49'S., 74°40'W.) and a point 0.5 mile N. The cove is deep, but open to W winds and cannot be recommended. Anchorage may be obtained about 1 mile ENE of Cabo Mataura, the S entrance point, in a depth of 35m, sand.

Puerto Loberos (52°51'S., 74°35'W.) is an inlet entered midway between Cabo Mataura and Punta Chancery, 3.2 miles SE. Numerous rocks and breakers exist near the entrance, and the head of the inlet is encumbered with rocks and patches of kelp. The swinging room is restricted and the anchorage is open W. Local knowledge is required. Rocas los Jueces lie on a reef up to 3.5 miles NW of Punta Chancery, there are many breakers near these rocks.

Bahia Dislocacion lies 2.5 miles SE of Punta Chancery. The bay is unsuitable for vessels, except as a refuge when in distress. Islas Cotesworth lie about 5 miles SSE of Bahia Dislocacion and nearly 1 mile offshore. The channel between these islands and Isla Desolacion has not been surveyed. Bahia Barrister, about 12 miles SE of Bahia Dislocacion, is also unsuitable for vessels, as it is encumbered with foul ground, and is exposed. Roca Lee, a prominent above-water rock, and Isla Black lie about 2.5 miles off the coast between the entrance to Bahia Dislocacion and Islas Cotesworth.

Puerto Saturday lies about 8 miles SSE of Bahia Barrister and in the channel between Isla Monday and Isla Tuesday. It affords a secure and snug anchorage to small vessels in a depth of 40m, with good holding ground, but access is difficult. Anchorage may also be obtained between Isla Tuesday and Isla Graves, in 21 to 25m, off a waterfall. The anchorage should be approached from the N, passing N of a 3.5m patch, marked by kelp, lying mid-channel 0.5 mile NNE of Isla Tuesday. There is an anchorage, in depths of 15 to 19m, in a large cove on the E side of Isla Monday.

Paso Murray (53°08'S., 74°17'W.) can be navigated without difficulty in its W part, N of Isla Graves and Isla Monday, but it is necessary to keep at least 183m off either shore. The E part of

the pass is obstructed by many islets and rocks, which lie between the NE end of Isla Monday and Grupo Friday, 1 mile E. Isla Graves is the largest of Islas Weeks and attains an elevation of 610m. Several rocks lie off the coast of the island.

Isla Recalada lies about 8 miles SSE of Isla Monday. Cabo Schetky, its S extremity, is a remarkable double-peaked promontory. Rocks, just awash, lie up to 1 mile S of this cape. Isla Inman is separated from the SW end of Isla Recalada by a narrow channel. Off Cabo Inman, the W extremity of the island, are several detached rocks on which the sea breaks violently giving them a formidable appearance.

9.3 Bahia Latitud (53°17'S., 74°14'W.), formed by the NW side of Isla Recalada and the NE side of Isla Inman, has depths of 13 to 31m. The bay affords good anchorage off the N entrance to the narrow channel between the two islands, but is somewhat exposed to the swell caused by strong NW winds. It is advisable to anchor as close as possible to the W shore, but not in depths of less than 18m, with an anchor laid out E in case the wind blows from that direction.

Within the channel between the two islands there is a secure and snug berth, with calm water, which is suitable for a vessel drawing less than 3.6m.

Bahia Otway lies NW of Isla Nunes and Islas Rice Trevor and SE of Isla Recalada. The bay should not be entered without local knowledge, as there are many islets and rocks in it, and it has not been surveyed. Passages lead from the bay to Estrecho de Magallanes through Seno Dynevor and Canal Abra.

Puerto Gonzales (53°20'S., 73°47'W.) is the larger and E of two small bays on the N coast of Isla Childs. The port affords good anchorage for vessels with local knowledge in depths of 16 to 18m, sand and shells, good holding ground. The port is recommended as a harbor of refuge.

Canal Abra is entered at the E end of the head of Bahia Otway. It is a good navigable channel, but has not been completely surveyed. Canal Maule leads 8 miles SE from Bahia Otway to the head of Seno Profundo. The channel is deep, but it has a bend which can not be taken by vessels over 59m in length. Canal Evans, which separates Isla Evans from Islas Rice Trevor to the E, is unsurveyed.

Cabo Tate (53°38'S., 73°51'W.) is the SW extremity of Isla Nunes. It is high and rounded at the summit. There are numerous clusters of rocks off its W and N sides, known as Rocas College, which extend up to 8 miles NW of the cape. This part of the coast is very dangerous and should be avoided.

Cabo Tate to Isla Noir

9.4 Seno Profundo (Hondo) is entered between Cabo Tate and the SW end of Islas Fincham, 8 miles SE. The inlet is studded with rocks and for the most part unsurveyed. It contains no anchorage. Islas Rice Trevor form a large and compact group at the head of the inlet.

Puerto Almirante Martinez is a cove on the S side of Punta Ragged (53°46'S., 73°34'W.), affording anchorage to vessels of moderate size. The harbor has not been fully surveyed. Vessels should steer so as to pass W of Rocas del Medio and then E to some prominent rocks lying near the coast. When the latter rocks have been passed, the cove opens out.

Seno Langford (53°49'S., 73°25'W.) is entered between islets and rocks, which extend from the N side of the W entrance to Paso Wakefield, and Punta Ragged. The inlet is encumbered with islets and rocks, and has not been surveyed. The whole of this coast is known as Costa Inabordable. It is exposed to W winds and no vessel should approach it.

Cabo Gloucester (54°04'S., 73°28'W.) is the W extremity of Isla Carlos and is a remarkable promontory which cannot be mistaken. A rock, on which the sea breaks, lies 1 mile WNW of the cape, but there are no other known dangers and the cape can be passed fairly close.

Bahia Euston lies on the SE side of Isla Carlos. The bay, 2 miles wide, forms the approach to Seno Laura. Anchorage is obtainable for large vessels, in depths of 10 to 35m. The bay is only exposed to SE winds, which seldom blow hard. This anchorage is considered one of the best in the vicinity.

Seno Laura is a small inlet on the SE side of Isla Carlos. There are three small arms on the W side of the inlet. The S arm, known as Estero La Darsena, lies 1 mile within the entrance, and is only suitable for small vessels, which can anchor, in depths of 9 to 16m.

9.5 Bahia Hope (54°07'S., 73°04'W.) lies on the NE side of Isla James and affords anchorage to vessels with local knowledge. The best anchorage is with the N entrance point bearing 023°, in depths of 14 to 20m. There is some kelp in the entrance to the bay, but it does not indicate any danger.

Bahia Bolivar lies between the N end of Isla Isabella (54°11'S., 72°56'W.) and the E side of Isla Libertad. Good anchorage is afforded to vessels with local knowledge, in a depth of 11m. The bay has been reported to be unsurveyed.

Paso Wakefield (54°03'S., 73°08'W.), 2 miles wide, separates Isla Santa Ines and Islas William from Islas Grafton. At times the pass has been used by vessels, and appears to present no particular difficulty. There are several anchorages in the passage between the islands, but the best and easiest of access is in Bahia Euston.

Bahia Stokes is an almost unsurveyed bay, strewn with dangerous reefs, formed by several islands lying off the SW part of Isla Santa Ines. It is entered between Islas Agnes and Rocas Kennel (54°17'S., 72°59'W.). At the head of the bay Canal Gonzalez connects NE with Canal Barbara.

Isla Santa Ines rises to a prominent snow-capped summit, 1,341m high, at the SE part of the island.

Isla Noir (54°29'S., 73°01'W.) lies about 15 miles SSW of Bahia Stokes. Rada Noir, located on the E side of the island, is an excellent roadstead. Anchorage can be obtained here, secure from all W winds, in depths of 26 to 27m, over a clear sandy bottom. A below-water rock lies in the NE part of the roadstead. Islotes Torres lie about 7 miles S of Isla Noir and can be passed moderately close on either side.

Isla Noir, 182m high, was reported to be an excellent radar target at a distance of 42 miles. Sealers have been known to visit the island during the season of moderate weather.

Isla Noir to Bahia Desolada

9.6 Islas Agnes (54°19'S., 72°40'W.) lie on the SE side of the outer part of Bahia Stokes. The islands form a chain from 2 to 11 miles WNW of the NW extremity of Isla Kempe. Numerous above and below-water rocks lie up to 6 miles S of Islas Agnes.

The islands are unsurveyed, unexamined, and should only be approached in good weather and with local knowledge.

Isla Lort lies 3 miles N of Islas Agnes. The cove on the SE side of the island is spacious, and affords good shelter to vessels with local knowledge. There are two narrow passages into the cove and they are well-defined by kelp. Anchorage may be obtained in the cove, where depths vary from 18 to 30m, good holding ground. Isla Lort should only be approached in good weather and with local knowledge.

Rocas Neptuno lie 4 miles NE of Isla Noir; Rocas Jupiter lie 6 miles WSW of Cabo Kempe (54°23'S., 72°32'W.). This area should be avoided, as little is known of it and it is extremity dangerous to shipping.

9.7 **Paso Aviador Ibanez** (54°18'S., 72°22'W.) is an unsurveyed channel which extends 9 miles NE from the NW extremity of Isla Kempe (54°21'S., 72°25'W.). Its narrowest part is between Isla Mortimer and Islas Dora, 1 mile NW. There is an anchorage, for vessels with local knowledge, off the E side of Islas Dora, in depths of from 15 to 18m, sand and mud.

Puerto Skyring is an extensive bay NE of Isla Skyring (54°24'S., 72°08'W.) and S of Isla Adelaida. The best anchorage is in the SW corner of the bay where the depth is less and the bottom is sand and rock. There is an anchorage for small vessels with local knowledge, on the NE side of Isla Bynoe, 4 miles NW of Bahia Adelaida (54°22'S., 72°05'W.).

Isla Adelaida lies close off the NE extremity of Isla Skyring. Bahia Adelaida, a small bay on the NE coast of the island, affords two anchorages. One is in a cove on the S side of the bay, in a depth of 25m, sand, and the other is on the N side of the bay in a cove which is longer and narrower than the first with a depth of 15m, mud in the middle.

Seno Melville (54°22'S., 72°14'W.), in the middle of the group, is formed by Islas Furias, Skyring, and Adelaide to the S, and by Islas Kempe, Mortimer, and Bynoe to the W and N. It is encumbered with islets and rocks, and is unsurveyed. The E entrance to Seno Melville is in Paso Adelaida at the S end of Canal Barbara.

Islote Barcaza is a barren islet, 7 miles SSW of Bahia Furia. Above and below-water rocks lie N, E, and S of Islote Barcaza and can best be seen on the chart. The passages between the islets and rocks lead to the SW entrance to Canal Cockburn.

Canal Cockburn

9.8 Canal Cockburn (54°22'S., 71°40'W.) runs in a generally E direction for some 40 miles following the outline of Peninsula Brecknock of Tierra del Fuego, which it separates from the S coasts of Islas Henry, Clavel, Vidal Gormaz, Clarence, Seebrock, Diego, and Capitan Aracena. It then joins Canal Magdalena and Estrecho de Magallanes, which are described in Pub. 124, Sailing Directions (Enroute) East Coast of South America.

Canal Cockburn crosses a mountainous area and its coasts are irregular. The channel is wide and very deep and offers no problems to navigation, except at its ocean mouth where numerous groups of rocks and islets make its navigation dangerous.

In the E part of the channel heavy overfalls are encountered to the N and S of Islas King and Fitz Roy, because of the narrowing of the channels.

The canal is entered between Isla Furia and Isla Aguirre, 8 miles SE. The rocks in the approach to the canal should only be passed during daylight and in clear weather.

Canal Cockburn—South Side

9.9 **Seno Chasco** (54°28'S., 71°50'W.) is 15 miles long and opens SSE of Isla Vidal Gormaz. The S arm of Seno Chasco, and an unnamed sound from Paso Brecknock, form the base of Peninsula Brecknock.

Canal Ocasion (54°33'S., 72°00'W.) separates Isla Aguirre from Peninsula Brecknock to the E. It is convenient for vessels wishing to avoid the heavy seas which may be encountered at the NW entrance to Paso Brecknock, but local knowledge is necessary. The channel should be navigated at a moderate speed.

Paso Brecknock is entered between Isla Aguirre and Isla Astrea. It has a least width of 183m in Paso Aguirre and leads 25 miles E to the W side of Bahia Desolada. The shores of the passage are barren, mountainous, and desolate. The tidal currents in the pass, although they cannot be called a hazard, are appreciable in the E part, and eddies and tide rips may be met, especially in Paso Aguirre. The flood tide which flows E is stronger than the ebb.

Islotes Nelson (54°39'S., 74°52'W.) lie on the N side of Paso Brecknock, 9.5 miles SE of the entrance. There are numerous rocks around the islets. The closest to the fairway lies 183m S of the southernmost islet. Temporary anchorage may be taken, in a depth of 36m, mud, off the E end of the largest islet. A light is shown from a rock SW of the island.

Islas Kirke (54°22'S., 71°44'W.) lie in the middle of the channel near the entrance to Seno Brujo. They are steep-to and rocks extend 0.2 mile N from them. There is a 12.8m shoal about 3 miles WSW of the islets.

Seno Brujo is entered about 2 miles SE of Islas Kirke. It has many branches and is full of islets and reefs.

Islote Petit (54°24'S., 71°40'W.) lies near the middle of the entrance. A rock, awash, with an 18m shoal close SW, lies 0.5 mile NNW of the islet. The inlet offers only one anchorage in Puerto Alegria, at the head of the S arm. It is just over 0.5 mile in diameter and affords good anchorage, in a depth of 20m, mud. Local knowledge is required.

Isla Prowse is opposite the entrance to Seno Sargazos and is 3 miles long from W to E. Islote Horacio lies off its N coast, close to its W point. About 45m W is an islet surrounded by kelp. One mile E of the E end of Isla Prowse is Isla Reyes, and 1.3 miles NE of the latter is the W extremity of Isla Amaya.

Seno Sargazos lies S of Isla Prowse, between Peninsula Juan to the E and Peninsula Rolando to the W. There is no anchorage in this sound.

Seno Bluff is entered between the W end of Isla Amaya and Isla Reyes. There are some unnamed islands S of the former, SE of the latter and right in the entrance. Seno Bluff is 8 miles long with numerous bays along its coasts with anchorages in two of them. Puerto Tanteo is near its entrance, on the SW coast. It is sheltered, but narrow, with space for only one small vessel which can anchor NW of a small beach at its head in 18m of water. Puerto Saco is at the head of Seno Bluff. It is a circular basin, apparently free from dangers, with an anchorage

for small vessels a little S of its center, to the W of the outflow from a small lake located in a valley which opens to the E. The depth at this anchorage is 20m.

Isla King (54°22'S., 71°17'W.) rises 6 miles from the E end of Canal Cockburn and to the W of it are Rocas Simmons and Islote Fitz Roy. The channel turns N of these islands and the passage is wide and deep. Passing to the S is not recommended, as it is narrow and the currents are strong. Isla King Light is on the E end of the island.

Puerto Ideal (54°26'S., 71°11'W.) is on the S coast of Canal Cockburn, about 4.5 miles SE of Isla King Light. It is marked by an islet in its middle, 1 mile within. There is good anchorage near its head, in a depth of 26m, mud.

Canal Cockburn—North Side

9.10 Bahia Furia, entered at the S end of Isla Furia, affords little shelter and bad holding ground.

Puerto Tom lies on the SE coast of Isla Skyring and between it and Isla Henry. The anchorage is good and sheltered, except from the violent gusts which come down from the adjacent heights which are common throughout the region. The anchorage is protected from the SE by Isla Henry and from the SW by a group of unnamed islets on the NW side of the entrance to Canal Cockburn.

Islas Clavel lie about 2.5 miles NE of Isla Henry. A dangerous rock of unknown depth is located close S of the central part of the island. There may be a light structure on the SE side of Islas Clavel but the light is extinguished.

Isla Vidal Goemaz lies 1.5 miles NE and has distinctive summits named Titas de Calderon. Isla Enderby lies about 0.4 mile NW.

Canal Barbara joins Canal Cockburn between the SE extremity of Isla Clarence and Isla Henry. Isla Vidal Gormaz, Isla Enderby, and Isla Clavel divide it into three passes; Paso Adelaida is the N pass, Paso Aguila is the central pass, and Paso Sur is the S pass. Canal Barbara connects with Estrecho de Magallanes, but its use is not recommended as it is difficult to navigate due to numerous obstacles.

Puerto Niemann (54°20'S., 71°55'W.) is situated on the S coast of Isla Clarence. It is used by small craft requiring fresh water. The entrance channel, with an average depth of 40m, is 183m wide, straight, and free of dangers. The harbor is sheltered from winds of all directions and there is no swell. A light is shown from the SE extremity of Isla Clarence.

Seno Duntze lies between the SE coast of Isla Clarence and the W side of Isla Seebrock. It is about 6 miles long and is obstructed by Islas Duntze. Most of Seno Duntze is unexplored, so that its navigation is not recommended.

Isla Seebrock (54°18'S., 71°42'W.) is the largest of several islands and islets which lie between the SE end of Isla Clarence and Isla Diego, 10 miles E. Isla Elisa, with Isla Baynes 0.5 mile NE of it, lies close off the E end of Isla Seebrock. Isla Alegria, with Isla Molly 0.2 mile SE, lies 0.1 mile NE of Isla Seebrock.

Seno Dyneley is entered between Isla Elisa and Isla Diego, 3 miles E. This sound runs inland for a total of 23 miles, into Isla Clarence, in a NW direction. It has not been surveyed N of Isla Alegria. It is joined to Seno Duntze by Paso Andrade Tarada, which runs N of Isla Seebrock.

Canal Engano is entered 2 miles NNE of the entrance to Seno Dyneley and separates Isla Capitan Aracena to the W. It is 4.5 miles long, 0.3 mile wide, deep and free of dangers, except at its N entrance which is strewn with shoals, which stop the passage of ships.

Small craft can anchor at the head of the channel, where it turns E, in a depth of 20m, sand and mud, good holding ground.

9.11 **Puerto Barrow** (Caleta Barrow) (54°20'S., 71°26'W.) is on the S coast of Isla Diego. It is entered between Punta Colombo and Punta Final, 0.3 mile WSW. A light is shown about 0.4 mile W of Punta Final. Puerto Barrow extends back for about 0.4 mile about both its head and W half are occupied by an extensive shoal where there are several sunken rocks and rocks awash. Anchorage for large vessels may be obtained in the middle of the entrance, in a depth of 22m. The anchorage is open to S winds. Small craft up to 20m in length, with a 1.5m draft, can anchor, in a depth of 16m, on the E side of the cove.

Seno Mercurio is entered to the E of Isla Diego and extends deeply, via several arms, into Isla Capitan Aracena. Little is known of Seno Mercurio and of its inner harbors. To the NW is Seno Prat, which borders the N coast of Isla Diego. Seno Prat takes a N direction and opens into three inlets. From W to E these inlets are Alda, Riquelme, and Uribe. Puerto Quidora is in Ensenada Riquelme, and Puerto Esmeralda opens 0.7 mile S of Ensenada Uribe. Ensenada Uribe lies at the NE end of Seno Prat, close NE of Puerto Esmeralda, on Isla Capitan Aracena. It runs ENE but only its first half is navigable as further passage is blocked by a 3m shoal. In general, it is narrow and shoal so its navigation is inadvisable. Anchorage is possible in this inlet, but is not recommended as W, SW, and NW winds are so strong and the inlet so narrow. Ensenada Riquelme, the center arm of Seno Prat, is 3 miles long and free from dangers, with depths between 16 and 36m. It is sheltered from all winds. Puerto Quidora at its N end is a beautiful bay, about 0.8 mile in diameter, with depths varying from 16 to 26m, so that it is a suitable anchorage for large vessels.

Puerto Soffia (54°17'S., 71°24'W.) is an excellent anchorage on the E side of Isla Diego. It extends NW for over 1 mile, and has a width of about 0.5 mile with depths of 30m half way up the inlet and 15m near its head. There are no hidden dangers and the holding ground is excellent consisting of sand, shells, and mud. Squalls which blow down the harbor are not very severe, as the surrounding land is only moderately high.

Bahia Park lies on the S coast of Isla Capitan Aracena, about 1.5 miles E of the entrance of Seno Mercurio. Although there are no sunken dangers inside it, there are rocks awash 0.2 mile S and close W of the entrance point. Islote Chulula lies 0.5 mile SW of the entrance. There are several islets off the E shore of the bay. The bay is exposed to the prevailing winds.

The best anchorage is in a cove W of the inner islet, in a depth of 22m, sand and mud, with patches of rock.

Another anchorage, in a depth of 30m, is between the inner islet and a point farther in. A belt of kelp nearby marks depths of 2 to 7m.

Bahia Stormy lies 6.5 miles SE of Bahia Park. There is a peninsula in the middle which divides it into two parts. From seaward this peninsula looks like an islet. The bay is unsuitable as an anchorage, as it is entirely open to the prevailing winds.

Bahia Warp is entered between Punta Raton and Cabo Turn,

1 mile E. It is exposed to the S. It affords temporary anchorage for small craft; local knowledge is required. It is necessary to anchor in the entrance, in a depth of 30m; farther in the depths are greater.

Isla Noir to Bahia Desolada (continued)

9.12 Isla London, the largest of Grupo Camden, lies NW of Punta Cuarzo (54°43'S., 71°52'W.), the NW extremity of Isla Sidney. It is separated from Isla Sidney by Paso Pratt. Puerto Townshend, on the SE end of Isla London, is entered from Paso Pratt. Anchorage may be obtained, in depths of 16 to 18m, in the middle of Puerto Townshend, 0.2 mile from the W shore. The holding ground is good, but strong winds from S and W descend from the hills in heavy squalls. There is little room to maneuver should the anchor drag, and vessels are advised not to remain overnight.

Isla Georgiana (55°40'S., 71°44'W.) lies on the S side of Paso Brecknock, 4 miles E of Islotes Nelson. Punta Vuelta, the NW extremity of the island is low, but there is a hummock on it. Isla Clementina, lies close S of Isla Georgiana; the passage between the islands is unsurveyed.

Isla Basket lies 4.5 miles SE of Isla Georgiana. Caleta Basket is a small bay on the NE side of the island and can easily be identified by a deep defile, which can be seen high up in the hills opposite. Small vessels may obtain anchorage, in a depth of 20m, in the middle of Caleta Basket. There are a number of rocks, shoals, and islets, to the S, SE, and SW of the island, and can best be seen on the chart.

Isla Brecknock (54°41'S., 71°33'W.) lies on the N side of Paso Brecknock, about 1 mile N of Isla Basket. The narrowest part of Paso Brecknock, known as Paso Aquirre, lies between Isla Macias and Cabo Atracadero, the SE extremity of Isla Brecknock. A light stands on the cape.

Bajo Bevan, with a least depth of 0.9m, lies in mid-channel, 183m SW of Cabo Atracadero. At half-tide, Bajo Bevan is marked by patches of kelp, but at HW, there is no visible sign of the shoal. A lighted buoy is moored close SE of the 0.9m patch and marks the end of the shoal.

Isla Marsh (54°42'S., 71°30'W.) forms the S entrance point to the E end of Paso Brecknock. The island lies 2.5 miles E of Isla Macias. The passage between the two islands is foul.

Bahia Desolada

9.13 Bahia Desolada lies close E of Isla Marsh. The bay is open to the sea from the SW. There are many islets and dangers; however, vessels with local knowledge can proceed across the head of the bay from Canal Ballenero to the E entrance of Paso Brecknock. The head of the bay extends 7 miles ESE from the S part of Peninsula Edwards to Isla Burnt. The tidal currents in the bay are weak.

Isla Gorda (54°41'S., 71°25'W.) lies in the NW part of Bahia Desolada and forms the N entrance point to the E end of Paso Brecknock. Puerto Estrecho lies between the SW side of Isla Gorda and two islets close off the island. The port is open to the SE and affords anchorage to small vessels, in depths of 29 to 40m, sand and gravel, fair holding ground.

Puerto Langlois, on the E side of Peninsula Edwards, is entered between Cabo Saliente (54°39'S., 71°24'W.) and a point 0.7 mile W. Anchorage may be obtained by vessels with local knowledge near the head of the inlet, in a depth of 24m, soft bottom, but the inlet is not recommended because of better conditions obtainable in Puerto Edwards.

Puerto Edwards (54°40'S., 71°27'W.) is entered between the W entrance point of Puerto Langlois and Punta Abrigo, 0.7 mile SW. Grupo Jorge lies in the middle of the entrance. Vessels of moderate size may obtain good anchorage, in a depth of 37m, 0.3 mile WNW of the largest islet of Grupo Jorge. A vessel should approach Puerto Edwards from the S, passing between Isla Gorda and Peninsula Edwards and steer for Cabo Saliente. When the largest islet of Grupo Jorge bears 270°, course should be altered W to pass S of the islet and 183m NNE of Punta Abrigo, then a NW course should be steered for the anchorage. The passage N of Grupo Jorge should not be attempted.

Islote Direccion (54°43'S., 71°21'W.) lies in the middle of Bahia Desolada, on the S side of the fairway. A light is shown from the islet. Islote Entrada, located close N of Isla Marsh, also shows a light.

Seno Courtenay (54°35'S., 71°17'W.) is entered between Cabo Saliente and Cabo Fletcher, 4 miles farther E. The sound extends 9 miles N from the head of Bahia Desolada and is little known and unsurveyed. The entrance and the sound itself is studded with rocks and islets.

Canal Ballenero—North Side

9.14 **Isla Burnt** (54°44'S., 71°14'W.) lies 3 miles E of Islote Direccion Light. A light is shown from the SW point of the island. Caleta Burnt lies in the channel separating Isla Burnt and Isla Smoke, 0.5 mile E. Anchorage may be obtained, in a depth of 20m, good holding ground, 0.3 mile NW of the W extremity of Isla Smoke, but this berth is restricted. Another berth is reported to be in a depth of 20 to 26m, SE of Isla Burnt, with the NE point of the island bearing 330°, 183m off the W extremity of Isla Smoke.

Caleta Ancha, located 0.5 mile NNE of the S extremity of Isla Burnt affords anchorage, in a depth of 25m. When approaching the anchorage from W, the S extremity of the island should be rounded at a distance of not less than 0.7 mile, in order to clear all dangers. Caleta Ancha is suitable for all size vessels. A shoal, with a least depth of 8.5m, marked by kelp, lies about 183m E of the recommended berth.

Seno Ladrones (54°40'S., 71°03'W.) is an extensive inlet NE of Isla Smoke, Seno Alfredo, and Seno Searle lie E of Seno Ladrones, and although extensive, little is known about them.

Puerto Util (54°51'S., 70°53'W.) lies off the SE extremity of Isla Grande. An islet lies on the outer end of a reef extending 0.1 mile E of this point. A 5.2m shoal, which is steep-to, lies 0.1 mile SSW of the same point. Anchorage is afforded S of the reef, in depths of 30 to 36m, with the S extremity of the islet bearing 025°, distant about 0.1 mile.

Grupo del Medio consists of Isla Grande, Islita Senal, and several smaller islets. A light is shown from the SW point of Islita Senal. Bajo Jimenez, with a depth of 3m, marked by kelp, lies 2.5 miles SE of Puerto Until.

Canal Ballenero—South Side

9.15 Isla Catalina (54°48'S., 71°13'W.) lies close off the middle of the N coast of Isla Stewart. Passage between the two islands is not recommended. Islote Vargas, 0.5 mile E of the NW extremity of Isla Catalina, affords anchorage off Caleta Vargas, in a depth off 30m.

Puerto Fanny lies about 3 miles SSW of Isla Grande and is entered between Punta Fanny and Punta Baja. A reef marked by kelp extends 0.2 mile NNE from Punta Baja. Anchorage may be obtained in the outer part of Puerto Fanny by vessels of moderate size, in a depth of 29m, 0.5 mile from the shore WSW of Punta Baja. A small beach at the foot of a high mountain may assist in the identification of the anchorage. The inner harbor is well-sheltered, but the bottom is irregular. Small vessels anchor here, in depths of 25 to 40m.

Isla Stewart (54°51'S., 71°09'W.) extends from Punta Walter, its E extremity, 20 miles to Cabo Emilia. The island is very indented and mountainous. Roca Blanca is a small islet, with kelp off its N side, 1 mile NE of Punta Walter.

Bahia Isabel, on the N side of Isla Londonderry, is entered between Punta Isabel and a point 1 mile NW of Punta Engano (54°56'S., 70°45'W.). In spite of its size, the bay is encumbered with numerous islets, rocks, and kelp, and is unsuitable for shipping.

Puerto Engano (54°56'S., 70°45'W.) is a cove on the N shore of Isla Londonderry, and is entered between Punta Engano and Punta Guerrico, 0.7 mile SSE. A beacon stands 0.1 mile SW of Punta Engano and a second beacon stands on a prominent rock about 0.2 mile SSW of the first beacon. A shoal, with a depth of 15.5m, lies NE of Punta Engano and S of the recommended track through the canal. Anchorage for large vessels may be obtained, in a depth of 27m, 0.3 mile S of Punta Engano. There is also anchorage, in depths of 20 to 25m, 183m from the NW shore of the cove.

Bahia Rosa (54°53'S., 70°44'W.) lies about 2.5 miles SSE of Punta Engano. A beacon stands on the E entrance point to the bay. The bay should not be entered without local knowledge.

Canal O'Brien

9.16 Canal O'Brien (54°53'S., 70°25'W.) has a least navigable width of 0.3 mile and a least known depth in the fairway of 18m. In general, all shoals are marked by kelp.

Regulations.—At the W end of Canal O'Brien, between a position 2.2 miles E of Isla Redonda Light (54°55'S., 70°37'W.) and a position 1.2 miles WSW of that light, it is forbidden for a vessel to pass another proceeding in the opposite direction or to overtake another proceeding in the same direction. A vessel approaching Canal O'Brien from the W, on hearing a warning signal or otherwise verifying the presence of a vessel approaching from the E, must wait about 1.3 miles SW of Isla Redonda Light until the westbound vessel has passed.

In accordance with the Chilean Ship Reporting System (CHILREP), vessels should establish contact, then maintain a continuous listening watch, on VHF channel 16 from 1 hour before expected arrival at Canal O'Brien until arrival. If a vessel is unable to use VHF channel 16, then RF frequency 2182 kHz may be used. For further information on CHILREP see Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia.

Caution.—It has been reported that the W portion of Canal O'Brien is incorrectly oriented and mariners should proceed with caution.

Isla O'Brien (54°51'S., 70°32'W.), which forms the N shore of Canal O'Brien, extends 14 miles E from Punta Pinto to Punta Americano. The whole island is mountainous and Monte Fantasma in the middle of the island is very prominent.

Islita Redonda, which marks the W end of Canal O'Brien, lies close off the S extremity of the island. A light is shown on the islet. Depths of 6 to 10m were reported about 1 mile SSW and a depth of 12m 0.7 mile SSE of the islet. A shoal, with a depth of 8.4m, lies 1.2 miles SSW of the island, while a bank with a least depth of 45m lies between the shoal and Isla Guillermo. This part of the canal must therefore be navigated with great caution. A recommended track passed 0.5 mile S of the islet.

Caleta Canales (54°54'S., 70°36'W.) lies 0.7 mile NE of Islita Redonda and offers fair shelter to vessels with local knowledge. Kelp grows in abundance in the cove, especially on the W side. Anchorage is afforded 0.7 mile E of Islita Redonda Light, in a depth of 24m, sand and shells.

Surgidero Fantasma located on the N side of Canal O'Brien, 3 miles ENE of Caleta Canales, affords temporary anchorage in good weather for small vessels with local knowledge. The anchorage, which is in a depth of 18m, 183m offshore due S of Monte Fantasma, can be identified by a large rock on the hillside almost level with the tops of the trees nearby. The anchorage is completely open to winds from the E and W which blow along the canal. A shoal, with a depth of 6.4m, marked by kelp, lies close NW of the berth.

9.17 Puerto Fortuna (54°53'S., 70°25'W.) is a small cove on the S side of the canal, 3 miles E of Surgidero Fantasma. There is a well-sheltered anchorage in the middle of the cove, in a depth of 22m. The cove is used mainly by small vessels with local knowledge.

Canal Pomar separates the N side of Isla O'Brien from Tierra del Fuego. Its W entrance is encumbered by islets and rocks, leaving a narrows known as Angostura Pomar, only 183m wide. Passage through Canal Pomar is prohibited, but there are two emergency anchorages which can be approached from the E.

Puerto Almeida (54°50'S., 70°39'W.) lies on the S side of Canal Pomar, 4 miles NE of the W entrance. There is good anchorage, in a depth of 18m, about 0.3 mile SE of the W entrance point of the cove. The head of the cove is foul.

Puerto Ballenas (54°50'S., 70°33'W.), on the S side of Canal Pomar and 1 mile wide, is entered 7 miles W of Punta Americana. The middle of the bay is deep, but anchorage may be obtained, in depths of 15 to 20m, in the SW corner. As the bottom is indifferent, a long scope of cable is advised.

Seno Ventisquero lies N of the E entrance to Canal Pomar and is entered E of Punta Verde (54°50'S., 70°20'W.). The inlet is deep and narrow, and affords no anchorage. A vessel found anchorage about 0.1 mile off the inlet's E shore, in a depth of 70m, mud bottom, about 1.8 miles N of the entrance. The holding ground proved good in N winds of 40 knots. At its head is a large glacier, of which portions drift down the inlet and are carried E through Seno Darwin by the current.

South Coast of Isla Stewart to Bahia Cook

9.18 **Bahia Stewart** (54°54'S., 71°25'W.) is an excellent anchorage off the W coast of Isla Stewart, 2.5 miles N of Cabo Castlereagh. The harbor consists of three openings and is easy of access. The best afforded anchorage for small vessels is in depths of from 9 to 11m, 0.2 mile N of the two rocks which dry.

Bahia Parker King extends SW from Paso Adventure to the open sea. Its W entrance point lies 4.5 miles E of Cabo Castlereagh (54°56'S., 71°25'W.) The bay is easy to recognize from seaward by Pico Stewart in the background. The bay offers no anchorage.

Paso Adventure (54°57'S., 71°06'W.) runs in a W to E direction for about 17 miles. It stretches from Bahia Parker King to the SE end of Canal Ballenero. In general navigation throughout is not difficult as all known dangers are marked by heavy kelp. Local knowledge is recommended when using this passage.

Islas Gilbert, consisting of two islands surrounded by many islets and rocks, forms the SW part of Paso Adventure. Caleta Doria lies on the NE side of the E island and affords anchorage for small vessels just within the entrance, in a depth of 24m.

Bahia Fiasco (54°52'S., 71°13'W.) lies near the middle of the S coast of Isla Stewart, 3 miles W of Pico Stewart (54°53'S., 71°07'W.). Puerto Piloto Sibbald, a circular basin 0.3 mile in diameter at the NE head of Bahia Fiasco, is entered through a channel 183m wide and affords anchorage, in a depth of 27m, sand and rock. Facing the anchorage on the N shore is a large waterfall.

Bahia Fitzroy lies 2.5 miles ESE of Caleta Doria. The bay is entered between the W end of Isla Londonderry and the E side of Islas Gilbert. The bay leads from the sea to Paso Adventure and appears to be free of dangers, although the bay is poorly surveyed.

Isla Londonderry (55°07'S., 70°40'W.), consists of Isla Londonderry, the coast of which is much indented, and numerous islets and rocks. This intricate group has been only partially surveyed and no anchorages can be recommended. Isla Londonderry extends 27 miles from its W extremity to Bahia Cook. Rocas Phillips is the S of the group and should be given a wide berth, as they are low and dangerous.

Bahia Cook (55°10'S., 70°10'W.) lies E of Grupo Londonderry and W of Isla Hoste. The bay has not been thoroughly surveyed and should be approached with caution. It would appear to be free of dangers along the usual track, no kelp or sunken rocks which break have been sighted, and Rocas Cabrestante (55°22'S., 70°10'W.) forms the only known danger. It can be regarded as the best landfall for a vessel coming from sea to Canal Ballenero and Canal Beagle.

Pilotage.—A pilot boarding area for vessels entering Chilean channels from the S is located SE of Islotes Salientes Light in position 55°08'02"S, 70°15'10"W. For more information on pilotage in Canal Beagle, see the Pilotage section for the port of Ushuaia in paragraph 9.27.

Seno Darwin

9.19 Seno Darwin leads E for a distance of about 15 miles between the E entrance point of Canal O'Brien and the W entrance point to Brazos del Noroeste. In the summer Seno Darwin is encumbered with ice flows from the many glaciers in the region. The N shore of Seno Darwin is high and precipitous, with a range of mountains that are snow-clad year round.

Isla Timbal Grande (54°53'S., 70°16'W.) is located about 1.5 miles NE of the E extremity of Isla O'Brien. Its E and W ends are low, and some of the high ground is nearly covered with vegetation. The N coast is nearly clear of dangers and the S coast is fronted by rocks and islets, between which kelp is visible.

Isla Darwin lies on the S side of Seno Darwin, about 4 miles SE of Isla Timbal Grande. The W end of the island borders on Canal Thomson, which empties into Bahia Cook. Puerto Huemul (54°54'S., 70°07'W.) is a small, sheltered, cove on the NE side of the island. An islet is located 0.2 mile within the entrance on the E side of the head of the cove, which is shallow. Anchorage is afforded 183m or more N of the islet, in depths of 30 to 40m.

Isla Chair (54°52'S., 70°03'W.) lies in the middle of Seno Darwin, about 3 miles NNE of Isla Darwin. The N coast of the island is steep-to, but Rocas Chair and Islote Montenares extend up to 0.7 mile off the NW corner of the island. A light is shown on Islote Montenares.

Seno Garibaldi lies on the N side of Seno Darwin, about 3.5 miles NE of Isla Chair. A rock, with a depth of 11m, lies 0.5 mile ENE of Punta Tempanos, the W entrance point. There are two anchorages, the outer of which has a depth of 18 to 22m, and is located 0.5 mile N of Punta Tempanos. Puerto Garibaldi, the inner anchorage, lies 0.2 mile off the W shore, 3.5 miles N of the entrance, in a depth of 16m, good holding ground. On the coast abreast of Puerto Garibaldi, there is a prominent wall-like rock, with inscriptions on it. Navigation N of Puerto Garibaldi is not recommended, because of shoal water and dangers.

Brazo del Noroeste

9.20 Brazo del Noroeste lies between Tierra del Fuego and the N coast of Isla Gordon. It extends 28 miles from Seno Garibaldi to the E extremity of Isla Gordon. It is deep throughout and free of dangers. Some of the ravines and valleys on the N shore are occupied by immense glaciers, which sometimes descend to the shore where blocks of ice may be broken off, to be carried away by the current. The current in the passage runs E at a moderate rate. Violent squalls descend from the hills in the region.

Bahia Tres Brazos (54°54'S., 69°46'W.) is an extensive inlet on the S side of Brazo del Noroeste. Two miles inside the bay, there are several islets, S of which the bay divides into three arms. Anchorage may be obtained for small vessels, with local knowledge, in a cove on the E shore, 2 miles within the entrance. On the N shore of Brazo del Noroeste, opposite Bahia Tres Brazos and Caleta Voilier, there are two extensive unnamed inlets which have not been surveyed. The E inlet is blocked by an above-water rocky ridge within its entrance.

Caleta Voilier (54°52'S., 69°39'W.) lies on the S side of the channel, 5 miles E of the entrance to Bahia Tres Brazos. The cove may be identified by a sugarloaf on its E side. General depths are from 16 to 20m, but foul ground extends 0.1 mile off the W shore. Anchorage is afforded for small vessels with local knowledge, in a depth of 18m, with the entrance points of

Caleta Voilier bearing 310° and 055°.

Bahia Romanche, on the S side of the channel, is entered 6 miles ESE of Caleta Voilier. The entrance can be identified by being opposite two large glaciers on the N shore of the channel. Caleta Morning lies close within the entrance to the bay on the W side. Caleta Evening, at the head of the bay, has depths of 49m. Anchorage may be obtained in Caleta Morning, in depths of 20 to 22m, in the middle of the cove.

An alternative anchorage is 2.5 miles within the entrance to Bahia Romanche, before the bay turns W, in a depth of 27m, with a sharp peaked mountain 899m high, located 2.2 miles SSW of the W entrance point bearing 302°, distant 0.9 mile.

Caleta Olla (54°55'S., 69°10'W.) lies on the N side of the channel, about 1.8 miles NNW of Punta Divide. It is formed by a small peninsula which shelters it from S and W winds. Good anchorage for small vessels with local knowledge can be obtained in the cove, in a depth of 22m. Large vessels can anchor outside the cove, E of the small peninsula, in a depth of 25m.

Care is necessary to avoid a sandbank, with a depth of 3.4m at its outer end and marked by kelp, which extends 0.5 mile SSE from the E entrance point.

Brazo del Suroeste

9.21 **Brazo del Suroeste**, the continuation of Canal Beagle, leads ENE between Isla Hoste and Isla Gordon for 32 miles, from Cabo Kokblao to Punta Divide, with a least width of 0.3 mile. Tidal currents in this arm are very strong and cause numerous eddies. On either side of Brazo del Suroeste there are mountain ranges, and deep inlets in which there are glaciers.

Bahia Rafagales (55°07'S., 69°58'W.) lies on the S shore of Brazo del Suroeste, and is entered 2.5 miles NE of Cabo Kokblao. The bay is wide and spacious, but the entrance is encumbered by rocks and islets. Anchorage made be obtained in the bay by vessels with local knowledge, but it is not recommended.

Isla Delta and Isla Thomson lie close W of Isla Gordon, and are separated by Canal Barros Merino. This canal trends N for 9 miles to join Seno Darwin, SE of Isla Chair. Paso Occidental, between Isla Delta and Isla Olga, is only 0.2 mile wide. Both these channels appear to be free of dangers, the rocks near the shore being marked by kelp. They should not be used without local knowledge. Anchorage is afforded on the W side of Canal Barros Merino, 2 miles within the entrance.

Bahia Fleuriais (55°00'S., 69°30'W.), on the N side of Brazo del Suroeste, is entered 12 miles WSW of Punta Divide. From the bay, a deep inlet extends N, and a shallow one NW, at the head of the latter there is a glacier which does not reach the sea. Good anchorage is afforded in the bay, in a depth of 22m, with the E extremity of the islets bearing 221°, distant 0.6 mile.

Estero Fouque lies on the S side of the channel, about midway between Cabo Kokblao and Punta Divide. It extends 7.5 miles to the S, forming Peninsula Cloue to the W. The inlet is deep, but is of no use to shipping. In winter it freezes over.

Bahia Penhoat (55°02'S., 69°23'W.), on the S side of the channel, is entered 9 miles WSW of Punta Divide. It consists of two inlets, 3 miles long, running SE and SW, respectively. Its entrance can be identified by a long black rock, bare of vegetation, close off the E entrance point. The bay is of no use to shipping.

Canal Beagle—Punta Divide to Islotes Eclaireurs

9.22 **Note.—**For information on pilotage in Canal Beagle, see the Pilotage section for the port of Ushuaia in paragraph 9.27.

Caleta Awaiakirrh (55°00'S., 69°01'W.), on the S shore of Canal Beagle, is entered 3 miles SE of Punta Divide. It can be identified by a prominent white mark on a cliff on the W side of the entrance. Islote Observacion (55°01'S., 69°01'W.), which lies in the entrance to the cove, is rocky and surrounded by kelp. A 4.9m shoal lies 0.2 mile NE of this islet. Anchorage for small vessels may be obtained in the middle of the cove, in a depth of 20m, 0.1 mile SSW of the islet.

Caleta Sonia, on the N side of Canal Beagle, is entered 2.5 miles N of Caleta Awaiakirrh. The E point of the cove is a sandy beach. Punta Yamana, the W entrance point to the cove, shows a light.

Anchorage, in a depth of 24m, sand, has been obtained off the cove with Punta Yamana Light bearing 265°, distant 0.4 mile. Small craft up to 60m in length can obtain sheltered anchorage close to the beach, in a depth of 16m, sand and mud, excellent holding ground. Local knowledge is required.

Bahia Yendegaia (54°54'S., 68°42'W.), on the N side of Canal Beagle, is entered E of Cabo Hyades. The bay extends 7 miles NW and is enclosed by mountains. The greater part of the bay is deep and clear of dangers. Caleta Contreras, on the W side of the bay, affords good anchorage for small vessels, in depths of 15 to 25m. Caleta Ferrari lies close to the head of the bay and affords anchorage for vessels of any size, in 30m, 0.1 to 0.2 mile off a mole located near some buildings and a sawmill. Caleta Dos de Mayo lies on the E side of the bay, about 2.5 miles E of Caleta Contreras. There is a small mole with a light at its head. Three light-colored army barracks stand near the mole. Anchorage is afforded, in a depth of 35m, N of the barracks. Depths of 8m are obtained 0.2 mile offshore.

9.23 **Rocas Peron** (54°56'S., 68°35'W.) lies 3.5 miles ESE of the entrance to Bahia Yendegaia, and consists of two islets with a rock, awash, between them, and surrounded by kelp. A light is shown on the SW islet. An area of foul ground, marked by kelp on its NE side, extends from a position 91m WNW of the light, in a WSW direction to the shore of Isle Hoste.

Caleta Peron lies on the S shore of Canal Beagle, about 2.2 miles E of Rocas Peron Light. There is an islet, on which there is a beacon, in the entrance to the cove. The W entrance point to the cove is also marked by a beacon. Anchorage for small vessels with local knowledge may be obtained, in a depth of 18m, 0.1 mile N of the islet. The anchorage is completely exposed to W winds blowing in Canal Beagle. There is a small mole, suitable for small vessels, at the head of the cove.

Bahia Almirante Saenz Valiente (54°53'S., 68°33'W.) lies 3 miles NNW of Caleta Peron. The bay is deep and free of dangers. There is a shoal patch, with a depth of 6.4m, marked by kelp, 183m N of the S entrance point. There are several buildings and a sawmill at the head of the bay. A beacon stands on the S entrance point and a second beacon stands on the N shore.

Anchorage for small vessels may be taken, in depths of 18 to 26m, 0.1 mile off the middle of the head of the bay. A second berth lies midway between the two entrance points in a depth

of 31m, rock.

The bay should be approached from the SE, passing midway between areas of kelp extending from the respective entrance points. The kelp can be seen from a distance of about 0.3 mile. From a position within the bay, the approach to the anchorage leads W towards the houses at the head.

9.24 Bahia Lapataia, on the N shore of Canal Beagle, is entered between Punta Entrada (54°52'S., 68°31'W.) and a point 0.5 mile N. The bay is easily identified by two islets in the entrance. Isla Redonda, with a stone pyramid on its summit, lies 0.6 mile E of Punta Entrada and Islita Estorbo is located 0.5 mile E of Isla Redonda.

There are three passages into the bay. The W passage between Punta Entrada and Isla Redonda is reduced in width to 0.1 mile by a 3m shoal in the middle. The middle passage, between Isla Redonda and Islita Estorbo, is the recommended approach to the bay. The third passage, between Islita Estorbo and the mainland, is not recommended. A light is shown on the S shore close to the head of the bay.

Anchorage.—Anchorage is afforded, in depths of 26 to 31m, N of Isla Redonda. Vessels also anchor 1.25 miles WNW of Punta Entrada, in a depth of 26m, or near the head of the bay, 0.3 mile N of the light, in a depth of 18m.

Note.—The approximate boundary between Chile and Argentina lies about 3.3 miles W of Punta Entrada. The N side of Canal Beagle, from Bahia Lapataia E, is in Argentina.

9.25 Caleta Letier (54°56'S., 68°26'W.) lies on the S side of Canal Beagle, about 2.5 miles ESE of Caleta Peron. Anchorage may be obtained for small vessels with local knowledge, in 11m. Vessels may secure to the shore stern-to, abreast a cattle enclosure, in a depth of 10m.

Canal Murray connects Canal Beagle to Seno Ponsonby to the S. The N entrance to the canal is entered between Cabo Hahn and Cabo Mitchell. Islotes Campamento are a group of rocks and islets lying on the W side of the N entrance NW of Cabo Hahn. Islas Picapedreros are a group of rocks and small islands lying on the E side of the N entrance N of Cabo Mitchell. It was reported (2001) that several depths in the N section of Canal Murray are less than those charted.

The S entrance is between Isla Button and Isla Pauvre, 2.5 miles W. There are several rocks and islets near the shores of the canal, but apart from the dangers as seen on the chart, the center of the canal is generally clear. Puerto Corriente, a small cove on the W side of Canal Murray, affords anchorage out of the strong tidal current, but owing to its great depth is not recommended.

Islas Whaits (54°55'S., 68°22'W.) is a group of islands, islets, and rocks. The principal islands of the group are Isla Chicle, Isla Norte, and Isla Sur. Some of the islets and rocks are marked by beacons. Islas Whaits lie S of Canal Beagle channel. They can best be seen on the chart.

Puerto Navarino, where there is a small settlement, is a cove on the NW extremity of Isla Navarino. It is barely sheltered from NW winds and is approached from the E via Paso del Este, a passage with a least depth of 10m, and from the W via Paso del Weste. Anchorage is afforded small vessels with local knowledge in poor holding ground. Because of the rocky bottom, anchorage in this area is not recommended.

Bahia Honda (54°55'S., 68°13'W.), a spacious bay, is entered between Islas Lawrence and Garcia, or between Islas Garcia and Paty. Both entrances are free of dangers. Two shoals, marked by kelp, are the only known dangers in the bay. Good anchorage is afforded large vessels in most parts of the bay. The recommended anchorage is in 42m, mud, pebbles and shells, good holding ground, 0.4 mile SE of the small islet off the E end of Isla Paty.

Islote Bartlett is a dark colored islet lying in mid-channel, about 1.8 miles N of Bahia Honda. A light is shown from the islet.

Peninsula Ushuaia extends about 1.3 miles S from the N side of Canal Beagle, about 4 miles NW of Islote Bartlett.

9.26 Bahia Ushuaia (54°49'S., 68°15'W.) lies on the N side of Canal Beagle, E of Peninsula Ushuaia. It is entered between Punta Oriental, the E extremity of the peninsula, and Punta Escarpados, 2.7 miles ENE. A light is shown from Punta Escarpados. The Rio Olivia and the Rio Grande flow into the bay. Montes Martial, which rise 4 miles inland and round the head of the bay, are prominent and always snow-capped. Monte Olivia 1,320m high, stands 4.2 miles NNE of Punta Escarpados and is prominent with a sharp pointed summit.

Ites Les Eclaireurs Light

Islotes Les Eclaireurs (54°52'S., 68°05'W.), a small group of islets, lie in mid-channel 4.7 miles SE of Punta Escarpados. A light is exhibited from a tower, 11m in height, on the NE islet of the group.

A chain of islands, islets, and shoals lie on the S side of Bahia Ushuaia, between Islotes Les Eclaireurs and Peninsula Ushuaia. The main entrance channel to the bay leads from the E, passing N of Islotes Les Eclaireurs. Three passages lead through the chain of islands, islets, and shoals, but are not recommended and should only be used by vessels with local knowledge. Lights are shown from some of the islets in the three passages.

Ushuaia (54°49'S., 68°18'W.)

World Port Index No. 13980

9.27 The port of Ushuaia is located at the head of Bahia Ushuaia and is the home to a naval base protecting Argentine interests in the disputed areas around Tierra del Fuego (Land of Fire). This port is the southernmost port of Argentina and the South American continent. The town largely caters to the tourist industry.

Port of Ushuaia Home Page
http://www.puertoushuaia.gov.ar

Tides—Currents.—Tides rise about 1.4m at springs and 0.8m at neaps.

Aspect.—A causeway connects Punta Observatorio with Ushuaia on the NW shore of the bay. There are numerous lights and beacons about the bay which can best be seen on the chart. A prominent radio tower, 25m high, stands N of the city. Three radio masts stand at the Naval Air Station, about 0.3 mile W of Punta Observatorio. A monument, with a flagstaff close ESE, stands near the root of the commercial pier. Several prominent tanks stand along the shore in the vicinity of the tanker berth.

Depths—Limitations.—The commercial pier is situated on the NW of the bay and is built of cement. The total length is 640m long, with the shore end extending 160m S, then bending to the SE for another 480m. Depths alongside range from 3.8m near the shore to 10m at the seaward end of the pier. There is one inter-connected dolphin extending the overall mooring length at the end of the portion of the pier extending SE. Vessels can berth on either side, each having certain advantages. Passenger vessels can be accommodated at the commercial pier. On the S side, the SW winds hold the vessel to the pier. On the N side, in the event of a S gale, the vessel can cast off and clear the berth quicker.

Two small wooden piers are located close E of the shoreside portion of the commercial pier; these are used for small craft and ferries.

Port of Ushuaia

A concrete pier, 40m long and 30m wide, used by naval vessels and their support craft, is located further E along the coast from the wooden piers.

An oil jetty, 49m in length, with depths alongside of 9.14m, is located close E of the naval pier and is used by tankers to discharge to storage tanks ashore. Vessels berth starboard side-to and moor to two dolphins, one on either side of the pier.

Port of Ushuaia—Berth Information

Berth	Length	Draft	Remarks
Dry Cargo—Terminal			
No. 1	120m—640m continuous	10.0m	Fertilizer, fish meal, and fishing vessels.
No. 2	46m—480m continuous	10.0m	Fertilizer, fish meal, and fishing vessels.
No. 3	80m—640m continuous	10.0m	Fertilizer, fish meal, and fishing vessels.
No. 4	120m—480m continuous	10.0m	Fertilizer, fish meal, and fishing vessels.
No. 5	120m—640m continuous	10.0m	Ro-ro, passengers, fertilizer, fish meal, and fishing vessels.
No. 6	150m—480m continuous	10.0m	Cruise vessels, to-to, passengers, fertilizer, fish meal, and fishing vessels.
No. 7	150m—480m continuous	10.0m	Cruise vessels, to-to, passengers, fertilizer, fish meal, and fishing vessels.
No. 8	200m—480m continuous	10.0m	Cruise vessels, to-to, passengers, fertilizer, fish meal, and fishing vessels.

Port of Ushuaia—Berth Information			
Berth	**Length**	**Draft**	**Remarks**
No. 9	200m—640m continuous	10.0m	Cruise vessels, to-to, passengers, fertilizer, fish meal, and fishing vessels.
Tanker—YPF Orion Terminal			
No. 1	30m—49m incl. dolphin	9.0m	Chemicals and clean products.

Ushuaia Commercial Pier from E

Pilotage.—Pilotage for Ushuaia is compulsory for all vessels unless they are of Chilean or Argentinian registry. Requests for pilots should be sent through the agent 48 hours and 24 hours in advance of expected arrival at the port. An Argentinian pilot will board, as follows:

1. 55°02.00'S, 66°44.00'W (off Punta Moat) for foreign vessels.
2. Approximately 1 mile NW of Islotes Les Eclaireurs Light (54°52.67'S, 68°05.77'W) for Argentine and Chilean flag vessels.
3. Approximately 1 mile SE of Isla Redonda for vessels approaching from the W.

For vessels bound for Ushuaia within Canal Beagle from the E, an Argentinian pilot will be embarked N of Isla Nueva (55°14'S., 66°34'W.) and continue all the way to port, with no need to pick up another pilot at the position listed in paragraph No. 1 above. For vessels bound for Ushuaia from the W or from Canal Murray, a Chilean pilot will be used, boarding N of Punta Gusano Light (Puerto Williams) but still with an Argentinian pilot boarding SSE of Isla Redonda to take the vessel into port..

Pilotage for Canal Beagle is compulsory for all vessels bound in either direction unless they are of Chilean or Argentinian registry. Requests for pilots should be sent through the agent 48 hours and 24 hours in advance of expected entry into Canal Beagle.

In Canal Beagle, Argentina and Chile share responsibility for pilotage duties, depending on the territorial waters through which the vessel is sailing and the port of destination or departure nominated. Vessels should fly from the foremast the flag of the country under whose pilot authority it is navigating under.

For westbound navigation through Canal Beagle between Isla Nueva and Ushuaia, an Argentinian pilot will board about 1.8 miles S of Punta Moat (55°00'18"S., 66°43'36"W.), as seen on the chart. For eastbound navigation from Ushuaia, the pilot will disembark at the same place.

For westbound navigation from Isla Nueva to Puerto Wil-

liams, a Chilean pilot will be embarked about 2.5 miles N of Punta Waller (55°10'30"S., 66°33'24"W.), as seen on the chart. For eastbound navigation from Puerto Williams, the pilot will be disembarked at the same place. In bad weather, this transfer may be done in Rada Picton (55°04'S., 66°48'W.).

Vessels entering or leaving Chilean waters through Canal Beagle without calling at any port between the meridians of 66°25'00.0"W. and 68°36'38.5"W. should embark or disembark Chilean pilots at the E end of Canal Beagle, about 2.5 miles N of Punta Waller, the N extremity of Isla Nueva. In bad weather, this transfer may be done in Rada Picton (55°04'S., 66°48'W.).

Contact Information.—The port is operated by the Naval Prefecture in Ushuaia. The port and prefecture can be contacted, as follows:

Ushuaia—Contact Information	
Port Operations	
Telephone	54-2901-435200
	54-2901-431443
	54-2901-422412
	54-2901-421293
Facsimile	54-2901-431443
E-mail	operaciones@dpp.gob.ar
Web site	http://www.dpp.gob.ar
Prefectura Naval Argentina	
Telephone	54-11-4318-7521/7522/7523
Facsimile	54-11-4314-0317
E-mail	oarce@prefecturanaval.gov.ar
Web site	http://www.prefecturanaval.gov.ar

Regulations.—All vessels operating in Argentinian waters must participate in the Safety of Navigation Communication Service (SECOSENA). See the Regulations portion under Argentina in Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for the details of the Vessel Reporting System as well as the contact information for the Maritime Rescue Coordination Centers (MRCC). Messages for this system should be sent to the Prefectura Naval Station in Ushuaia via VHF channel 16.

Anchorage.—Two designated anchorages, in depths of 7 to 10m, good holding ground, lie within Bahia Ushuaia on the W side in order to have protection from SW gales.

The N anchorage is bounded by lines joining the following positions:

a. 54°48'27"S, 68°15'43"W.
b. 54°48'23"S, 68°15'54"W.
c. 54°48'46"S, 68°17'45"W.
d. 54°48'39"S, 68°17'23"W.

The S anchorage is bounded by lines joining the following positions:

a. 54°50'01"S, 68°16'05"W.
b. 54°50'12"S, 68°16'24"W.
c. 54°49'32"S, 68°18'06"W.
d. 54°49'43"S, 68°18'12"W.

Large vessels may anchor, in a depth of 28m, about 1.5 miles ENE of the head of the Commercial Pier; in depths of 25m, about 0.8 mile SE of the Commercial Pier head; and in depths of about 20m, about 0.5 mile ESE of the pier head.

Caution.—On the S side of the commercial pier, the SW winds tend to hold vessels alongside the berth. On the N side, in the event of a S gale, vessels may cast off and clear the berth quicker.

Foul ground areas are located within Bahia Ushuaia and are best seen on the chart. Bajo Usnea, a rock with depth of 5.9m, lies 0.5 mile NNE of Isla Casco.

Canal Beagle—Islotes Eclaireurs to Cabo San Pio

9.28 Note.—For information on pilotage in Canal Beagle, see the Pilotage section for the port of Ushuaia in paragraph 9.27.

Puerto Mejillones (54°54'S., 68°00'W.) lies on the S side of Canal Beagle, 3.5 miles SE of Islotes Les Eclaireurs Light. Anchorage is afforded, in a depth of 25m, good holding ground, 0.2 mile SSW of the W extremity of Islote Panqueque, the SW of the two islets on the E side of the entrance to the cove. An indian village stands at the head of the cove.

Punta San Juan, on the N side of Canal Beagle, opposite Puerto Mejillones, shows a light. A prominent radio mast stands close E of the point.

Arrecife Lawrence (54°53'S., 67°52'W.) lies on the N side of Canal Beagle, 5 miles ESE of Punta San Juan. The reef is marked by kelp and lies with two rocks, awash, at its SE end. A light is shown on the SE rock of the reef. The light tower is visible a long distance by day and resembles the sail of a schooner when seen from a distance.

9.29 Punta Remolino (54°51'S., 67°53'W.) lies about 0.8 mile NNE of Arrecife Lawrence Light. Foul ground and a rock, awash, exist within 183m of the point, which is surrounded by kelp. A beacon stands on the point. The recommended berth for vessels is in a depth of about 23m, with Fondeadero Remolino Beacon bearing 008° and Remolino Beacon bearing 291°. Good anchorage can be obtained for small vessels 0.3 mile E of the point, in depths of 20 to 22m. There is a sawmill with a small jetty that small craft can moor alongside, 0.2 mile NE of the beacon.

Ensenada Villarino, on the S side of the canal, lies 5 miles SE of Punta Remolino. The bay affords good anchorage for small vessels, in a depth of 15m, in the center of the bay. The W coast of the bay is foul with rocks up to 0.2 mile offshore. An overnight stay is not recommended, due to the violent W winds which blow in from Canal Beagle.

Caleta Robalo (54°56'S., 67°39'W.), on the S side of the canal, lies 3 miles ESE of Ensenada Villarino. The cove provides two anchorages for small vessels with local knowledge. Neither of these anchorages are recommended. The outer anchorage is exposed to the prevailing winds and the inner anchorage is small and difficult to approach.

Banco Herradura, with a least depth of 1.2m over its N edge, extends 2.2 miles NE from the S shore of Canal Beagle, close W of Puerto Williams. The bank is particularly dangerous to vessels approaching from the E, as it is steep-to on its N and E sides and extends into the fairway. This bank has been reported

to extend N of its charted position; also its W limit has been reported to lie 0.2 mile E of its charted location. A lighted beacon marks the N edge of the bank.

9.30 Puerto Williams (54°56'S., 67°36'W.) (World Port Index No. 14075) lies on the S shore of Canal Beagle, 2 miles E of Caleta Robalo. It is well-sheltered by Peninsula Gusano, a sandy spit forming its N entrance point. The port is used by vessels of the Chilean Navy, oil and gas tankers, and ocean-going fishing vessels.

Tides—Currents.—Tides rise about 2.4m at springs and 1.5m at neaps.

Puerto Williams

Depths—Limitations.—Muelle Guardian Brito, a T-head pier, extends 66m NNW from the shore. The head is 86m long and a hulk is moored off the W end to form a pontoon extension. The outer berth can accommodate vessels up to 86m long, with a maximum draft of 9m. The inner berth can accommodate vessels up to 42m long, with a maximum draft of 4.5m.

Muelle Cavadonga, close W of Muelle Guardian Brito, extends 50m from the shore. There is a holding-off buoy moored about 91m NW of the pierhead. The outer berth can accommodate vessels up to 40m long, with a maximum draft of 4m. The inner berth can accommodate vessels up to 36m long, with a maximum draft of 2m.

Small piers extend from the S shore of Peninsula Gusano and the S shore of the harbor close W of Muelle Cavadonga. Seno Lauta, an inlet, lies at the SW corner of the harbor, but is suitable for only small craft.

A tanker berth lies in depths of about 17m NE of Muelle Guardian Brito. Vessels use two anchors and mooring buoys on each quarter.

Pilotage.—Pilotage is compulsory for foreign vessels. For

Puerto Williams

westbound navigation from Isla Nueva to Puerto Williams, a Chilean pilot will be embarked about 2.5 miles N of Punta Waller (55°10'30"S., 66°33'24"W.), as best seen on the chart. For eastbound navigation from Puerto Williams, the pilot will be disembarked at the same place.

Contact Information.—See table titled **Puerto Williams—Contact Information**.

Puerto Williams—Contact Information	
Harbormaster	
Telephone	56-61-2624205
Facsimile	56-61-2624205
E-mail	cpwilliams@directemar.cl
Port Operations	
Call sign	Puerto Williams Capuerto Radio (CBM24)
VHF	VHF channels 9, 14, and 16
RT Frequency	2182 kHz and 2738 kHz
Telephone	56-61-2624205
	56-61-621090

Anchorage.—The port affords a good safe anchorage to vessels of all sizes. It is clear of dangers with an even bottom of mud and clay. Good anchorage may be found, in depths of 14.6 to 21.9m, off the piers. Anchor Berth A, Anchor Berth B, and Anchor Berth C are located E of Punta Gusano in the following positions:

1. Anchor Berth A—54°55'30.0"S, 67°36'12.5"W.
2. Anchor Berth B—54°55'24.0"S, 67°35'46.0"W.
3. Anchor Berth C—54°55'08.0"S, 67°35'18.0"W.

9.31 Paso Mackinlay (54°55'S., 67°28'W.) is entered be-

tween Punta Piedrabuena to the S and Punta Gable, about 1 mile N. The pass has a least navigable width of 0.6 mile between the foul ground extending from the SW side of Isla Gable and Punta Piedrabuena. In the pass the current flows from W to E and is superimposed on the tidal currents, causing an E current of 1 to 3 knots. A mid-channel course should be steered through Paso Mackinlay. Leading lights, in line bearing 140°, stand on Punta Piedrabuena.

Isla Gable forms the N side of Paso Mackinlay. The island extends 4.5 miles E between Punta Gable and Punta Mackinlay, the SE extremity of the island. Leading lights, in line bearing 090°, stand on the W coast of the island, about 0.8 mile N of Punta Gable. Lights are shown on Punta Espora and Punta Mackinlay.

Puerto Gable (54°53'S., 67°25'W.) lies on the NE side of Isla Gable, 1.5 miles NNW of Punta Mackinlay. The cove affords anchorage for small craft, in depths of 5 to 7m. An emergency airstrip is situated 1 mile N of Puerto Gable.

9.32 Punta Rosales (54°55'S., 67°27'W.) lies on the S side of Paso Mackinlay, 1.5 miles SW of Punta Mackinlay. Leading lights, in line bearing 100°, stand near the point. Reports have stated that a set of beacons, in line bearing 250°, have also been established on the point. Caleta Pantalon del E, 1 mile SW of the point, can only be used by small craft.

Isla Martillo lies 1.7 miles SE of Puerto Gable, on the N side of Canal Beagle. A light is shown on the SE corner of the island. Between the island and the N shore of the canal, there are several islets and rocks, the positions of which can best be seen on the chart. Isla Yunque lies 1.5 miles NE of Isla Martillo.

Two good anchorages can be obtained in this area in the event of strong W winds. The first anchorage lies 0.5 mile W of Harberton Beacon (54°53'S., 67°19'W.) in a depth of 15m. The second anchorage is 1.2 miles farther SW in Rada de los Cazadores, in a depth of 11m, midway between Isla Yunque and Isla Martillo. When approaching the second anchorage, care must be taken to avoid a 5.5m patch WSW of the SW extremity of Isla Yunque.

Puerto Harberton (54°53'S., 67°19'W.) lies on the N shore of Canal Beagle and is entered 0.4 mile W of Ponsati Light. A beacon stands on the W entrance point. There are two leading beacons at the head of the harbor. A second pair of beacons stand on the W coast of the inlet. A village, near a stone jetty, stands on the W coast.

Anchorage.—The recommended berth, in a depth of 15m, mud and sand, is on the leading line about 0.5 mile within the entrance. The position is marked by the alignment (263°) of a pair of beacons, 4m high, standing on the W shore.

Small craft can anchor 91m off the jetty, in a depth of 10m.

Caution.—When approaching Puerto Harberton from the E in thick weather, care must be taken to identify Harberton Beacon on the W entrance point, to avoid confusion with the entrance to Bahias Varela or Cambaceres to the E.

9.33 Puerto Eugenio (54°56'S., 67°18'W.) lies on the S side of Canal Beagle and is entered between Punta Eugenio and Isla Barlovento, which shows a light. Large vessels should anchor in the E part of the bay, abreast Punta Eugenio, in 22m. Small vessels can anchor in the W part of the bay, opposite the buildings of a hacienda, in a depth of 15m. Vessels entering should keep mid-channel between the NW islet of Islotes Eugenio and the shoal area, marked by kelp, off the E end of Isla Barlovento. Puerto Eugenio is considered one of the best anchorages in the vicinity.

Grupo Holger is a group of islets and rocks off the S shore of Canal Beagle, 3 miles W of Isla Snipe. A 8.2m patch lies 0.4 mile NNE of the NW extremity of the group. Two islets marked by kelp and a 14.6m shoal lies in the middle of the bay between Grupo Holger and Punta Eugenio.

Isla Snipe (54°57'S., 67°09'W.) lies about 3 miles E of Grupo Holger. A shoal, with a depth of 5.9m and marked by a lighted buoy and kelp, lies 1 mile N of the island. Another shoal, with a depth of 8.5m (position approximate), lies 1.2 miles further NW. The NNE side of the island should be given a wide berth as dangerous shoals, marked by kelp, lie as much as 1 mile offshore. There are other shoals N and S of the island and can best be seen on the chart.

Paso Picton lies between Isla Picton and the NE side of Isla Navarino. The pass has a least width of 2 miles. Two rocks, awash, lie close together in mid-channel 2 miles ENE of Cabo Rees (55°06'S., 67°04'W.). There are several dangers at the NW entrance to the pass.

9.34 Puerto Piedra (55°02'S., 67°02'W.) lie on the W side of Isla Picton, 2.7 miles NNE of Cabo Rees. The cove affords anchorage, in depths of 7 to 9m, but the holding ground is bad and no vessel should remain overnight. There is a small wooden pier at the head of the cove.

Puerto Toro is a cove on the SW side of Paso Picton, 1 mile NW of Cabo Rees. The cove is free of dangers and the holding ground is good. A settlement consisting of a few houses is situated nearby. Puerto Toro Light is exhibited on the SE entrance point. Anchorage may be obtained in the middle of the cove, in depths of 25 to 32m, 0.1 to 0.2 mile offshore.

A metal pier, 60m long and with a depth of 2.5m at its head, projects from the head of the cove.

Puerto Toro

Caleta Banner (55°01'S., 66°56'W.) is a small snug inlet on the N side of Isla Picton. It is well-sheltered from the N by Isla Gardiner, an islet close off the entrance. Small vessels, with local knowledge, may obtain good anchorage in the middle of the cove in a depth of 6m. Larger vessels can anchor off the cove in

Puerto Toro

a depth of 18m, with the NE extremity of Isla Gardiner bearing 315°, distant 0.2 mile. Another good anchorage, protected from E and S winds, is in a depth of 29m, with Isla Gardiner Light bearing 110°, distant about 0.8 mile.

A lookout post is maintained at Caleta Banner which is in radio contact with the mainland. There is a pier for the use of small craft.

Rada Picton lies off the E side of Isla Picton, midway between Cabo Maria and Punta Nordeste (55°02'S., 66°52'W.). The roadstead affords anchorage, in depths of 18 to 29m, 1 mile offshore. Small vessels can anchor, in depths of 11 to 12m, 0.7 mile offshore, 2.5 miles N of Cabo Maria.

9.35 Islote Alvina (Hakenyeshka) (54°54'S., 67°10'W.) is surrounded by kelp and lies 2 miles WNW of Pampa de Los Indios Light. Shoal water extends up to 1 mile SW and SE of the island. Islas Becasses are two islets in mid-channel and lie about 2.2 miles N of the N extremity of Isla Picton. A light is shown on the W islet.

Fondeadero Moat lies on the N side of Canal Beagle, 3.5 miles NW of Punta Moat (55°01'S., 66°44'W.). Vessels can obtain anchorage, in depths of 9 to 18m, 0.2 mile SSE of a small point. Although the holding ground is good, the anchorage is exposed to the prevailing winds, and a stay overnight is not recommended. A beacon stands on the point NW of the anchorage. There is a slight ENE current in the anchorage. A light is shown from Punta Moat.

Cabo San Pio (55°04'S., 66°32'W.) lies 7.2 miles ESE of Punta Moat. A light is shown on the point. A rock, awash, with a breaker 183m SE of it, lies about 0.2 mile SE of the light. There is an anchorage, in a depth of 24m, with the light bearing 032°, distant about 0.3 mile. The anchorage is clear, but should not be used during fresh SW winds, which raise a heavy sea.

Note.—For information concerning waters E of a line from Cabo San Pio to Falso Cabo de Hornos (55°43'S., 68°04'W.), see Pub. 124, Sailing Directions (Enroute) East Coast of South America.

Cabo San Pio to Seno Ponsonby

9.36 Bahia Oglander (55°09'S., 66°56'W.) lies about 15 miles SW of Cabo San Pio. The bay is bounded by Isla Nueva to the E, Isla Lennox to the S, Isla Picton to the N, and Isla Navarino to the W. Navigation in the bay presents no difficulty except between Cabo Maria, the SW extremity of Isla Picton, and Punta Jorge, the NW extremity of Isla Nueva. A thick patch of kelp extends 5 miles SE from Cabo Maria, and depths of less than 11m, lie within 3.5 miles from the cape, the least depth being 7m near the outer end. Depths of less than 18.3m lie up to 2.5 miles NW of Punta Jorge.

Paso Goree lies in the SW entrance to Bahia Oglander, between Islas Lennox and Navarino. The pass is about 3 miles wide and affords a well-sheltered anchorage. Isla Medio lies near mid-channel, 2 miles off the W coast of Isla Lennox. Anchorage may be obtained between Isla Medio and Punta Anchor, 3 miles NW, where the depths are moderate and the holding ground is good.

Isla Navarino (55°05'S., 67°43'W.), one of the largest of Archipielago de Tierra Del Fuego, lies S of Canal Beagle. From Cabo Rees, it extends 45 miles W to Cabo Mitchell, and is 20 miles wide. The island is very mountainous, and the summits are usually snow-capped. Pico Navarino, its highest peak, lies near the center of the island towards the N side.

Bahia Nassau lies between Isla Navarino to the N and Islas Wollaston to the S. It extends to the NW through Seno Ponsonby and Canal Murray to Canal Beagle. The bay has a number of anchorages on each side.

Caution.—A local magnetic anomaly in the bay affects the magnetic compass, which becomes very sluggish and serious errors may occur if the compass is not carefully watched.

9.37 Bahia Windhond (55°14'S., 67°30'W.) lies on the S side of Isla Navarino and is entered between Punta Harvey and Punta Courrejolles. The bay has moderate depths, but is exposed to the prevailing winds. Vessels with local knowledge can anchor off Puerto Bevan, on the E side of the bay, in a depth of 20m. A beacon stands on the S point of the cove. Fondeadero Oreste affords anchorage close off the W shore of Bahia Windhond.

Isla Bertrand lies on the S coast of Isla Navarino, about 12 miles W of Bahia Windhond. The island lies in the entrance to Seno Grandi, which is extensive but incompletely surveyed. Puerto Grandi, on the NE end of the island, affords anchorage to vessels with local knowledge in moderate depths, good holding ground.

Caleta Douglas (55°10'S., 68°07'W.) lies on the W coast of Isla Naverino. The Rio Douglas flows into the head of the cove. There is a prominent white stone on the S entrance point of the river.

Anchorage, in a depth of 20m, sand, good holding ground, can be obtained with the NW entrance point of the cove bearing 348°, distant 0.5 mile. A shoal, with a depth of 4m and marked by kelp, lies 0.1 mile S of the NW entrance point. Vessels should approach with the white stone bearing 076°.

The Rio Douglas has a depth of 2m at its mouth and can only be entered by boats.

Caleta Wulaia lies on the W coast of Isla Naverino and is entered between Islote Conejos and Islote Aguila. The cove is a good sheltered harbor for small craft with local knowledge. A settlement, with a small jetty, lies on the shore of the cove. Two pairs of beacons mark the anchorage.

9.38 Isla Button (55°01'S., 68°15'W.) lies in the S entrance to Canal Murray at the N end of Seno Ponsonby. Bahia Catorce de Julio is a cove on the E side of the island. It affords anchorage for small vessels with good holding ground. Roca Schirmer, with a depth of 1m, marked by a buoy, lies 0.6 mile E of the NE point of Isla Button. A chain of rocks and islets extend 1.7 miles SSE from the S end of the island, terminating in Isla Lobos, which is marked by a beacon.

Isla Milne Edwards is separated from Peninsula Pasteur to the SW by Canal Canacus, which leads from the NW part of Bahia Nassau to the W arm of Seno Ponsonby. Passage through Canal Canacus should not be attempted without local knowledge. Caleta Canacus lies on the S side of the canal and affords anchorage to medium-sized vessels, in a depth of 26m.

Puerto Castillo (55°15'S., 68°16'W.) lies on the E side of Peninsula Pasteur. Anchorage in the cove affords complete shelter to small vessels with local knowledge, in depths of 20 to 30m. It is approached from the S through a channel, with a depth of 12.8m, between Peninsula Pasteur and an islet close E. A depth of 4m lies close N of the anchorage.

Seno Ponsonby lies NW of Bahia Nassau and is connected with Canal Beagle by Canal Murray. An arm of Seno Ponson by extends W for 26 miles S of Peninsula Dumas, and is separated from Caleta Awaiakirrh by a low and narrow isthmus. The W arm is deep, but should not be entered without local knowledge. Caleta Yekadahby lies on the N side of the W arm and affords anchorage to small vessels with local knowledge. Bahia Lagrese, also on the N shore, affords anchorage in a depth of 26m, but there is very little swinging room. Bahia Helada, at the head of the W arm, is the only other known anchorage, but it is icebound at times.

Bahia Tekenika to Seno Ano Nuevo

9.39 Bahia Tekenika (55°21'S., 68°15'W.), lying between Peninsula Pasteur and Peninsula Hardy, extends W for about 20 miles. The greater part of the bay is deep, but the head is shoal. Bahia Allen Gardiner lies on the S side of Bahia Tekenika and affords anchorage, in a depth of 16m, 0.5 mile from the head of the bay.

Bahia Packsaddle lies on the NE side of Peninsula Hardy. The bay is sheltered from N and E winds by Isla Packsaddle and Grupo Guffern. Bahia Scotchwell forms the head of Bahia Packsaddle. Anchorage is recommended between Grupo Guffern and the W shore, but nearer the latter, in depths of 15 to 24m. Care is necessary to avoid the kelp patches which indicates where the bottom is rocky.

Bahia Orange (55°31'S., 68°03'W.) lies about 3.5 miles SSE of Bahia Packsaddle. Isla Burnt lies in the middle of the bay. A beacon stands on an islet close off the SE side of Isla Burnt. A rock shoal, with a depth of 1m, and a depth of 7.6m close SW of it, lie midway between Isla Burnt and Isla Yellow, 1 mile SE. The shoal is marked on its N side by a buoy.

There is an excellent anchorage between Isla Burnt and the W shore, in depths of 18 to 29m. Smaller vessels can anchor close within the entrance of Caleta Mission, in a depth of 14m, mud, with a flagstaff on the E end of a pier bearing 260° and with Punta Lephay bearing 157°. A cove on the S side of Bahia Orange, 1 mile SE of Caleta Mision, also affords good anchorage to small vessels, in depths of 9 to 29m.

Bahia Schapenham lies about 1 mile SSE of Isla Yellow. Two remarkable peaks of Cadena de Las Garitas, which resemble sentry boxes, are prominent W of the bay. A black above-water rock lies near the middle of the entrance to the bay. Vessels with local knowledge can obtain anchorage, in depths of 18 to 27m, near the S entrance point.

9.40 Bahia Rice (55°36'S., 67°59'W.), the N of two small bays, is entered between the S entrance point of Bahia Schapenham and Punta Lort, 2.2 miles S. There is an anchorage, which is completely landlocked and safe, in a depth of 11m, W of a small islet in the middle of the bay.

Bahia Lort is entered between Punta Lort and Punta Cannelier, 2 miles S. Caleta del Medio, a small cove, lies on the W side of the bay. Anchorage can be taken 0.2 mile from the shore off the cove, in a depth of 26m, sand. Small craft anchor, in depths of 8 to 16m, midway between the W side of Islote Orques and the SW entrance point of a cove N of Caleta del Medio.

Falso Cabo de Hornos (55°43'S., 68°04'W.), the S extremity of Peninsula Hardy and of Isle Hoste, terminates in a rocky and sharp pointed islet, shaped like a rhinoceros horn, at the foot of which there are many rocks, with heavy breakers. The cape has some resemblance to Cabo de Hornos, for which it has frequently been mistaken.

Note.—For information concerning waters E of a line from Falso Cabo de Hornos to Cabo San Pio (55°04'S., 66°32'W.), see Pub. 124, Sailing Directions (Enroute) East Coast of South America.

Off-lying Islands

9.41 Islas Diego Ramirez (56°30'S., 68°42'W.), a chain of islets and rocks in the N part of Drake Passage, extends 5.5 miles S from a position approximately 56 miles SSW of Cabo de Hornos. They were reported to lie 3.5 miles NE of their charted position. They are divided into two groups, separated by a navigable passage 1 mile wide. All the outer rocks are above-water, and there are no known underwater dangers. The largest of the N group is Roca Norte. The N group extends 1.2 miles and consists of six islets, high enough to be visible a considerable distance, and numerous rocks.

Isla Bartolome, in the S group, lies 2.5 miles S of Roca Norte and is the largest island. Isla Gonzalo is close S of Isla Bartolome and separated from it by Canal Nodal, a boat channel. It was reported that a light is shown from a tower, 5m high, standing on Isla Gonzalo. Some detached above-water rocks lie about 1 mile SE of Isla Gonzalo (56°32'S., 68°44'W.). The islands are usually inhabited during the season of moderate weather. Mean maximum range is about 1.8m and a mean minimum range is about 0.9m for tidal levels. Anchorage may be obtained close E of the middle of Isla Bartolome, 0.1 mile from the shore, in a depth of 29m, sand. A landing can be effected in Caleta Condell, a small cove on the NE side of Isla Gonzalo, where there is a meteorological station. There is also anchorage 0.5 mile E of the SE point of Isla Bartolome, in 33m, sand.

A marine protected area, named Islas Diego Ramirez y Paso Drake, has been established around Islas Diego Ramirez, extending in an arc of up to 200 miles SE through NW of the island group.

Islas Ildefonso (55°51'S., 69°15'W.) whose positions are ap-

proximate, extend 3.5 miles SE from a position 52 miles W of Isla Hermite. These islets and rocks appear to be the top of a narrow mountain range, broken in many places by the sea. Vessels can pass moderately close to them. The islands are usually inhabited during the season of moderate weather.

Bahia Tekenia to Seno Ano Nuevo (continued)

9.42 Cabo Payen (55°38'S., 68°15'W.), 9 miles NW of Falso Cabo de Hornos, is the SW end of a promontory which separates Bahia del Sur from Bahia Bourchier. Both of these bays are encumbered with islets and rocks, and are useless to shipping.

Canal Romanche lies 14.5 miles NW of Cabo Payen. The canal separates a number of islands and islets from Peninsula Hardy. The canal is 0.5 mile wide at its narrowest part, and clear of dangers. It affords two good anchorages to vessels with local knowledge, sheltered from SW winds. Caleta Coralie, on the SE side of the canal, affords a temporary anchorage to small vessels, in depths of 22 to 26m.

Seno Ano Nuevo lies between the W side of Peninsula Hardy and the E side of Peninsula Rous, the SW part of Isla Hoste. It extends 20 miles NNW, and is encumbered with numerous islands and islets. The inlet branches into five main arms, which are very deep, but mostly terminate in coves where a vessel could moor. Local knowledge is necessary. Arrecife Peligroso, a dangerous reef which breaks in heavy seas, lies 2 miles S of Cabo Brisbane (55°39'S., 69°00'W.).

9.43 Bahia India (55°28'S., 69°10'W.) lies at the SE end of Peninsula Rous and is entered two miles N of Isla Golddust. There is a low islet off the N side of the entrance to the bay. Anchorage in the bay is not recommended, as the bottom is rocky and the water deep.

Estero Doze, the S arm on the E side of Seno Ano Nuevo, is entered about 9 miles NNE of Isla Henderson. There is a large basin at the head of the inlet which affords an excellent anchorage.

Isla Morton (55°35'S., 69°12'W.) is the largest of Islas Morton, a group of islands and islets, located 3.5 miles W of Isla Henderson. The island has two anchorages on its E side, but the water is very deep and they are not recommended. In the passage between Islas Morton and Henderson are many rocks and kelp, making navigation dangerous. Bahia Clearbottom, at the N end of Isla Morton, is small and not recommended.

Isla Dumont d'Urville occupies the center of Seno Ano Nuevo, with Isla Mouchex close NW of it. Isla Paques is an islet off the NW end of Isla Mouchex, and affords a well-sheltered anchorage on its W side.

Isla Hind to Bahia Cook

9.44 Isla Hind (55°31'S., 69°20'W.) lies off the S coast of Peninsula Rous. Monte Leading, in the E part of the island, has a remarkable double peak which resembles a mitre. Bahia Wyatt, on the SE side of the island, affords better shelter than Bahia Clearbottom, but it is exposed to S winds. Neither Seno Rous nor Bahia Trefusis to the W of Isla Hind affords anchorage.

Paso Talbot separates Islas Wood from Peninsula Rous, and has a least width of 0.3 mile. There are many islets, rocks, and inlets in it, especially in the SE entrance. Passage through should not be attempted without local knowledge. Caleta Angot lies at the SE entrance to the pass and cannot be recommended as an anchorage, as the bottom is irregular and rocky.

Puerto March (55°20'S., 69°58'W.), on the E side of Isla Waterman, is entered 3 miles NE of the S point of the island and 0.7 mile W of Isla Shag. The S shore of the cove is formed by an island, with a channel having a depth of 9m between it and Isla Waterman. The best anchorage is 0.1 mile NNW of an islet in the middle of the cove toward its head, in depths of 16 to 25m, with good holding ground. Vessels can anchor in other parts of the cove, but there are several dangers. It is recommended that vessels should not enter the cove without local knowledge.

Puerto Clerke, entered 1 mile N of Puerto March, extends 1.7 miles to the W and is narrow. The approach from the N is encumbered by rocks and the coast of Isla Shag should be kept close aboard until abreast the entrance, when the S shore of the inlet should be closed. Vessels should anchor in the inner part of the cove, in depths of 14 to 32m, good holding ground. Vessels should not enter without local knowledge.

9.45 Estero Webb (55°14'S., 69°39'W.) is a large inlet lying between Peninsula Rous and Peninsula Cloue. It is entered 2.5 miles N of Isla Goose at the NW end of Paso Talbot, and extends 13 miles NE. The inlet consists of two arms. One extends NE while the other extends E.

Islas Christmas, off the W side of Peninsula Cloue, are a group of islands, islets, and rocks. The principal islands are Isla Shag, Isla Waterman, Isla Hammond, and Isla Whittlebury. Isla Waterman, the largest island, can be identified from seaward by its remarkable height. Rocas Cabrestante, the most seaward of Islas Christmas, lie 6.5 miles W of the S extremity of Isla Waterman. Vessels passing W of these rocks are advised to give them a berth of 5 miles.

Seno Christmas (55°16'S., 70°00'W.) is the continuation of Paso Talbot for 12 miles WNW, and leads into Bahia Cook by a narrow, but deep channel. The fairway is close to the S shore of the channel, as the N shore is studded with islets and rocks. Rocas Negra Chica, which are two rocks close together with depths of less than 2m, and Roca Negra Grande, which is always above-water, lie in the S approach to the SE entrance. There are no other known dangers in this part of Seno Christmas, except for some submerged rocks off Roca Negra Grande, which are marked by breakers.

Spanish

SPANISH	English
A	
abra	cove, creek, haven, opening
acantilados	cliffs
adentro	inner, inside
afuera	outer, outside
aguada	watering place
agudo, da	sharp, pointed
aguja	needle
albufera	lagoon, pond
aldea	village
alto, a	tall, high
altos	heights
alturas	heights
amarillo, a	yellow
ancho	wide, broad
ancladero	anchorage
anclaje	anchorage
ancon	open bay or roadstead
angostura	narrows
archipielago	archipelago
arena	sand
arenal	extensive area of sand
arrecife	reef
arroyito	brook
arroyo	steam, rivulet
astillero	shipyard
atalaya	watchtower, high viewpoint
azul	blue
B	
bahia	bay
bajio	shoal
baliza	beacon
balneario	seaside resort
banco (de arena)	bank (sandbank)
bancha	bank
barlovento	windward
barra	bar (of a river, etc.)
barranco	precipice, ravine
barrera	barrier (e.g. mountain barrier)
barrio	ward, section (of a town)
bateria	battery
boca	mouth
bodega	storehouse
boqueron	wide mouth, opening or entrance
boquete	narrow entrance, gap
bravo, a	coast, shore, beach exposed to heavy seas
brazo	arm (of the sea, etc.)
C	
cabeza	shoal head
cabezo	shoal head, summit of a hill
cabo	cape
cadena	chain (of mountains, etc.)
cala	narrow cove or creek with steep sides
calado	draft
caleta	cove
caleton	large cove
campo	any tract of country
canada	glen
canal	channel
canalizo	narrow channel between islands
cano	creek
canto	bluff
capilla	chapel
cargardero	shore-ship loading appliance
carrera, carreiro	narrow channel or passage
casa	house
cascada	waterfall
caserio	hamlet, group of houses
castillo	castle
castro	headland, hillock surmounted by ruins
catedral	cathedral
cayo	cay
cerrito	hillock
cerro	hill, hillock
chico, a	small
chubasco	squall
cima	summit, crest
ciudad	city, town
ciudadela	citadel
co	rocky shoal, rock
colina	hill, hillock
collado	hillock, elevation
colonia	colony, settlement
colorado	reddish in color
comarca	region
concha	bay or cove
cono	cone
convento	convent
cordillera	mountain range
corona	crown, summit
cortadura	cut, cutting, very narrow channel or defile
costa	coast
coto	summit
cruz	cross
cuartel	barracks
cuesta	sloping ground, hill, hillock
cueva	cave
cumbre	summit, peak
cuna	quoin, wedge
cuspide	summit
D	
darsena	basin, dock, backwater
delta	delta
departamento	department
desembarcadero	landing place
desembocadura	mouth of a river
desierto	desert
dique	mole, dock, embankment, levee

SPANISH	English
distrito	district
doble	double
duna	dune
E	
el	definite article (masc.)
embocadura	mouth
ensenada	bay
entrada	entrance
ermita	hermitage
escollera	breakwater, wavetrap
escollo	shallow rock, reef awash
espigon	arm of a mole
estacion	station
estancia	ranch, country estate
este	east
estero	creek, inlet
estrecho	straits, narrows
estuario	estuary
exterior	outer, exterior
F	
farallon	stack; steep sharp-pointed rocky islet
faro	lighthouse
fondeadero	anchorage
fortaleza	fortress
fraile	friar
freo	strait
freu	narrow strait between island and mainland
fronton	wall-like cliff
fuerte	fort
G	
garganta	narrow restricted passage, sound
garita	sentry box, hut lookout
golfo	gulf
gran, grande	large, great, big
gris	gray
grupo	group (of islands)
H	
hacienda	farm, plantation
herradura	horseshoe-shaped bay
I	
iglesia	church
insua	small islet or rock
interior	inner
isla	island
islita	small island, islet
islote	islet, skerry
islotillo or islotito	small barren islet
istmo	isthmus
L	
la, las	definite article (fem.)
lago	lake
laguna	lagoon, pond

SPANISH	English
laja	flat rock
largo, a	long
lastra	rocky ledge
laxe	rock
levante	eastern
llana	plain
llano, a	plain, flat
llanura	plain
loma	hillock, knoll
lomo	ridge
los	definite article (masc.)
lugar	village, place
lugarejo	hamlet
M	
malecon	quay, mole
mar	sea
margen	shore, river bank
marisma	marsh
medano	dune, sandhill
medio	middle
meridional	southern
mesa or meseta	tableland, plateau
mogote	hummock
molino	mill
monasterio	monastery
montana	mountain
monticulo	knoll
monte	mountain, mount
monte	forest, group or clump of trees
moreno	brown
morro	headland, bluff, head of breakwater
muelle	pier, jetty, mole
muralla	a wall of mountains, cliffs
N	
negro, a	black
norte	north
nuevo, a	new
O	
obscuro	dark
occidental	western
oeste	west
oriental	eastern
oriente	east
orilla	shore, edge, bank (of a river)
oscuro	dark
P	
palacio	palace
pan de azucar	sugar loaf
pantano	swamp, marsh
pardo	gray
parque	park
pasco	promenade, avenue
pasaje	passage
paso	pass

SPANISH	English
pedregal	stony or rocky patch
peninsula	peninsula
pena	rock
penasco	a large rock
penon	rocky mountain
pequeno, a	small
peton	pinnacle rock
picacho	sharp peak
pico	peak
piedra	stone, rock
pies	feet
placer	shoal
playa	beach
poblado	village
poniente	western
pozo	well, deep hole in river or sea bed
presa	barrage, weir
promontorio	promontory
provincia	province
puebla	village
pueblecito	small town, village
pueblito	hamlet
pueblo	town
puente	bridge
puerto	port, harbor
punta	point
puntal	narrow point

Q

quebrada	ravine, gully

R

rada	roadstead
redondo, a	round
regato	torrent, stream
restinga	reef
reventazones	breakers
ria	sunken valley forming estuary
riachuelo	riverlet
ribera	shore, river bank
rincon	inner angle or corner, a small cove
rio	river
roca	rock
rocalloso, a	pebbly, stony
rochel	rocky patch
rodal	shoal, usually rocky and of some extent
rojo, a	red
rompeolas	breakwater
rompientes	breakers
roquerio	rocky shoal

S

salinas	saltpans
san, santo, a	saint
seco	dry
seno	bight, sound
septentrional	northern
serrania	mountain ridge
sierra	mountain range
silla	saddle
sotavento	leeward
sucio, a	foul
sud, sur	south
surgidero	anchorage

T

tenedero	holding ground, anchorage
tetas	nipples, paps
teton	large nipple, pap
tierra	land
torre	tower
touza	rock (usually lying off a larger feature)

V

vado	ford
valle	valley
varadero	slipway
vega	plain
ventisquero	glacier
verde	green
viejo, a	old
vigia	lookout
villa	town, villa
villorio	hamlet
volcan	volcano
vuelta	bend, turn (of a channel)

Z

zona	zone

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
	°	'	°	'	
A					
ABRA KELLY	46	59 S	74	07 W	8.6
ABRA SEARCH	48	42 S	74	32 W	8.78
ACHAO	42	28 S	73	30 W	7.45
ANAKENA	27	04 S	109	20 W	1.25
ANCUD	41	52 S	73	50 W	6.10
ANGOSTURA GUIA	50	45 S	74	29 W	8.56
ANGOSTURA INGLESA	48	58 S	74	24 W	8.73
ANTOFAGASTA	23	39 S	70	25 W	4.29
ARCHIP DE JUAN FERNANDEZ	33	37 S	78	50 W	1.19
ARCHIPELAGO DE COLON	0	00 N	90	00 W	1.3
ARCHIPIELAGO DE LA PLATA	4	01 N	77	16 W	2.6
ARICA	18	28 S	70	20 W	4.2
ARRECIFE DE ATACAMES	0	57 N	79	50 W	2.15
ARRECIFE LAWRENCE	54	53 S	67	52 W	9.28
ARRECIFE MACGOWEN	1	07 S	89	54 W	1.9
B					
BAHIA ACADEMY	0	45 S	90	18 W	1.11
BAHIA ACOSTA	47	44 S	74	45 W	8.83
BAHIA ADELAIDA	54	22 S	72	05 W	9.7
BAHIA ADVENTURE	44	50 S	74	45 W	6.31
BAHIA ALM SAENZ VAL.	54	53 S	68	33 W	9.23
BAHIA ANNA PINK	45	47 S	74	49 W	6.37
BAHIA ANO NUEVO	52	10 S	73	32 W	8.43
BAHIA ARDITA	7	08 N	77	48 W	2.2
BAHIA BERMEJO	10	33 S	77	55 W	3.28
BAHIA BOSSI	49	50 S	75	26 W	8.13
BAHIA CAMERON	51	57 S	72	56 W	8.45
BAHIA CARRIZAL	29	06 S	71	29 W	4.61
BAHIA CARVAJAL	33	40 S	78	56 W	1.20
BAHIA CHACABUCO	45	28 S	72	50 W	7.81
BAHIA CHOROS	29	13 S	71	30 W	4.62
BAHIA COBQUECURA	36	08 S	72	48 W	5.25
BAHIA COCHAMO	41	30 S	72	16 W	7.15
BAHIA COLIUMO	36	32 S	72	56 W	5.25
BAHIA CONCEPCION	36	41 S	73	02 W	5.26
BAHIA COOK	55	10 S	70	10 W	9.18
BAHIA COPIAPO	27	19 S	70	59 W	4.49
BAHIA CORBETA PAPUDO	50	22 S	75	20 W	8.20
BAHIA CORUNA	51	51 S	72	44 W	8.47
BAHIA CUCAO	42	37 S	74	13 W	6.13
BAHIA CUEVITA	5	28 N	77	28 W	2.3
BAHIA CUMBERLAND	33	37 S	78	50 W	1.20
BAHIA DAY	50	09 S	74	47 W	8.64
BAHIA DE AGUADULCE	0	56 S	89	30 W	1.6
BAHIA DE ANCON	11	45 S	77	11 W	3.37
BAHIA DE ANCUD	41	52 S	73	52 W	6.10
BAHIA DE CARAQUEZ	0	35 S	80	25 W	2.18
BAHIA DE CASMA	9	27 S	78	23 W	3.26
BAHIA DE CHANCAY	11	35 S	77	17 W	3.34
BAHIA DE CUPICA	6	41 N	77	27 W	2.2
BAHIA DE HUARMEY	10	06 S	78	10 W	3.27
BAHIA DE JAMES	0	14 S	90	52 W	1.13
BAHIA DE LOS CHINOS	9	21 S	78	26 W	3.26
BAHIA DE MALAGA	3	55 N	77	20 W	2.5
BAHIA DE MANTA	0	57 S	80	43 W	2.20
BAHIA DE NAUFRAGIO	0	54 S	89	37 W	1.7
BAHIA DE PAITA	5	02 S	81	06 W	3.8
BAHIA DE PARACAS	13	49 S	76	16 W	3.47
BAHIA DE PERRY	0	35 S	90	55 W	1.14
BAHIA DE PISCO	13	44 S	76	16 W	3.47
BAHIA DE SAMANCO	9	14 S	78	32 W	3.25
BAHIA DE SAN LORENZO	1	27 N	79	02 W	2.12
BAHIA DE SANTA ELENA	2	12 S	80	55 W	2.24
BAHIA DE SECHURA	5	40 S	81	00 W	3.11
BAHIA DE SOLANO	6	18 N	77	25 W	2.2
BAHIA DE SULLIVAN	0	17 S	90	34 W	1.13
BAHIA DE TALARA	4	34 S	81	17 W	3.5
BAHIA DEL CALLAO	12	02 S	77	10 W	3.39
BAHIA DEL CORREO	1	14 S	90	25 W	1.10
BAHIA DEL OESTE	33	36 S	78	51 W	1.20
BAHIA FIASCO	54	52 S	71	13 W	9.18
BAHIA FLEURIAIS	55	00 S	69	30 W	9.21
BAHIA GARDNER	1	21 S	89	38 W	1.9
BAHIA GREGG	51	49 S	73	52 W	8.52
BAHIA GUAPACHO	41	47 S	73	58 W	6.6
BAHIA HERRADURA GUAYACAN	29	58 S	71	22 W	4.69
BAHIA HONDA	54	55 S	68	13 W	9.25
BAHIA HOPE	54	07 S	73	04 W	9.5
BAHIA HUGH	50	24 S	74	45 W	8.60
BAHIA ILQUE	41	38 S	73	05 W	7.19
BAHIA INDEPENDENCIA	14	14 S	76	10 W	3.49
BAHIA INDIA	55	28 S	69	10 W	9.43
BAHIA INGLESA	27	07 S	70	54 W	4.48
BAHIA ISABEL	0	37 S	91	06 W	1.16
BAHIA LA PEROUSE	27	05 S	109	18 W	1.25
BAHIA LAGUNA VERDE	33	06 S	71	42 W	5.15
BAHIA LATITUD	53	17 S	74	14 W	9.3
BAHIA LAVATA	25	39 S	70	40 W	4.37
BAHIA LENCA	41	38 S	72	41 W	7.16
BAHIA LINAO	41	57 S	73	33 W	7.24
BAHIA LION	48	33 S	74	25 W	8.79
BAHIA LOW	43	48 S	73	58 W	6.20
BAHIA MANAO	41	52 S	73	30 W	7.23
BAHIA MEJILLONES	23	03 S	70	27 W	4.23
BAHIA MOORE	51	46 S	73	52 W	8.53
BAHIA OCTAVIA	6	51 N	77	40 W	2.2
BAHIA OGLANDER	55	09 S	66	56 W	9.36
BAHIA ORANGE	55	31 S	68	03 W	9.39
BAHIA PARGUA	41	47 S	73	26 W	7.3
BAHIA PENHOAT	55	02 S	69	23 W	9.21
BAHIA PLAYA PRIETA	1	16 S	90	30 W	1.10
BAHIA PUMALIN	42	42 S	72	50 W	7.49
BAHIA QUEULE	39	20 S	73	13 W	5.44
BAHIA QUINTERO	32	46 S	71	32 W	5.12
BAHIA RALUN	41	24 S	72	19 W	7.15
BAHIA RATAGALES	55	07 S	69	58 W	9.21
BAHIA RICE	55	36 S	67	59 W	9.40
BAHIA ROSA	54	53 S	70	44 W	9.15
BAHIA SALINAS	11	12 S	77	36 W	3.32
BAHIA SAN ANDRES	46	34 S	75	31 W	6.43
BAHIA SAN RAFAEL	43	33 S	73	48 W	7.87
BAHIA SAN VICENTE	36	44 S	73	10 W	5.31
BAHIA SANDY	52	07 S	73	41 W	8.41

	Position				Sec. Para
	°	'	°	'	
BAHIA SHOLL	52	45 S	73	53 W	8.35
BAHIA STEPHENS	0	48 S	89	30 W	1.8
BAHIA STEWART	54	54 S	71	25 W	9.18
BAHIA TARN	47	44 S	74	47 W	8.83
BAHIA TEKENIKA	55	21 S	68	15 W	9.39
BAHIA TIERRA BLANCA	33	39 S	78	55 W	1.20
BAHIA TOM	50	12 S	74	48 W	8.64
BAHIA TONGOY	30	16 S	71	34 W	4.72
BAHIA TRES BRAZOS	54	54 S	69	46 W	9.20
BAHIA USHUAIA	54	49 S	68	15 W	9.26
BAHIA WIDE	50	39 S	74	36 W	8.59
BAHIA WINDHOND	55	14 S	67	30 W	9.37
BAHIA WODEHOUSE	51	47 S	73	56 W	8.53
BAHIA YENDEGAIA	54	54 S	68	42 W	9.22
BAJO ABREOJO	43	01 S	72	52 W	7.65
BAJO AITUI	42	46 S	73	28 W	7.54
BAJO APABON	42	41 S	73	27 W	7.47
BAJO AQUILES	41	44 S	73	51 W	6.3
BAJO BIEN CONOCIDO	42	58 S	73	09 W	7.57
BAJO BLANCO	43	10 S	73	40 W	7.60
BAJO BORDES	52	05 S	73	31 W	8.42
BAJO CAHLINAO	42	55 S	73	26 W	7.54
BAJO CANTAGALLO	1	17 S	80	58 W	2.22
BAJO CAPAC	49	07 S	74	22 W	8.71
BAJO CHAUQUES	42	15 S	73	15 W	7.29
BAJO CORVIO	41	51 S	73	13 W	7.5
BAJO COTOPAXI	48	46 S	74	28 W	8.77
BAJO CULENHUE	41	52 S	73	11 W	7.10
BAJO DAYOT	32	24 S	72	16 W	5.10
BAJO DE AFUERA	3	01 S	80	03 W	2.31
BAJO DE MONDRAGON	2	40 S	79	55 W	2.35
BAJO DE NEGRITOS	3	54 N	77	26 W	2.6
BAJO DRIVER	42	41 S	73	02 W	7.52
BAJO DUGOAB	42	23 S	73	11 W	7.30
BAJO INCONVENIENTE	42	41 S	73	11 W	7.51
BAJO MEMPHIS	49	05 S	74	23 W	8.71
BAJO MONTANITA	1	50 S	81	03 W	2.23
BAJO RAPEL	33	51 S	71	53 W	5.18
BAJO SAN JOSE	41	50 S	72	56 W	7.13
BAJO SANTO DOMINGO	42	01 S	72	47 W	7.33
BAJO SOLITARIO	42	47 S	73	10 W	7.51
BAJO VETTOR PISANI	42	46 S	73	28 W	7.54
BAJOS DE COJUNES	0	23 N	80	08 W	2.16
BALAO OIL TERMINAL	1	02 N	79	42 W	2.14
BANCO AMNISTIA	41	58 S	73	08 W	7.10
BANCO DE MALA	2	53 S	79	52 W	2.31
BANCO VELAHUE	43	12 S	73	33 W	7.60
BAYOVAR OIL TERMINAL	5	47 S	81	03 W	3.12
BENEPU	27	10 S	109	25 W	1.25
BLACK BEACH ANCHORAGE	1	16 S	90	30 W	1.10
BOCA DE CANALES	47	30 S	74	30 W	8.6
BOCA GRANDE	1	49 N	78	51 W	2.10
BOCA WICKHAM	45	49 S	74	34 W	6.38
BOCANA DE VIRUDO	5	26 N	77	25 W	2.3
BUENAVENTURA	3	54 N	77	05 W	2.7

C

CABO BARRINGTON	0	36 S	90	54 W	1.14
CABO BASCUNAN	28	51 S	71	30 W	4.59
CABO BLANCO	4	16 S	81	15 W	3.4
CABO BRIGSTOCK	52	07 S	75	00 W	8.32
CABO BRISBANE	55	39 S	69	00 W	9.42
CABO BYNOE	47	59 S	75	18 W	8.8
CABO CARLOS	50	51 S	74	20 W	8.56
CABO CAROLINA	51	38 S	75	12 W	8.29
CABO CARRANZA	35	35 S	72	38 W	5.23
CABO CASTLEREAGH	54	56 S	71	25 W	9.18
CABO CHALMERS	0	33 N	90	47 W	1.5
CABO CHOROS	29	15 S	71	28 W	4.64
CABO CLANRICARDE	50	12 S	74	42 W	8.61
CABO COLMILLO	49	03 S	75	42 W	8.9
CABO COLWORTH	52	29 S	73	39 W	8.38
CABO CORCOVADO	43	08 S	72	55 W	7.66
CABO CORRIENTES	5	29 N	77	33 W	2.3
CABO DE SAN FRANCISCO	0	39 N	80	05 W	2.16
CABO DESEADO	52	45 S	74	43 W	9.2
CABO DISPATCH	51	42 S	74	31 W	8.30
CABO GLOUCESTER	54	04 S	73	28 W	9.4
CABO HAWKSWORTH	50	05 S	75	23 W	8.13
CABO JORGE	51	39 S	75	17 W	8.26
CABO KEMPE	54	23 S	72	32 W	9.6
CABO KENDALL	51	28 S	74	07 W	8.30
CABO LADRILLERO	50	49 S	75	19 W	8.24
CABO LOBOS	18	48 S	70	22 W	4.4
CABO MANGLARES	1	36 N	79	03 W	2.11
CABO MARZO	6	50 N	77	42 W	2.2
CABO MATAURA	52	49 S	74	40 W	9.2
CABO MOGOTES	47	44 S	75	23 W	8.7
CABO NORTE	0	41 S	89	21 W	1.8
CABO PALMER	52	13 S	73	40 W	8.41
CABO PASADO	0	21 S	80	30 W	2.17
CABO PAYEN	55	38 S	68	15 W	9.42
CABO PHILLIP	52	45 S	73	55 W	8.33
CABO PRIMERO	49	52 S	75	35 W	8.12
CABO QUEDAL	40	58 S	73	58 W	6.2
CABO QUEDAL	40	59 S	73	57 W	5.54
CABO QUILAN	43	16 S	74	24 W	6.14
CABO RAPER	46	49 S	75	38 W	6.43
CABO REES	55	06 S	67	04 W	9.33
CABO ROSA	1	03 S	91	10 W	1.16
CABO RUGGED	50	02 S	75	23 W	8.13
CABO SALIENTE	54	39 S	71	24 W	9.13
CABO SAN LORENZO	1	03 S	80	49 W	2.21
CABO SAN MATEO	0	57 S	80	49 W	2.20
CABO SAN MATEO	51	24 S	74	02 W	8.54
CABO SAN PIO	55	04 S	66	32 W	9.35
CABO TABLAS	31	51 S	71	34 W	5.6
CABO TAITAO	45	52 S	75	04 W	6.41
CABO TATE	53	38 S	73	51 W	9.3
CABO TIRUA	38	22 S	73	31 W	5.40
CABO TRES MONTES	46	59 S	75	26 W	6.44
CABO WALKER	52	37 S	73	40 W	8.36
CABO WEST CLIFF	50	40 S	75	31 W	8.23
CABO WOODFORD	0	45 S	90	47 W	1.15
CALATA TIERRA COLORADA	5	04 S	81	06 W	3.8
CALBUCO	41	46 S	73	08 W	7.6
CALDERA	27	03 S	70	50 W	4.46
CALETA ABTAO	23	31 S	70	32 W	4.27
CALETA AEOLIAN	0	27 S	90	18 W	1.12
CALETA AGUA DULCE	24	08 S	70	30 W	4.32
CALETA AMALIA	50	56 S	73	51 W	8.56
CALETA AWAIAKIRRH	55	00 S	69	01 W	9.22
CALETA BANNER	55	01 S	66	56 W	9.34
CALETA BARRANQUILLAS	27	31 S	70	54 W	4.50
CALETA BARROW	54	20 S	71	26 W	9.11
CALETA BUZETA	48	11 S	73	19 W	8.87
CALETA CANALES	54	54 S	70	36 W	9.16
CALETA CHANAVAYA	20	53 S	70	08 W	4.14
CALETA CHIGUALOCO	31	46 S	71	32 W	5.5
CALETA CLIFF	46	28 S	75	17 W	6.42
CALETA COLCURA	37	07 S	73	09 W	5.35
CALETA COLOSO	23	45 S	70	28 W	4.30
CALETA CONNOR	48	30 S	74	26 W	8.79
CALETA CONSTITUCION	23	25 S	70	36 W	4.26
CALETA DE LA TORTUGA	0	42 S	89	22 W	1.8
CALETA DEL MEDIO	27	41 S	70	57 W	4.51
CALETA DEL NORTE	0	25 S	90	17 W	1.12
CALETA DEWETT	47	52 S	74	33 W	8.84
CALETA DIXON	51	57 S	73	42 W	8.51
CALETA DOUGLAS	55	10 S	68	07 W	9.37
CALETA ESMERALDA	25	55 S	70	42 W	4.39
CALETA ESPINOZA	47	54 S	73	54 W	8.88
CALETA ESTANCIA MONTES	51	58 S	72	52 W	8.45
CALETA GATO	46	17 S	75	03 W	6.42
CALETA GOICOLEA	50	48 S	74	16 W	8.56
CALETA HERRADURA DE CARRIZAL	28	06 S	71	11 W	4.54
CALETA HORNILLA	30	17 S	71	37 W	4.72
CALETA HOSKYN	48	57 S	74	26 W	8.75
CALETA HUENTELAUQUEN	31	38 S	71	32 W	5.4
CALETA IDEAL	47	47 S	74	55 W	8.83
CALETA IQUANA	0	57 S	91	27 W	1.16
CALETA ITE	17	54 S	70	57 W	3.62
CALETA JUNIN	19	38 S	70	11 W	4.6
CALETA LAGUERA	48	01 S	73	28 W	8.90
CALETA LAMEGUAPI	40	11 S	73	43 W	5.50
CALETA LATITUD	50	52 S	74	24 W	8.57
CALETA LETIER	54	56 S	68	26 W	9.25
CALETA LINLINAO	42	35 S	73	46 W	7.44
CALETA LLONCOCHAIGUE	42	23 S	72	28 W	7.38
CALETA LOBITOS	4	27 S	81	17 W	3.5
CALETA LUCAS	49	00 S	74	24 W	8.72
CALETA MALA	12	43 S	76	39 W	3.44

	Position				Sec. Para
	°	'	°	'	
CALETA MANSA	40	33 S	73	46 W	5.52
CALETA MARIA ELENA	47	46 S	73	44 W	8.89
CALETA MOLLE	20	18 S	70	08 W	4.11
CALETA MOLLES	32	16 S	71	29 W	5.10
CALETA MORA	27	00 S	70	49 W	4.45
CALETA MUICOLPUE	40	34 S	73	46 W	5.52
CALETA OLLA	54	55 S	69	10 W	9.20
CALETA PATILLOS	20	44 S	70	12 W	4.12
CALETA PENA BLANCA	28	42 S	71	22 W	4.58
CALETA PILAR	42	53 S	73	33 W	7.55
CALETA PUCUSANA	12	29 S	76	48 W	3.43
CALETA QUILCA	16	43 S	72	26 W	3.57
CALETA QUIUTIL	42	31 S	74	14 W	6.13
CALETA RAYO	50	45 S	74	32 W	8.58
CALETA ROBALO	54	56 S	67	39 W	9.29
CALETA SALINILLO	14	00 S	76	17 W	3.49
CALETA SAN CARLOS	39	50 S	73	26 W	5.46
CALETA SANDY	49	47 S	74	24 W	8.66
CALETA TAGUS	0	16 S	91	22 W	1.16
CALETA TANDY	52	25 S	73	38 W	8.38
CALETA TEMBLADOR	29	28 S	71	20 W	4.66
CALETA VITOR	18	46 S	70	21 W	4.3
CALETA VOILIER	54	52 S	69	39 W	9.20
CALETA WEBB	0	48 S	91	27 W	1.16
CALETA YAL	42	41 S	73	40 W	7.44
CALETA ZORRA	43	08 S	74	19 W	6.14
CANAL ANIHUE	42	19 S	73	17 W	7.29
CANAL APIAO	42	39 S	73	10 W	7.53
CANAL BERTRAND	52	20 S	74	34 W	8.33
CANAL CASTRO	51	22 S	74	28 W	8.31
CANAL CHACAO	41	48 S	73	35 W	6.4
CANAL CHAIGUAO	43	09 S	73	31 W	7.60
CANAL CHAULINEC	42	37 S	73	19 W	7.48
CANAL CHAUQUES	42	19 S	73	11 W	7.30
CANAL CHOLGO	42	08 S	72	29 W	7.35
CANAL COCKBURN	54	22 S	71	40 W	9.8
CANAL CONCEPCION	50	18 S	74	49 W	8.60
CANAL COVADONGA	49	05 S	75	27 W	8.9
CANAL CUTLER	52	05 S	74	00 W	8.34
CANAL DARWIN	45	27 S	73	48 W	7.1
CANAL DE ITBACA	0	29 S	90	16 W	1.11
CANAL DE JAMBELI	3	10 S	80	10 W	2.31
CANAL DE JUANCHACO	3	56 N	77	21 W	2.6
CANAL DEL CASTILLO	48	45 S	75	18 W	8.9
CANAL ESCAPE	49	27 S	74	27 W	8.68
CANAL FALLOS	48	20 S	75	10 W	8.11
CANAL FERRONAVE	45	08 S	73	29 W	7.78
CANAL GRAPPLER	49	29 S	74	17 W	8.68
CANAL HERNANDEZ	52	18 S	73	45 W	8.40
CANAL ICY	49	36 S	74	17 W	8.68
CANAL JUAN DE DIOS	3	54 N	77	20 W	2.6
CANAL KRUGER	47	56 S	74	39 W	8.82
CANAL LEMUY	42	34 S	73	40 W	7.47
CANAL LEUCAYEC	43	59 S	73	45 W	6.25
CANAL LLANCHID	42	03 S	72	38 W	7.34
CANAL MIRAMAR	49	34 S	75	30 W	8.12
CANAL MOLINAS	52	04 S	74	14 W	8.34
CANAL MONTEITH	50	25 S	75	01 W	8.62
CANAL MONTT	52	06 S	74	41 W	8.32
CANAL O'BRIEN	54	53 S	70	25 W	9.16
CANAL O'HIGGINS	52	25 S	74	04 W	8.33
CANAL OCASION	54	33 S	72	00 W	9.9
CANAL PACHECO	52	14 S	74	03 W	8.34
CANAL PICTON	49	45 S	75	12 W	8.15
CANAL PITT	50	40 S	74	12 W	8.56
CANAL PLAZA	47	58 S	73	41 W	8.86
CANAL PUQUITIN	43	51 S	73	50 W	6.27
CANAL PUYUGUAPI	44	55 S	73	21 W	7.76
CANAL QUILAN	43	20 S	74	14 W	6.18
CANAL QUINCHAO	42	30 S	73	28 W	7.45
CANAL REFUGIO	43	58 S	73	08 W	7.76
CANAL RODRIGUEZ	45	19 S	73	33 W	7.80
CANAL SAN BLAS	51	14 S	74	55 W	8.26
CANAL SAN PEDRO	43	20 S	73	44 W	7.62
CANAL SANTA MARIA	52	00 S	73	07 W	8.44
CANAL SENORET	51	43 S	72	37 W	8.48
CANAL TRINIDAD	49	59 S	75	05 W	8.13
CANAL TROYA	47	56 S	73	49 W	8.85
CANAL TUAMAPU	43	59 S	74	07 W	6.22
CANAL UTARUPA	45	31 S	74	14 W	6.39
CANAL VALDES	52	00 S	72	57 W	8.45
CANAL WHITE	51	55 S	73	00 W	8.44
CARTAGO BAY	0	35 S	90	55 W	1.14
CAYO BLANCO	44	47 S	73	33 W	7.72
CERRO ALTO	33	36 S	78	52 W	1.20
CERRO CALAVERA	12	33 S	76	46 W	3.44
CERRO EL YUNQUE	33	39 S	78	51 W	1.19
CERRO LA MESA MARIA FRANCISCA	14	41 S	75	50 W	3.50
CERRO MALA	2	48 S	80	00 W	2.33
CERRO MANTAN	44	00 S	73	39 W	7.70
CERRO PAN DE AZUCAR	0	43 S	89	21 W	1.8
CERRO TRES PICOS	4	33 S	81	17 W	3.6
CERRO ZAMBAPALA	2	58 S	80	13 W	2.31
CHACAO	41	50 N	73	32 W	6.9
CHANARAL	26	21 S	70	39 W	4.42
CHANCAY	11	35 S	77	17 W	3.35
COISHCO	9	01 S	78	38 W	3.23
CONCHAN	12	16 S	76	56 W	3.42
COQUIMBO	29	57 S	71	21 W	4.68
CORONEL	37	02 S	73	10 W	5.33
CRUZ GRANDE	29	27 S	71	20 W	4.65

D

DALCAHUE	42	23 S	73	39 W	7.41
DURAN	2	10 S	79	51 W	2.37

E

EASTER ISLAND	27	05 S	109	20 W	1.23
EL CABEZO	12	04 S	77	16 W	3.39
EL VIUDO	1	51 N	78	43 W	2.10
EMILY ROCK	29	38 S	87	25 W	1.18
ENSENADA CHAITEN	42	55 S	72	47 W	7.64
ENSENADA CODIHUE	41	47 S	73	22 W	7.5
ENSENADA DE JUAN CHACO	4	00 N	77	18 W	2.6
ENSENADA DE JUANCHACO	3	59 N	77	18 W	2.5
ENSENADA DE SAN FRANCISCO	0	36 N	80	05 W	2.16
ENSENADA GAVIOTA	29	05 S	71	31 W	4.60
ENSENADA LEUTEPO	42	57 S	73	36 W	7.56
ENSENADA TOTORALILLO	32	01 S	71	32 W	5.9
ENSENADA UTRIA	6	02 N	77	21 W	2.2
ESMERALDAS	1	00 N	79	39 W	2.13
ESTERO	42	20 S	72	30 W	7.36
ESTERO	42	30 S	72	45 W	7.39
ESTERO CAHUELMO	42	16 S	72	26 W	7.37
ESTERO CASTRO	42	30 S	73	45 W	7.42
ESTERO CHAUQUI	41	43 S	72	58 W	7.18
ESTERO CHOLHUE	41	40 S	72	59 W	7.18
ESTERO COMPU	42	52 S	73	40 W	7.55
ESTERO DE LAS MONTANAS	52	00 S	73	18 W	8.43
ESTERO DE SANTA ROSA	3	14 S	80	01 W	2.32
ESTERO DESENGANO	49	21 S	75	16 W	8.10
ESTERO HUILDAD	43	05 S	73	32 W	7.58
ESTERO NEF	48	07 S	74	16 W	8.84
ESTERO QUETRALCO	45	43 S	73	25 W	7.86
ESTERO QUINTUPEU	42	10 S	72	26 W	7.35
ESTERO RELONCAVI	41	43 S	72	35 W	7.2
ESTERO RINGDOVE	49	45 S	74	11 W	8.66
ESTERO SAN ESTEBAN	46	19 S	75	06 W	6.42
ESTERO ULTIMA ESPERANZA	51	35 S	72	56 W	8.50
ESTERO VAN DE MEULEN	48	15 S	74	32 W	8.80
ESTERO WEBB	55	14 S	69	39 W	9.45
ESTRECHO DE NELSON	51	42 S	75	07 W	8.27
ESTUARIO BARROS ARANA	45	52 S	73	55 W	7.85
ESTUARIO BARROS LUCO	50	09 S	75	17 W	8.20
ESTUARIO GAGE	49	54 S	74	26 W	8.66

F

FALSO CABO DE HORNOS	55	43 S	68	04 W	9.40
FARALLONES CAICURA	41	43 S	72	42 W	7.13
FARALLONES DE TRAHUILCO	40	20 S	73	45 W	5.51
FARALLONES MARIMELI	41	42 S	72	26 W	7.14
FIORDO ALEJANDRO	46	14 S	74	55 W	6.41
FIORDO BALLADARES	45	44 S	74	22 W	6.39
FIORDO BARROS LUCO	50	09 S	75	17 W	8.20
FIORDO COMAU	42	20 S	72	30 W	7.36
FIORDO RENIHUE	42	30 S	72	45 W	7.39
FORT SAN JUAN BAUTISTA	33	37 S	78	50 W	1.20

	Position				Sec. Para
	°	'	°	'	
G					
GALAPAGOS ISLANDS	0	00 N	90	00 W	1.3
GOLFO ALMIRANTE MONTT	51	53 S	72	40 W	8.46
GOLFO DE ARAUCO	37	05 S	73	20 W	5.31
GOLFO SAN ESTEBAN	46	57 S	74	17 W	8.5
GOLFO SARMIENTO	52	13 S	75	00 W	8.32
GOLFO TRES MONTES	46	50 S	75	00 W	8.3
GRUPO CHAULINEC	42	37 S	73	16 W	7.48
GRUPO CORUNA	51	52 S	72	45 W	8.46
GRUPO DE HUAURA	11	24 S	77	45 W	3.33
GRUPO DE PESCADORES	11	48 S	77	16 W	3.36
GRUPO DJENANA	52	21 S	74	30 W	8.33
GRUPO EL ENJAMBRE	44	48 S	73	39 W	7.72
GRUPO EVANGELISTAS	52	23 S	75	06 W	8.32
GRUPO GOMEZ CARRENO	51	39 S	74	19 W	8.30
GRUPO LOBOS	51	33 S	74	44 W	8.30
GRUPO ROA	44	10 S	73	47 W	6.29
GUARELLO ORE TERMINAL	50	22 S	75	20 W	8.21
GUAYAQUIL	2	12 S	79	53 W	2.36
H					
HAKENYESHKA	54	54 S	67	10 W	9.35
HARBERTON BEACON	54	53 S	67	19 W	9.32
HORMIGAS DE AFUERA	11	58 S	77	45 W	3.36
HUASCO	28	28 S	71	15 W	4.56
HUTUITI ANCHORAGE	27	07 S	109	17 W	1.25
I					
ILOT BLANCO	44	35 S	73	53 W	6.29
IQUIQUE	20	12 S	70	10 W	4.9
ISLA ACUAO	45	38 S	73	49 W	7.84
ISLA ALAO	42	36 S	73	18 W	7.48
ISLA ALEJANDRO SELKIRK	33	45 S	80	45 W	1.21
ISLA ANALAO	45	29 S	74	41 W	6.34
ISLA APIAO	42	36 S	73	13 W	7.48
ISLA AUCHILU	45	20 S	74	35 W	6.33
ISLA AUGUSTA	51	15 S	75	05 W	8.26
ISLA AULEN	41	52 S	72	50 W	7.13
ISLA BALTRA	0	27 S	90	16 W	1.11
ISLA BARTHOLOME	0	17 S	90	33 W	1.13
ISLA BAVERSTOCK	52	14 S	73	44 W	8.41
ISLA BEAGLE	51	55 S	75	08 W	8.32
ISLA BORDES	52	05 S	74	21 W	8.33
ISLA BOXER	48	33 S	74	21 W	8.78
ISLA BRECKNOCK	54	41 S	71	33 W	9.12
ISLA BRINKLEY	51	59 S	73	41 W	8.42
ISLA BURNT	54	44 S	71	14 W	9.14
ISLA BUTA CHAUQUES	42	18 S	73	07 W	7.30
ISLA BUTTON	55	01 S	68	15 W	9.38
ISLA CAGUACHE	42	29 S	73	16 W	7.31
ISLA CAILIN	43	11 S	73	34 W	7.60
ISLA CALBUCO	41	47 S	73	09 W	7.6
ISLA CASCAJALL	4	53 N	77	04 W	2.7
ISLA CATALINA	54	48 S	71	13 W	9.15
ISLA CAUCAHUE	42	09 S	73	24 W	7.25
ISLA CHAIR	54	52 S	70	03 W	9.19
ISLA CHANARAL	29	02 S	71	36 W	4.60
ISLA CHELIN	42	34 S	73	32 W	7.46
ISLA CHIDGUAPI	41	50 S	73	06 W	7.10
ISLA CHOROS	29	16 S	71	33 W	4.63
ISLA CHUIT	42	40 S	73	05 W	7.51
ISLA COAMANS	0	45 S	90	17 W	1.11
ISLA COLDITA	43	13 S	73	43 W	7.59
ISLA COLORADO	45	21 S	73	21 W	7.80
ISLA CORNEJO	52	16 S	74	35 W	8.33
ISLA CROSSOVER	49	17 S	74	24 W	8.69
ISLA CUTLER	52	14 S	73	40 W	8.41
ISLA DALY	48	52 S	74	29 W	8.77
ISLA DE LA PLATA	1	16 S	81	05 W	2.22
ISLA DE MALPELO	3	59 N	81	36 W	1.2
ISLA DE PASCUA	27	05 S	109	20 W	1.23
ISLA DE PUNA	2	50 S	80	10 W	2.29
ISLA DE TUMACO	1	49 N	78	46 W	2.10
ISLA DEL COCO	5	32 N	87	04 W	1.2
ISLA DEL GUANO	1	50 N	78	46 W	2.10
ISLA DEL MORRO	1	49 N	78	45 W	2.10
ISLA DIEGO PORTALES	51	55 S	72	54 W	8.45
ISLA DRUMMOND-HAY	50	15 S	74	49 W	8.63
ISLA EDEN	0	33 S	90	32 W	1.12
ISLA EL GORRO	44	18 S	73	28 W	7.70
ISLA ESCALA ALTA	51	47 S	74	26 W	8.57
ISLA ESPANOLA	1	23 S	89	40 W	1.9
ISLA FERNANDINA	0	25 S	91	29 W	1.17
ISLA FITZ ROY	45	50 S	74	00 W	7.85
ISLA FRANCISCO	44	31 S	73	38 W	7.71
ISLA FRANCISCO	48	07 S	73	39 W	8.86
ISLA GARDNER	1	20 S	89	39 W	1.9
ISLA GARRAO	44	24 S	73	43 W	6.29
ISLA GENOVESA	0	20 N	89	57 W	1.5
ISLA GEORGIANA	55	40 S	71	44 W	9.12
ISLA GONZALO	56	32 S	68	44 W	9.41
ISLA GORDA	54	41 S	71	25 W	9.13
ISLA GORGONA	2	58 N	78	11 W	2.9
ISLA GRANDE	11	36 S	77	16 W	3.36
ISLA GREEN	52	36 S	73	41 W	8.36
ISLA GUAFO	43	35 S	74	42 W	6.15
ISLA GUAITECA	43	52 S	74	00 W	6.20
ISLA GUAMAN	23	33 S	70	25 W	4.27
ISLA GUAMBLIN	44	50 S	75	05 W	6.30
ISLA GUARD	50	44 S	74	31 W	8.57
ISLA GUTIERREZ	45	22 S	73	36 W	7.80
ISLA HIND	55	31 S	69	20 W	9.44
ISLA HUELMO	41	40 S	73	04 W	7.19
ISLA ICA	42	22 S	72	48 W	7.39
ISLA IMELEV	42	37 S	73	25 W	7.46
ISLA INCHEMO	45	48 S	75	00 W	6.37
ISLA INOCENTES	50	33 S	74	51 W	8.59
ISLA IPUN	44	37 S	74	47 W	6.31
ISLA IRENE	47	50 S	74	04 W	8.88
ISLA ISABELA	0	30 S	91	10 W	1.14
ISLA ISABELLA	54	11 S	72	56 W	9.5
ISLA JAVIER	47	06 S	74	24 W	8.6
ISLA JORGE	50	15 S	74	42 W	8.61
ISLA JULIA	48	12 S	73	20 W	8.87
ISLA KEMPE	54	21 S	72	25 W	9.7
ISLA KING	54	22 S	71	17 W	9.9
ISLA LAITEC	43	14 S	73	37 W	7.59
ISLA LATOLQUE	45	02 S	73	32 W	7.74
ISLA LAVIN	45	25 S	73	36 W	7.85
ISLA LEMUY	42	37 S	73	38 W	7.47
ISLA LEUCAYEC	44	00 S	73	40 W	6.27
ISLA LILIGUAPI	42	10 S	72	36 W	7.37
ISLA LIN	41	54 S	73	05 W	7.9
ISLA LINAGUA	43	17 S	72	58 W	7.67
ISLA LINGUAR	42	04 S	72	39 W	7.33
ISLA LINLIN	42	24 S	73	26 W	7.31
ISLA LLANCAHUE	42	07 S	72	33 W	7.35
ISLA LOBOS	0	51 S	89	34 W	1.8
ISLA LOBOS DE TIERRA	6	26 S	80	51 W	3.14
ISLA LONDONDERRY	55	07 S	70	40 W	9.18
ISLA LOS LEONES	43	47 S	72	57 W	7.76
ISLA LUZ	45	30 S	73	56 W	6.35
ISLA MAGDALENA	44	35 S	73	05 W	7.73
ISLA MAILLEN	41	35 S	73	00 W	7.19
ISLA MALLINA	41	40 S	73	00 W	7.18
ISLA MANCERA	39	52 S	73	24 W	5.46
ISLA MARCHENA	0	20 N	90	28 W	1.5
ISLA MARSH	54	42 S	71	30 W	9.12
ISLA MECHUQUE	42	18 S	73	17 W	7.29
ISLA MEDIO-CANAL	48	58 S	74	24 W	8.74
ISLA MELCHOR	45	08 S	73	53 W	7.75
ISLA MEULIN	42	25 S	73	19 W	7.31
ISLA MITAHUES	45	24 S	73	44 W	7.75
ISLA MOCHA	38	23 S	73	55 W	5.41
ISLA MONDRAGON	2	37 S	79	52 W	2.33
ISLA MONO	7	13 N	77	53 W	2.2
ISLA MORTON	55	35 S	69	12 W	9.43
ISLA MULCHEY	44	08 S	73	30 W	6.28
ISLA NAO	41	55 S	72	53 W	7.12
ISLA NAVARINO	55	05 S	67	43 W	9.36
ISLA NEWTON	51	52 S	73	45 W	8.51
ISLA NOIR	54	29 S	73	01 W	9.5
ISLA O'BRIEN	54	51 S	70	32 W	9.16
ISLA ORLEBAR	47	57 S	74	36 W	8.82
ISLA ORLEBAR	52	19 S	73	43 W	8.40
ISLA PACHACAMAC	12	18 S	76	54 W	3.41
ISLA PAJAL	44	58 S	73	39 W	7.75
ISLA PALMAS	3	55 N	77	21 W	2.6
ISLA PALUMBO	45	23 S	74	03 W	6.35

	Position				Sec. Para
	°	'	°	'	
ISLA PAN DE AZUCAR	26	09 S	70	41 W	4.40
ISLA PENGUIN	47	49 S	74	48 W	8.81
ISLA PENINSULA	19	49 S	70	10 W	4.7
ISLA PINTA	0	35 N	90	45 W	1.5
ISLA PINZON	0	36 S	90	40 W	1.17
ISLA PULUQUI	41	48 S	73	03 W	7.11
ISLA PUNA	2	50 S	80	10 W	2.31
ISLA QUEITAO	43	44 S	73	29 W	7.1
ISLA QUENA	51	49 S	73	42 W	8.52
ISLA QUENAC	42	28 S	73	21 W	7.31
ISLA QUENU	41	50 S	73	09 W	7.6
ISLA QUEULLIN	41	53 S	72	55 W	7.12
ISLA QUIGUA	41	45 S	73	14 W	7.5
ISLA QUINCHAO	42	29 S	73	30 W	7.45
ISLA RABIDA	0	25 S	90	42 W	1.13
ISLA REDONDA LIGHT	54	55 S	70	37 W	9.16
ISLA REFUGIO	43	57 S	73	13 W	7.73
ISLA RENOUARD	52	34 S	73	40 W	8.36
ISLA RICARDO	45	49 S	74	28 W	6.38
ISLA RICHARDS	52	31 S	73	39 W	8.37
ISLA ROBINSON CRUSOE	33	38 S	78	50 W	1.19
ISLA SALA Y GOMEZ	26	28 S	105	28 W	1.22
ISLA SALANGO	1	36 S	80	52 W	2.23
ISLA SAN AMBROSIO	26	21 S	79	52 W	1.18
ISLA SAN CRISTOBAL	0	50 S	89	25 W	1.6
ISLA SAN FELIX	26	17 S	80	07 W	1.18
ISLA SAN GALLAN	13	51 S	76	27 W	3.40
ISLA SAN LORENZO	12	05 S	77	13 W	3.39
ISLA SAN PEDRO	43	22 S	73	44 W	7.40
ISLA SAN SALVADOR	0	15 S	90	45 W	1.13
ISLA SANGAYAN	13	50 S	76	27 W	3.46
ISLA SANTA CLARA	3	10 S	80	26 W	2.31
ISLA SANTA CLARA	33	42 S	78	56 W	1.21
ISLA SANTA CRUZ	0	38 S	90	19 W	1.11
ISLA SANTA FE	0	50 S	90	04 W	1.12
ISLA SANTA MARIA	1	17 S	90	25 W	1.10
ISLA SANTAY	2	13 S	79	52 W	2.35
ISLA SEEBROCK	54	18 S	71	42 W	9.10
ISLA SEYMOUR	0	24 S	90	17 W	1.12
ISLA SHOAL	52	33 S	73	38 W	8.37
ISLA SIERRA	44	44 S	73	35 W	7.72
ISLA SKYRING	54	24 S	72	08 W	9.7
ISLA SNIPE	54	57 S	67	09 W	9.33
ISLA SOLAR	51	00 S	75	00 W	8.25
ISLA SOMBRERO	47	48 S	74	42 W	8.82
ISLA SOMBRERO	51	43 S	74	45 W	8.28
ISLA SORIA	44	47 S	73	46 W	6.29
ISLA STEWART	54	51 S	71	09 W	9.15
ISLA STOSCH	48	58 S	75	18 W	8.10
ISLA SUMMER	52	20 S	73	39 W	8.39
ISLA TABON	41	55 S	73	09 W	7.9
ISLA TAC	42	23 S	73	08 W	7.30
ISLA TALCAN	42	45 S	73	00 W	7.52
ISLA TAUTIL	41	43 S	73	04 W	7.7
ISLA TENGLO	41	30 S	72	59 W	7.20
ISLA THOMAS	48	56 S	74	24 W	8.76
ISLA TIMBAL GRANDE	54	53 S	70	16 W	9.19
ISLA TITO	47	55 S	74	36 W	8.82
ISLA TORTUGA	1	01 S	90	52 W	1.15
ISLA TRANQUI	43	01 S	73	20 W	7.56
ISLA TUAP	44	56 S	73	30 W	7.74
ISLA VAN DE MEULEN	48	15 S	74	29 W	8.80
ISLA VERDE	2	39 S	79	56 W	2.34
ISLA VICO	44	19 S	73	17 W	7.73
ISLA WENMAN	1	22 N	91	49 W	1.4
ISLA WHIDBEY	51	17 S	74	10 W	8.54
ISLA WHITE HORSE	51	09 S	75	06 W	8.25
ISLA YENCOUMA	43	24 S	74	05 W	6.18
ISLA ZOLA	45	14 S	73	32 W	7.78
ISLAS AGNES	54	19 S	72	40 W	9.6
ISLAS BAJAS	43	57 S	74	08 W	6.22
ISLAS CROSSMAN	0	51 S	90	48 W	1.15
ISLAS DAPHNE	0	25 S	90	22 W	1.12
ISLAS DE CHINCHA	13	38 S	76	24 W	3.46
ISLAS DE FERROL	9	09 S	78	37 W	3.24
ISLAS DE GUANAPE	8	33 S	78	57 W	3.21
ISLAS DE SANTA	9	02 S	78	41 W	3.22
ISLAS DIEGO RAMIREZ	56	30 S	68	42 W	9.41
ISLAS FOCUS	51	55 S	72	44 W	8.46
ISLAS GEMELOS	44	02 S	73	53 W	6.24
ISLAS GUY FAWKES	0	31 S	90	32 W	1.12
ISLAS HARWOOD	49	07 S	74	22 W	8.70
ISLAS HERNANDO	50	02 S	75	05 W	8.18
ISLAS HORMIGAS DE TIERRA	11	45 S	77	17 W	3.36
ISLAS ILDEFONSO	55	51 S	69	15 W	9.41
ISLAS KIRKE	54	22 S	71	44 W	9.9
ISLAS LOBOS DE AFUERA	6	56 S	80	43 W	3.14
ISLAS MACABI	7	49 S	79	29 W	3.19
ISLAS MALASPINA	49	57 S	75	01 W	8.17
ISLAS OTTER	52	22 S	73	40 W	8.39
ISLAS PLAZA	0	35 S	90	10 W	1.11
ISLAS QUEITAO	43	43 S	73	30 W	7.70
ISLAS RHONE	44	01 S	74	08 W	6.24
ISLAS USBORNE	46	11 S	75	00 W	6.41
ISLAS VEREKER	52	22 S	73	43 W	8.40
ISLAS VIEL	52	41 S	73	42 W	8.35
ISLAS WHAITS	54	55 S	68	22 W	9.25
ISLETAS BOERS	47	49 S	74	30 W	8.88
ISLITAS ANTONIO	50	01 S	74	52 W	8.17
ISLOTA EDEN	49	09 S	74	27 W	8.70
ISLOTE AHUENCO	42	07 S	74	05 W	6.13
ISLOTE ALVINA	54	54 S	67	10 W	9.35
ISLOTE BONDUCA	50	56 S	74	17 W	8.55
ISLOTE CARRETA	52	41 S	73	45 W	8.35
ISLOTE CATALINA	51	58 S	73	41 W	8.51
ISLOTE CONEJO	50	28 S	75	28 W	8.20
ISLOTE DARWIN	1	39 N	92	00 W	1.4
ISLOTE DIRECCION	45	11 S	73	37 W	7.79
ISLOTE DIRECCION	54	43 S	71	21 W	9.13
ISLOTE EDELMIRA	51	08 S	74	12 W	8.54
ISLOTE EL BLANCO	45	13 S	73	39 W	7.74
ISLOTE EUGENIA	44	58 S	73	28 W	7.78
ISLOTE FANTOME	49	18 S	74	24 W	8.69
ISLOTE FLETCHER	50	11 S	74	48 W	8.64
ISLOTE GORGONILLA	2	57 N	78	13 W	2.9
ISLOTE HAYCOCK	48	56 S	74	23 W	8.76
ISLOTE ISABEL	52	31 S	73	37 W	8.37
ISLOTE LEUCONTON	45	01 S	74	10 W	6.33
ISLOTE MONTAGUE	49	13 S	75	40 W	8.9
ISLOTE NEGRO	51	29 S	74	38 W	8.31
ISLOTE NIHUEL	42	38 S	72	56 W	7.50
ISLOTE NORTE	45	46 S	73	46 W	7.85
ISLOTE NOTABLE	45	49 S	74	29 W	6.39
ISLOTE OBSERVACION	55	01 S	69	01 W	9.22
ISLOTE PELADO	11	27 S	77	50 W	3.33
ISLOTE PETIT	54	24 S	71	40 W	9.9
ISLOTE REDONDO	50	08 S	75	25 W	8.20
ISLOTE WOLF	1	22 N	91	49 W	1.4
ISLOTE YUNQUE	50	44 S	75	28 W	8.23
ISLOTE ZEALOUS	48	59 S	74	24 W	8.73
ISLOTES ARTURO	48	25 S	74	35 W	8.79
ISLOTES DIRECCION	48	41 S	74	26 W	8.78
ISLOTES LES ECLAIREURS	54	52 S	68	05 W	9.26
ISLOTES LOCOS	43	59 S	73	27 W	7.70
ISLOTES LOS MOGOTES	45	57 S	73	39 W	7.86
ISLOTES NELSON	54	39 S	74	52 W	9.9
ISLOTES PAJAROS	29	35 S	71	33 W	4.66
ISLOTES QUETROS	45	28 S	73	46 W	7.83
ISLOTES WHEELER	50	34 S	74	44 W	8.59
ISOLOTE CULPEPPER	1	39 N	92	00 W	1.4
ITES GUAMBLIN	43	25 S	73	44 W	7.62

J

JORGE MONTT	48	20 S	73	35 W	8.84
JUAN CHACO	4	00 N	77	19 W	2.4

L

LA CONCORDIA LIGHT (PERU)	18	21 S	70	23 W	3.63
LA LIBERTAD	2	13 S	80	55 W	2.25
LA PAMPILLA OIL TERMINAL	11	56 S	77	10 W	3.38
LA SALINA	5	50 S	80	57 W	3.11
LEBU	37	38 S	73	40 W	5.38
LIRQUEN	36	43 S	72	59 W	5.28
LOS CINCOS HERMANOS	45	16 S	73	16 W	7.81
LOS FARALLONES	29	28 S	71	21 W	4.66
LOS NEGRITOS	3	54 N	77	24 W	2.6
LOS ORGANOS	4	15 S	81	08 W	3.3
LOTA	37	06 S	73	09 W	5.34

	Position				Sec. Para
	°	'	°	'	
M					
MANGLECITO	0	49 S	89	32 W	1.8
MANTA	0	57 S	80	43 W	2.19
MATACABALLO	5	39 S	80	51 W	3.11
MATARANI	17	00 S	72	07 W	3.59
MAULLIN	41	37 S	73	36 W	6.4
MEJILLONES	23	06 S	70	28 W	4.24
MONTE ISQUILIAC	45	20 S	74	29 W	6.35
MONTE MIRAGUALAI	43	34 S	73	00 W	7.68
MORRO BONIFACIO	39	42 S	73	25 W	5.44
MORRO CALAVERA	12	33 S	76	46 W	3.44
MORRO CHICO	41	44 S	72	39 W	7.14
MORRO CHICO	41	44 S	72	40 W	7.14
MORRO COMAU	42	11 S	72	36 W	7.38
MORRO DEL COMPAS	40	42 S	73	52 W	5.53
MORRO GODOY	41	36 S	73	41 W	6.4
MORRO GONZALO	39	50 S	73	28 W	5.49
MORRO HORNOS	41	42 S	72	39 W	7.16
MORRO JARA	23	52 S	70	30 W	4.31
MORRO JORGE	51	50 S	72	37 W	8.47
MORRO LOBERIA	36	35 S	73	00 W	5.25
MORRO QUICAVI	42	16 S	73	21 W	7.26
N					
NEGRITOS	4	40 S	81	19 W	3.7
NUEVO SAMANCO	9	14 S	78	30 W	3.26
P					
PACASMAYO	7	24 S	79	35 W	3.17
PAITA	5	05 S	81	07 W	3.9
PARAMONGA	10	40 S	77	50 W	3.28
PASA QUENU	41	49 S	73	10 W	7.8
PASAJE EL BOQUERON	12	06 S	77	11 W	3.39
PASAJE EL BOQUERON	13	50 S	76	25 W	3.46
PASO ADVENTURE	54	57 S	71	06 W	9.18
PASO AVIADOR IBANEZ	54	18 S	72	22 W	9.7
PASO CASMA	45	25 S	73	37 W	7.85
PASO CORVIO	41	5 S	73	14 W	7.8
PASO DEL ABISMO	49	34 S	74	28 W	8.67
PASO MACKINLAY	54	55 S	67	28 W	9.31
PASO MAILLEN	41	34 S	73	02 W	7.20
PASO MURRAY	53	08 S	74	17 W	9.2
PASO PICTON	49	26 S	75	27 W	8.16
PASO PLUDDEMANN	47	59 S	74	48 W	8.81
PASO QUESAHUEN	46	24 S	73	46 W	7.86
PASO QUEULLIN	41	52 S	72	58 W	7.12
PASO RUNDLE	47	43 S	75	05 W	8.7
PASO SHOAL	52	32 S	73	38 W	8.36
PASO SUMMER	52	18 S	73	39 W	8.39
PASO TARLETON	51	28 S	74	07 W	8.31
PASO TENAUN	42	21 S	73	27 W	7.27
PASO THE KNICK	48	57 S	75	00 W	8.11
PASO VICTORIA	52	00 S	73	43 W	8.42
PASO WAKEFIELD	54	03 S	73	08 W	9.5
PENCO	36	42 S	73	00 W	5.29
PENINSULA COCA	43	43 S	72	55 W	7.68
PENINSULA PARACAS	13	52 S	76	20 W	3.49
PENINSULA SIN NOMBRE	44	08 S	73	11 W	7.73
PENON BLANCO	44	23 S	73	32 W	7.70
PERU	18	21 S	70	23 W	3.63
PICO STEWART	54	53 S	71	07 W	9.18
PIMENTEL	6	50 S	79	56 W	3.15
PLAYA BAIA	6	04 N	77	24 W	2.2
POBLACION DE LA TOLA	1	13 N	79	06 W	2.12
PODESTA ISLAND	32	14 S	89	08 W	1.18
POSORJA	2	42 S	85	15 W	2.30
POST OFFICE	1	14 S	90	25 W	1.10
PROMONTORIO SALINAS	11	16 S	77	37 W	3.32
PUERTO ABTAO	41	48 S	73	22 W	7.5
PUERTO AGUIRRE	45	10 S	73	32 W	7.79
PUERTO ALERT	49	52 S	75	14 W	8.15
PUERTO ALMEIDA	54	50 S	70	39 W	9.17
PUERTO AMERICANO	45	02 S	73	42 W	7.75
PUERTO AUCHEMO	43	01 S	72	50 W	7.66
PUERTO BALLENAS	54	50 S	70	33 W	9.17
PUERTO BALSA	2	35 S	79	55 W	2.35
PUERTO BAQUERIO	0	54 S	89	37 W	1.7
PUERTO BARRIENTOS	43	55 S	74	01 W	6.23
PUERTO BARROSO	46	50 S	76	17 W	8.3
PUERTO BARROW	54	20 S	71	26 W	9.11
PUERTO BAYOVAR	5	50 S	81	03 W	3.12
PUERTO BOLIVAR	3	16 S	80	00 W	2.32
PUERTO BORDALI	47	49 S	74	03 W	8.88
PUERTO BORIES	51	43 S	72	33 W	8.49
PUERTO BUENO	51	00 S	74	13 W	8.55
PUERTO CABO BLANCO	4	16 S	81	15 W	3.4
PUERTO CALDERA	27	03 S	0	50 W	4.46
PUERTO CALDERILLA	27	05 S	70	52 W	4.47
PUERTO CARACCIOLO	50	28 S	75	11 W	8.22
PUERTO CARMEN	43	09 S	73	46 W	7.61
PUERTO CARRIZAL BAJO	28	04 S	71	10 W	4.53
PUERTO CASTILLO	55	15 S	68	16 W	9.38
PUERTO CASTRO	42	29 S	73	46 W	7.43
PUERTO CHACABUCO	45	28 S	72	50 W	7.82
PUERTO CHICAMA	7	42 S	79	27 W	3.18
PUERTO CHILCA	12	29 S	76	48 W	3.43
PUERTO CHONCHI	42	37 S	73	46 W	7.44
PUERTO CISNES	44	44 S	72	42 W	7.77
PUERTO CONCHA	45	01 S	74	20 W	6.32
PUERTO CONDELL	45	37 S	74	12 W	6.39
PUERTO CONDOR	51	40 S	72	40 W	8.49
PUERTO CONSTITUCION	35	19 S	72	23 W	5.21
PUERTO CUPTANA	44	40 S	73	38 W	7.71
PUERTO DE CAYO	1	21 S	80	45 W	2.22
PUERTO DE CERRO AZUL	13	03 S	76	31 W	3.45
PUERTO DE CHALA	15	52 S	74	14 W	3.54
PUERTO DE CHANCAY	11	35 S	77	17 W	3.35
PUERTO DE CHIMBOTE	9	05 S	78	37 W	3.24
PUERTO DE CORRAL	39	52 S	73	26 W	5.48
PUERTO DE HUACHO	11	07 S	77	37 W	3.31
PUERTO DE MACHALILLA	1	28 S	80	46 W	2.23, 2.26
PUERTO DE PISCO	13	43 S	76	15 W	3.47
PUERTO DE SAN LORENZO	1	16 N	78	51 W	2.12
PUERTO DE SUPE	10	48 S	77	45 W	3.29
PUERTO DEL CALLAO	12	03 S	77	09 W	3.39
PUERTO DEL MORRO	50	04 S	75	01 W	8.18
PUERTO DIEGO DE ALMAGRO	51	36 S	75	10 W	8.29
PUERTO EDEN	49	08 S	74	27 W	8.70
PUERTO EDWARDS	54	40 S	71	27 W	9.13
PUERTO ENGANO	54	56 S	70	45 W	9.15
PUERTO ESPANOL	44	50 S	73	41 W	7.72
PUERTO ETEN	6	56 S	79	51 W	3.16
PUERTO EUGENIA	54	56 S	67	18 W	9.33
PUERTO FONTAINE	52	03 S	73	29 W	8.42
PUERTO FORTUNA	54	53 S	70	25 W	9.17
PUERTO GABLE	54	53 S	67	25 W	9.31
PUERTO GENERAL SAN MARTIN	13	48 S	76	18 W	3.48
PUERTO GONZALES	53	20 S	73	47 W	9.3
PUERTO GRAPPLER	49	25 S	74	19 W	8.68
PUERTO GRASERIA	51	43 S	72	33 W	8.49
PUERTO GRAY	48	55 S	74	19 W	8.76
PUERTO GUNTHER	47	55 S	73	30 W	8.90
PUERTO HARBERTON	54	53 S	67	19 W	9.32
PUERTO HARCHY	45	43 S	73	55 W	6.39
PUERTO HENRY	50	00 S	75	20 W	8.19
PUERTO HORACIO	49	21 S	74	26 W	8.69
PUERTO HUEMUL	54	54 S	70	07 W	9.19
PUERTO HUITE	42	07 S	73	27 W	7.25
PUERTO IDEAL	54	26 S	71	11 W	9.9
PUERTO ILO	17	38 S	71	22 W	3.61
PUERTO INGLES	33	36 S	78	51 W	1.20
PUERTO KAISER	48	43 S	74	50 W	8.11
PUERTO LAGUNAS	45	17 S	73	42 W	7.75
PUERTO LASTARRIA	51	58 S	72	37 W	8.47
PUERTO LLANCHID	42	03 S	72	36 W	7.33
PUERTO LOBEROS	52	51 S	74	35 W	9.2
PUERTO LOS VILOS	31	55 S	71	31 W	5.7
PUERTO LOW	43	49 S	74	00 W	6.21
PUERTO MALABRIGO	7	42 S	79	27 W	3.18
PUERTO MARCH	55	20 S	69	58 W	9.44
PUERTO MARIA ISABEL	45	05 S	74	17 W	6.32
PUERTO MARITIMO DE GUAYAQUIL	2	17 S	79	54 W	2.30
PUERTO MEJILLONES	54	54 S	68	00 W	9.28
PUERTO MELINCA	43	54 S	73	45 W	6.26
PUERTO MOLLENDO	17	01 S	72	02 W	3.64
PUERTO MONTT	41	29 S	72	58 W	7.21
PUERTO MUNOZ GAMERO	52	20 S	73	33 W	8.40
PUERTO NATALES	51	45 S	72	32 W	8.48

	Position				Sec. Para
	°	'	°	'	
PUERTO NIEMANN	54	20 S	71	55 W	9.10
PUERTO NUNEZ	0	43 S	90	13 W	1.11
PUERTO OVEREND	52	08 S	74	44 W	8.32
PUERTO PAPUDO	32	30 S	71	28 W	5.10
PUERTO PAYNE	49	42 S	75	16 W	8.16
PUERTO PICHIDANGUI	32	09 S	71	33 W	5.9
PUERTO PIEDRA	55	02 S	67	02 W	9.34
PUERTO QUEILEN	42	54 S	73	30 W	7.55
PUERTO QUELLON	43	08 S	73	38 W	7.61
PUERTO QUEMCHI	42	09 S	73	29 W	7.26
PUERTO REFUGIO	45	52 S	74	48 W	6.38
PUERTO RHONE	44	02 S	74	08 W	6.25
PUERTO RIQUELME	51	50 S	72	39 W	8.47
PUERTO ROSARIO	50	01 S	75	09 W	8.19
PUERTO SAN ANTONIO	33	35 S	71	38 W	5.17
PUERTO SAN JUAN	15	20 S	75	10 W	3.53
PUERTO SAN NICOLAS	15	15 S	75	14 W	3.51
PUERTO SIMPSON	49	01 S	74	29 W	8.72
PUERTO SOFFIA	54	17 S	71	24 W	9.11
PUERTO TAMBO DE MORA	13	28 S	76	12 W	3.45
PUERTO TICTOC	43	36 S	72	57 W	7.68
PUERTO TRES MESES	48	12 S	74	16 W	8.85
PUERTO UTIL	54	51 S	70	53 W	9.14
PUERTO VALDES	48	05 S	73	51 W	8.85
PUERTO VELENZUELA	47	56 S	73	32 W	8.90
PUERTO VENTANAS	32	45 S	71	29 W	5.12
PUERTO VIRTUDES	51	31 S	74	54 W	8.29
PUERTO VOIGUE	42	19 S	73	13 W	7.29
PUERTO WILLIAMS	54	56 S	67	36 W	9.30
PUERTO YANA	37	22 S	73	39 W	5.37
PUERTO YATES	45	29 S	74	26 W	6.36
PUERTO ZORRITOS	3	40 S	80	40 W	3.3
PUNA	2	44 S	79	55 W	2.33
PUNTA ABTAO	41	49 S	73	21 W	7.4
PUNTA ACHURRA	26	18 S	70	41 W	4.41
PUNTA ACOSTA	47	51 S	73	36 W	8.89
PUNTA AGUANTAO	42	32 S	73	35 W	7.42
PUNTA AGUJA	5	49 S	81	04 W	3.12
PUNTA AHONI	42	45 S	73	33 W	7.54
PUNTA AHUI	41	50 S	73	52 W	6.7
PUNTA AJI	3	14 N	77	33 W	2.4
PUNTA ALBEMARLE	0	10 N	91	20 W	1.14
PUNTA ALCALDE	28	34 S	71	20 W	4.57
PUNTA ALFARO	0	25 S	90	57 W	1.14
PUNTA ALMANAO	41	56 S	74	04 W	6.12
PUNTA AMOLANOS	31	35 S	71	35 W	5.4
PUNTA ANCON	2	20 S	80	54 W	2.28
PUNTA ANDERSON	51	22 S	74	07 W	8.53
PUNTA ANGAMOS	23	01 S	70	31 W	4.23
PUNTA ANGAMOS	27	05 S	109	18 W	1.25
PUNTA ANIMAS	26	23 S	70	42 W	4.43
PUNTA ANUNCIADA	50	30 S	75	03 W	8.62
PUNTA ARASI	5	37 N	77	30 W	2.3
PUNTA ARENAS	21	38 S	70	09 W	4.18
PUNTA ARENAS	3	02 S	80	08 W	2.31
PUNTA ARENAS	37	22 S	73	40 W	5.36
PUNTA ARENAS	41	52 S	73	54 W	6.10
PUNTA ARTESAS	32	47 S	71	33 W	5.13
PUNTA ARVEJAS	38	19 S	73	58 W	5.41
PUNTA ATAHUACA	10	54 S	77	42 W	3.30
PUNTA ATALA	22	17 S	70	15 W	4.20
PUNTA ATICO	16	14 S	73	43 W	3.55
PUNTA AUCHEMO	43	02 N	72	58 W	7.63
PUNTA AUCHEMO	43	02 S	72	52 W	7.1
PUNTA BAAL	47	52 S	73	56 W	8.88
PUNTA BAJA	42	14 S	72	45 W	7.38
PUNTA BAJA	49	38 S	74	19 W	8.66
PUNTA BAJAS	11	14 S	77	38 W	3.32
PUNTA BALLENA	0	10 S	80	20 W	2.16
PUNTA BALLENA	19	54 S	70	09 W	4.8
PUNTA BALLENITA	25	47 S	70	44 W	4.38
PUNTA BAQUEDANO	18	39 S	70	21 W	4.3
PUNTA BARCLAY	49	30 S	74	27 W	8.68
PUNTA BARNES	30	12 S	71	29 W	4.71
PUNTA BARRANCA	10	48 S	77	45 W	3.28
PUNTA BARRANCO	41	48 S	73	21 W	7.4
PUNTA BARRANCONES	29	25 S	71	21 W	4.64
PUNTA BASSA	0	49 S	89	32 W	1.8
PUNTA BAZAN	3	50 N	77	11 W	2.4
PUNTA BERESFORD	49	46 S	74	23 W	8.66
PUNTA BERNAL	11	55 S	77	09 W	3.39
PUNTA BLANCA	1	41 S	80	48 W	2.23
PUNTA BLANCA	21	15 S	70	05 W	4.17
PUNTA BLANCA	22	10 S	70	14 W	4.20
PUNTA BLANCA	41	43 S	72	55 W	7.17
PUNTA BORDES	51	47 S	72	34 W	8.48
PUNTA BORRACHOS	0	13 S	80	25 W	2.16
PUNTA BRAVA	1	58 S	80	46 W	2.23
PUNTA BRAVA	23	35 S	70	23 W	4.28
PUNTA BRAZO ANCHO	50	09 S	74	46 W	8.18
PUNTA BREMMER	48	39 S	74	28 W	8.78
PUNTA BURRO	31	25 S	71	37 W	5.4
PUNTA CABEZA DE LAGARTO	10	07 S	78	11 W	3.26
PUNTA CABEZA DE VACA	26	53 S	70	50 W	4.45
PUNTA CACHOS	27	40 S	71	02 W	4.52
PUNTA CAFFIN	48	31 S	74	27 W	8.79
PUNTA CALDERA	27	03 S	70	52 W	4.45
PUNTA CALQUEMAN	44	39 S	73	28 W	7.73
PUNTA CAMANA	16	53 S	72	48 W	3.57
PUNTA CAMARONES	19	13 S	70	18 W	4.4
PUNTA CAPITALA	5	08 S	81	11 W	3.10
PUNTA CARBONERO	39	52 S	73	23 W	5.46
PUNTA CARPA	48	01 S	74	18 W	8.85
PUNTA CARRETAS	14	12 S	76	17 W	3.49
PUNTA CASCAJAL	1	59 N	78	41 W	2.9
PUNTA CEDAR	48	59 S	74	27 W	8.74
PUNTA CENTINELA	43	01 S	73	20 W	7.56
PUNTA CHAIGUAO	43	09 S	73	29 W	7.59
PUNTA CHAIHUIN	39	55 S	73	36 W	5.49
PUNTA CHANA	42	46 S	72	51 W	7.49
PUNTA CHAO	8	46 S	78	44 W	3.21
PUNTA CHAPOYA	2	39 S	80	26 W	2.29
PUNTA CHARAMBIRA	4	18 N	77	30 W	2.4
PUNTA CHAYALIME	43	46 S	73	52 W	6.20
PUNTA CHEGUIAN	42	35 S	73	24 W	7.45
PUNTA CHILCA	12	31 S	76	48 W	3.43
PUNTA CHILEN	41	54 S	73	28 W	7.23
PUNTA CHOCAYA	12	45 S	76	39 W	3.44
PUNTA CHOCOI	41	45 S	73	46 W	6.6
PUNTA CHOHEN	42	12 S	73	23 W	7.26
PUNTA CHORRILLOS	12	10 S	77	02 W	3.40
PUNTA CHULAO	42	18 S	72	51 W	7.38
PUNTA CLAUCHIL	41	58 S	72	49 W	7.32
PUNTA COBIJA	22	33 S	70	17 W	4.21
PUNTA COLES	17	42 S	71	23 W	3.60
PUNTA COLINA REDONDA	9	38 S	78	22 W	3.26
PUNTA COLORADO GRANDE	10	30 S	77	57 W	3.28
PUNTA COLU	42	14 S	73	22 W	7.26
PUNTA CONCON	32	56 S	71	34 W	5.13
PUNTA CONDOR	40	45 S	73	54 W	5.53
PUNTA CONGLOMERADA	48	42 S	75	38 W	8.9
PUNTA COOK	27	08 S	109	26 W	1.24
PUNTA COQUITOS	0	59 N	79	40 W	2.12
PUNTA CORONA	41	47 S	73	53 W	6.7
PUNTA CORONEL	41	48 S	73	29 W	6.6
PUNTA CORRAL GRANDE	41	44 S	72	58 W	7.18
PUNTA CRISTOBAL	0	54 S	91	31 W	1.16
PUNTA CRUCES	6	39 N	77	32 W	2.2
PUNTA CUARZO	54	43 S	71	52 W	9.12
PUNTA CUELLO	42	59 S	73	33 W	7.57
PUNTA CURAUMILLA	33	06 S	71	45 W	5.15
PUNTA DALLAS	27	23 S	70	59 W	4.49
PUNTA DE CHANDUY	2	24 S	80	42 W	2.29
PUNTA DE LA QUIACA	18	05 S	70	46 W	3.63
PUNTA DEHUI	40	14 S	73	45 W	5.50
PUNTA DEL MORRO	2	44 S	80	15 W	2.29
PUNTA DESENGANO	51	51 S	72	32 W	8.47
PUNTA DINWOODIE	50	04 S	74	57 W	8.18
PUNTA DIRECCION	43	11 S	73	31 W	7.60
PUNTA DON	50	40 S	74	38 W	8.59
PUNTA DONA MARIA	14	40 S	75	55 W	3.50
PUNTA DOS REYES	24	32 S	70	35 W	4.33
PUNTA EMMA	51	28 S	73	19 W	8.50
PUNTA ENGANO	54	56 S	70	45 W	9.15
PUNTA ERADA	5	04 S	81	09 W	3.8
PUNTA ESPANOLA	2	48 S	79	56 W	2.33
PUNTA ESPINOSA	0	16 S	91	27 W	1.17
PUNTA ESTAQUILLAS	41	21 S	73	51 W	6.2
PUNTA ESTE	45	26 S	74	25 W	6.35
PUNTA ESTRADA	0	45 S	90	18 W	1.11
PUNTA ESTRADA	54	52 S	68	31 W	9.24
PUNTA ETEN	6	57 N	79	52 W	3.13
PUNTA ETEN	6	57 S	79	53 W	3.16
PUNTA FALSA	49	16 S	74	25 W	8.69

	Position				Sec. Para
	°	'	°	'	
PUNTA FALSA	5	55 S	81	09 W	3.15
PUNTA FINGER	0	45 S	89	28 W	1.8
PUNTA FLAMENQUITO	26	36 S	70	42 W	4.44
PUNTA FOCA	5	14 S	81	12 W	3.10
PUNTA FOLCH	4	27 S	81	17 W	3.5
PUNTA FOX	50	22 S	74	55 W	8.62
PUNTA FRAILE	13	02 S	76	31 W	3.44
PUNTA FRANCISCO	27	02 S	70	50 W	4.45
PUNTA FRONTON	39	53 S	73	23 W	5.46
PUNTA GALERA	0	50 N	80	03 W	2.15
PUNTA GALERA	39	59 S	73	43 W	5.50
PUNTA GARRAO	46	20 S	73	40 W	7.86
PUNTA GLUCKS	48	43 S	74	36 W	8.78
PUNTA GORDA	0	58 N	79	44 W	2.13
PUNTA GORDA	19	19 S	70	19 W	4.5
PUNTA GRANDE	22	28 S	70	16 W	4.21
PUNTA GRANDE	25	06 S	70	30 W	4.35
PUNTA GRUESA	20	21 S	70	11 W	4.11
PUNTA GRUESA	31	02 S	71	41 W	5.3
PUNTA GUALA	43	44 S	73	03 W	7.76
PUNTA GUALAGUALA	22	46 S	70	20 W	4.22
PUNTA GUANAQUERO	30	10 S	71	27 W	4.71
PUNTA GUANILLO DEL SUR	22	23 S	70	16 W	4.20
PUNTA GUASCAMA	3	37 N	78	25 W	2.8
PUNTA GUASILLA	22	34 S	70	17 W	4.22
PUNTA GUATRAL	41	43 S	73	03 W	7.17
PUNTA HALT	48	55 S	74	22 W	8.77
PUNTA HARCHY	45	43 S	73	53 W	7.84
PUNTA HORNOS	22	55 S	70	18 W	4.23
PUNTA HORNOS	29	38 S	71	20 W	4.67
PUNTA HUACAS	13	54 S	76	24 W	3.49
PUNTA HUACHO	11	07 S	77	37 W	3.30
PUNTA HUANCHACO	8	05 S	79	06 W	3.19
PUNTA HUECHUCUICUI	41	46 S	74	00 W	6.12
PUNTA HUECHUQUE	42	17 S	73	22 W	7.27
PUNTA HUEICOLLA	40	09 S	73	42 W	5.50
PUNTA HUEMUL	51	16 S	75	07 W	8.26
PUNTA HUESO BALLENA	33	40 S	78	46 W	1.20
PUNTA HUESOS	32	10 S	71	33 W	5.9
PUNTA ISLA	33	41 S	78	57 W	1.20
PUNTA ISLAY	17	01 S	72	07 W	3.58
PUNTA ISLOTE	28	50 S	71	27 W	4.59
PUNTA JAMBELI	3	12 S	80	01 W	2.31
PUNTA JARAMIJO	0	56 S	80	40 W	2.19
PUNTA JUAN LATORRE	39	49 S	73	25 W	5.45
PUNTA LAGARTOS	23	22 S	70	37 W	4.25
PUNTA LAGUNILLAS	30	06 S	71	23 W	4.70
PUNTA LAS ZORRAS	10	17 S	78	05 W	3.28
PUNTA LAURA	48	03 S	73	53 W	8.85
PUNTA LAUTARO	21	32 S	70	06 W	4.17
PUNTA LAVAPIE	37	09 S	73	35 W	5.36
PUNTA LAVAPIE	52	03 S	72	57 W	8.45
PUNTA LENGUA DE VACA	30	14 S	71	38 W	5.2
PUNTA LILICURA	41	54 S	73	29 W	7.3
PUNTA LINDERO	47	55 S	73	34 W	8.90
PUNTA LOBERIA	31	45 S	71	34 W	5.5
PUNTA LOBERIA	33	37 S	78	49 W	1.20
PUNTA LOBITOS	10	06 S	78	10 W	3.27
PUNTA LOBITOS	4	27 S	81	18 W	3.5
PUNTA LOBOS	21	01 S	70	10 W	4.15
PUNTA LOBOS	31	57 S	71	33 W	5.8
PUNTA LOBOS	4	27 S	81	18 W	3.5
PUNTA LOMAS	15	33 S	74	51 W	3.53
PUNTA LOROS	33	12 S	71	42 W	5.15
PUNTA LOS VILOS	31	55 S	71	32 W	5.6
PUNTA LUCAS	51	40 S	74	55 W	8.28
PUNTA LYNCH	45	47 S	73	34 W	7.86
PUNTA MACARA	4	32 S	81	17 W	3.5
PUNTA MACHELAN	44	49 S	73	24 W	7.73
PUNTA MAGDALENA	3	56 N	77	21 W	2.4
PUNTA MAL PASO	0	56 S	80	45 W	2.20
PUNTA MALABRIGO	7	42 S	79	28 W	3.18
PUNTA MALACA	4	32 S	81	17 W	3.5
PUNTA MALPELO	3	30 S	80	30 W	2.1
PUNTA MANDINGA	2	45 S	79	54 W	2.33
PUNTA MANUEL	38	30 S	73	31 W	5.43
PUNTA MAPELO	30	30 S	80	20 W	3.1
PUNTA MAQUIS	36	05 S	72	48 W	5.25
PUNTA MARIPOSA	28	29 S	71	16 W	4.57
PUNTA MEDIO	27	10 S	71	00 W	4.48
PUNTA METRENCUE	41	44 S	73	06 W	7.7
PUNTA MILLONHUE	37	36 S	73	39 W	5.37
PUNTA MOAT	55	01 S	66	44 W	9.35
PUNTA MOGOTE NEGRO	28	45 S	71	23 W	4.58
PUNTA MOLLE	28	11 S	71	11 W	4.55
PUNTA MOLLES	32	14 S	71	32 W	5.10
PUNTA MOMPICHE	0	31 N	80	05 W	2.16
PUNTA MONDRAGON	2	39 S	79	54 W	2.34
PUNTA MONTALUO	0	23 N	90	28 W	1.5
PUNTA MORGUILLA	37	44 S	73	40 W	5.40
PUNTA MORRO	27	06 S	70	57 W	4.48
PUNTA MULATAS	11	46 S	77	12 W	3.36
PUNTA MURCIELAGO	0	57 S	80	44 W	2.20
PUNTA MUTRICO	41	51 S	73	46 W	6.7
PUNTA NABOA	0	26 S	90	17 W	1.12
PUNTA NICKOLL	49	01 S	74	28 W	8.71
PUNTA NORDESTE	55	02 S	66	52 W	9.34
PUNTA NORTE	43	31 S	74	45 W	6.16
PUNTA NUGURUE	35	59 S	72	48 W	5.24
PUNTA OBSTRUCCION	51	57 S	72	49 W	8.47
PUNTA OESTE	51	32 S	74	04 W	8.53
PUNTA OLDFIELD	49	08 S	74	26 W	8.70
PUNTA PACASMAYO	7	25 S	79	35 W	3.17
PUNTA PAITA	5	04 S	81	09 W	3.8
PUNTA PALOMA	18	33 S	70	20 W	4.3
PUNTA PAMPICUELA	41	50 S	72	48 W	7.13
PUNTA PANCHA	11	51 S	77	11 W	3.38
PUNTA PANITAO	41	34 S	73	03 W	7.20
PUNTA PARADA	15	22 S	75	12 W	3.52
PUNTA PARADISE	49	06 S	74	24 W	8.71
PUNTA PARINAS	4	40 S	81	19 W	3.7
PUNTA PARINAS	4	40 S	81	20 W	3.7
PUNTA PARINUS	4	40 S	81	22 W	2.1
PUNTA PATACHE	20	49 S	70	12 W	4.13
PUNTA PATCH	49	37 S	74	27 W	8.67
PUNTA PAYANA	3	19 S	80	16 W	2.29
PUNTA PAYASO	48	01 S	74	02 W	8.85
PUNTA PAYAUA	3	19 S	80	16 W	2.31
PUNTA PECHONAS	31	50 S	71	33 W	5.5
PUNTA PEDERUALES	0	04 N	80	07 W	2.16
PUNTA PEMBERTON	49	01 S	74	26 W	8.72
PUNTA PENA BLANCA	27	46 S	71	05 W	4.52
PUNTA PENA BLANCA	33	21 S	71	42 W	5.16
PUNTA PERHUE	41	52 S	73	00 W	7.2
PUNTA PERRO	33	55 S	71	52 W	5.19
PUNTA PESCADORES	16	24 S	73	17 W	3.56
PUNTA PEUQUE	41	47 S	73	23 W	7.5
PUNTA PICHALO	19	36 S	70	15 W	4.6
PUNTA PICHILEMU	34	23 S	72	01 W	5.20
PUNTA PIEDRA LOBOS	30	48 S	71	43 W	5.3
PUNTA PIEDRAS	20	09 S	70	09 W	4.8
PUNTA PIEDRAS	49	16 S	75	28 W	8.10
PUNTA PIEDRAS DEL MORRO	2	39 S	80	26 W	2.29
PUNTA PILLUCO	41	30 S	72	53 W	7.16
PUNTA PINTO	41	49 S	73	10 W	7.5
PUNTA PIOJO	19	42 S	70	10 W	4.7
PUNTA PIRULIL	42	43 S	74	13 W	6.14
PUNTA PITE	32	30 S	71	29 W	5.11
PUNTA PITI HORNO	42	03 S	72	33 W	7.34
PUNTA PITT	0	43 S	89	14 W	1.6
PUNTA PLATA	24	43 S	70	35 W	4.34
PUNTA POROTO	29	45 S	71	22 W	4.67
PUNTA PRINGLE	46	32 S	75	30 W	6.42
PUNTA PUCAIHUEN	43	19 S	73	04 W	7.67
PUNTA PUCATRIHUE	40	25 S	73	48 W	5.51
PUNTA PUCHEPO	35	49 S	72	36 W	5.24
PUNTA PUGUENUN	41	48 S	73	40 W	6.8
PUNTA PUNTA	12	04 S	77	10 W	3.39
PUNTA QUELER	42	09 S	73	28 W	7.25
PUNTA QUETRELQUEN	41	48 S	73	36 W	6.8
PUNTA QUEUMAN	43	04 S	73	32 W	7.57
PUNTA QUILAN	45	24 S	74	07 W	6.35
PUNTA QUILLAGUA	41	35 S	73	48 W	6.2
PUNTA QUILQUE	41	50 S	73	21 W	7.4
PUNTA QUIQUEL	42	22 S	73	35 W	7.41
PUNTA RAGGED	53	46 S	73	34 W	9.4
PUNTA RAUL	47	49 S	73	43 W	8.89
PUNTA REDONDA	41	42 S	72	54 W	7.17
PUNTA REMOLINO	54	51 S	67	53 W	9.29
PUNTA RINCON	33	19 S	71	40 W	5.15
PUNTA ROBERTO	49	01 S	74	28 W	8.72
PUNTA ROCALLOSA	4	34 S	81	17 W	3.6
PUNTA RONCURA	34	58 S	72	11 W	5.21
PUNTA ROSALES	54	55 S	67	27 W	9.32

	Position				Sec. Para
	°	'	°	'	
PUNTA RUDOLPHY	45	18 S	73	36 W	7.80
PUNTA SALIENTE	30	01 S	71	26 W	4.70
PUNTA SALIENTE	48	23 S	75	08 W	8.11
PUNTA SALINAS	3	01 S	80	16 W	2.31
PUNTA SALITRAL	11	47 S	77	12 W	3.36
PUNTA SAMA	18	00 S	70	53 W	3.62
PUNTA SAN CARLOS	33	37 S	78	50 W	1.20
PUNTA SAN MATEO	0	57 S	80	51 W	2.21
PUNTA SAN MIGUEL	50	18 S	74	52 W	8.63
PUNTA SAN PEDRO	25	30 S	70	38 W	4.37
PUNTA SAN PEDRO	40	56 S	73	53 W	5.53
PUNTA SANTA	9	00 S	78	40 W	3.22
PUNTA SANTA ANA	15	09 S	75	23 W	3.50
PUNTA SANTA ELENA	2	11 S	81	00 W	2.23
PUNTA SANTO DOMINGO	33	37 S	71	38 W	5.18
PUNTA SARMENIA	20	27 S	70	10 W	4.11
PUNTA SNOUT	50	27 S	75	00 W	8.62
PUNTA SOLANO	6	18 N	77	28 W	2.2
PUNTA SOTOMO	41	39 S	72	22 W	7.15
PUNTA SQUIRE	50	06 S	74	36 W	8.61
PUNTA STEFFEN	47	49 S	73	46 W	8.88
PUNTA SUA	0	52 N	79	56 W	2.15
PUNTA TALCA	33	25 S	71	43 W	5.16
PUNTA TALINAY	30	37 S	71	44 W	5.2
PUNTA TAMES	22	40 S	70	20 W	4.22
PUNTA TAPERING	50	29 S	74	47 W	8.60
PUNTA TELIUPTA	42	11 S	73	24 W	7.25
PUNTA TENAUN	42	20 S	73	22 W	7.27
PUNTA TENGO	42	37 S	72	52 W	7.49
PUNTA TETAS	23	31 S	70	38 W	4.27
PUNTA THOMAS	10	48 S	77	45 W	3.28
PUNTA TIQUE	41	48 S	73	25 W	7.3
PUNTA TOPOCALMA	34	08 S	72	01 W	5.19
PUNTA TORO	33	46 S	71	48 W	5.18
PUNTA TRENTELHUE	41	55 S	72	53 W	7.32
PUNTA TRES CRUCES	41	50 S	73	29 W	6.8
PUNTA TRES PICOS	24	20 S	70	32 W	4.33
PUNTA TRINCHERA	2	45 S	80	13 W	2.30
PUNTA TUCAPEL	37	37 S	73	41 W	5.39
PUNTA TUDOR	50	00 S	75	21 W	8.13
PUNTA TUMBES	36	37 S	73	07 W	5.25
PUNTA VANA	31	10 S	71	41 W	5.4
PUNTA VEGUETA	11	01 S	77	40 W	3.30
PUNTA VEINTIMILLA	0	55 S	90	51 W	1.15
PUNTA VENTANILLA	32	45 S	71	30 W	5.11
PUNTA VERDE	1	05 N	79	27 W	2.12
PUNTA VERDE	54	50 S	70	20 W	9.17
PUNTA VILCUN	42	50 S	72	51 W	7.64
PUNTA WEATHER	43	34 S	74	50 W	6.16
PUNTA WRECK	0	55 S	89	38 W	1.6
PUNTA YAL	42	40 S	73	40 W	7.44
PUNTA YAMA	27	08 S	109	17 W	1.25
PUNTA YATAC	43	20 S	73	40 W	7.62
PUNTA ZAPOTAL	0	27 N	80	05 W	2.16
PUNTA ZENTENO	26	49 S	70	48 W	4.44

Q

QUEBRADA LAS CASAS	33	45 S	80	43 W	1.21
QUEBRADA SANCHEZ	33	43 S	80	44 W	1.21

R

RADA BACHEM	48	08 S	74	50 W	8.80
RADA CALEN	42	20 S	73	28 W	7.27
RADA DE ARICA	18	29 S	70	20 W	3.62
RADA DE ATICO	16	13 S	73	43 W	3.55
RADA DE CUNCO	41	49 S	73	22 W	7.4
RADA DE LA COLONIA	33	45 S	80	43 W	1.21
RADA LLICO	34	46 S	72	07 W	5.20
RADA QUETALCO	42	21 S	73	33 W	7.27
RADA TABLAS	31	51 S	71	34 W	5.5
RADA VALLENAR	45	19 S	74	33 W	6.34
RADA VINAPU	27	10 S	109	25 W	1.25
RIO CANETE	13	09 S	76	25 W	3.45
RIO CHONE	0	37 S	80	25 W	2.17
RIO COIHUIN	41	30 S	72	50 W	7.16
RIO GUAYAS	2	40 S	79	55 W	2.34
RIO JAGUAY	13	23 S	76	13 W	3.45
RIO JUAN DIAZ	18	10 S	70	40 W	3.63
RIO LURIN	12	17 S	76	54 W	3.41
RIO MALA	12	41 S	76	40 W	3.44
RIO MOLLES	18	18 S	70	26 W	3.63
RIO PIURA	5	34 S	80	52 W	3.11
RIO RIMAC	12	02 S	77	08 W	3.39
RIO SAN TADEO	46	45 S	74	12 W	8.5
RIO TOLTEN	39	14 S	73	14 W	5.43
RIO YELCHO	42	58 S	72	45 W	7.65
RIO YELI	43	32 S	73	02 W	7.68
RIVADENEYRA SHOAL	4	15 N	85	10 W	1.2
ROCA BLANCA	0	33 S	90	52 W	1.14
ROCA BURRA	0	58 S	90	52 W	1.15
ROCA CATEDRAL PETERBOROUGH	26	16 S	80	08 W	1.18
ROCA DE SANTA RITA	2	28 S	79	52 W	2.35
ROCA DUNDEE	48	07 S	75	41 W	8.8
ROCA ENTRY	50	16 S	74	44 W	8.61
ROCA KICKER	0	46 S	89	31 W	1.8
ROCA LYNCH	52	44 S	73	47 W	8.35
ROCA NEGRA	23	47 S	70	29 W	4.31
ROCA NEGRA	29	36 S	71	19 W	4.66
ROCA NEGRA	44	09 S	73	22 W	7.73
ROCA PAJAROS	45	24 S	74	11 W	6.35
ROCA PETEADORA	0	46 S	89	31 W	1.8
ROCA PIDO	42	01 S	73	29 W	7.24
ROCA PILCOMAYO	30	50 S	71	43 W	5.3
ROCA REDONDA	0	14 N	91	37 W	1.14
ROCA TAYLOR	50	32 S	74	45 W	8.59
ROCA UNION	1	02 S	91	06 W	1.15
ROCA VAUDREUIL	49	13 S	74	22 W	8.70
ROCA VERDE	41	35 S	72	44 W	7.16
ROCAS BAHAMONDE	51	45 S	75	11 W	8.28
ROCAS BARRIENTOS	42	35 S	73	03 W	7.51
ROCAS CABRESTANTE	55	22 S	70	10 W	9.18
ROCAS DALRYMPLE	0	51 S	89	38 W	1.7
ROCAS GORDON	0	34 S	90	09 W	1.11
ROCAS HELLYER	46	02 S	75	10 W	6.41
ROCAS KENNEL	54	17 S	72	59 W	9.5
ROCAS NIMROD	48	24 S	75	42 W	8.8
ROCAS OCTAVIA	6	47 N	77	42 W	2.2
ROCAS PERON	54	56 S	68	35 W	9.23
ROCAS PUGUENUN	41	48 S	73	42 W	6.5

S

SALAVERRY	8	14 S	78	59 W	3.20
SALINAS	2	12 S	80	59 W	2.27
SEFTON REEF	36	43 S	83	15 W	1.18
SENO AGUILA	52	30 S	73	30 W	8.37
SENO BAKER	47	48 S	74	38 W	8.84
SENO CHASCO	54	28 S	71	50 W	9.9
SENO CHRISTMAS	55	16 S	70	00 W	9.45
SENO COURTENAY	54	35 S	71	17 W	9.13
SENO CRUZ DEL SUR	48	30 S	75	04 W	8.11
SENO DELGADO	50	09 S	74	51 W	8.18
SENO DESCONOCIDO	50	15 S	75	24 W	8.20
SENO ELEUTERIO	50	22 S	75	21 W	8.20
SENO FRANCISCO	50	35 S	75	16 W	8.24
SENO LADRONES	54	40 S	71	03 W	9.14
SENO LANGFORD	53	49 S	73	25 W	9.4
SENO MELVILLE	54	22 S	72	14 W	9.7
SENO MOLYNEUX	50	17 S	74	53 W	8.63
SENO NEWMAN	46	32 S	74	57 W	8.4
SENO PALO	50	30 S	75	16 W	8.22
SENO PROFUNDO	51	55 S	73	35 W	8.51
SENO RELONCAVI	41	40 S	72	50 W	7.2
SENO ROWLEY	48	04 S	74	28 W	8.81
SENO VENTISQUERO	44	28 S	72	38 W	7.77
SURGIDERO ARTURO	47	50 S	73	39 W	8.89
SURGIDERO RAUL	47	49 S	73	42 W	8.89

T

TALARA	4	34 S	81	17 W	3.6
TALCAHUANO	36	42 S	73	06 W	5.30
TALTAL	25	24 S	70	29 W	4.36
TENEDERO RIO PASCUA	48	15 S	73	26 W	8.87
TOCOPILLA	22	05 S	70	14 W	4.19
TOME	36	37 S	72	57 W	5.27
TUMACO	1	49 N	78	45 W	2.10

	Position °	'	°	'	Sec. Para
U					
USHUAIA	54	49 S	68	18 W	9.27
V					
VALDIVIA	39	48 S	73	15 W	5.47
VALPARAISO	33	02 S	71	37 W	5.14
VILLAMIL	0	57 S	90	58 W	1.15
VOLCAN CORCOVADO	43	12 S	72	48 W	7.66
VOLCAN HORNOPIREN	41	54 S	72	27 W	7.34
VOLCAN VILLARRICA	39	28 S	71	55 W	5.43
VOLCAN YATE	41	46 S	72	23 W	7.14
W					
WATERING BAY	2	58 N	78	10 W	2.9
Y					
YOSEMITE ROCK	32	04 S	83	14 W	1.18