PUB. 143

SAILING DIRECTIONS (ENROUTE)

★

WEST COAST OF EUROPE AND NORTHWEST AFRICA

★

Prepared and published by the
NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY
Bethesda, Maryland

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2010

TWELFTH EDITION

Preface

Pub. 143, Sailing Directions (Enroute) West Coast of Europe and Northwest Africa, Twelfth Edition, 2010, is issued for use in conjunction with Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea. Companion volumes are Pubs. 141, 142, 145, 146, 147, and 148.

Digital Nautical Charts 1 and 8 provide electronic chart coverage for the area covered by this publication.

This publication has been corrected to 14 August 2010, including Notice to Mariners No. 33 of 2010.

Explanatory Remarks

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

Sailing Directions (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 initial letters of 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 refer to both the paper chart and the Digital Nautical Chart (DNC).

Coastal Features.—It is assumed that the majority of ships have radar. Available coastal descriptions and views, useful for radar and visual piloting are included in geographic sequence in each Sector.

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

1. Toll free: 1-800-362-6289
2. Commercial: 301-227-3147
3. DSN: 287-3147
4. DNC web site: http://www.nga.mil/NGAPortal/DNC.portal
5. Maritime Domain web site: http://www.nga.mil/NGAPortal/MSI.portal
6. E-mail: navsafety@nga.mil
7. Mailing address: Maritime Domain
   National Geospatial-Intelligence Agency
   Mail Stop D-44
   4600 Sangamore Road
   Bethesda MD 20816-5003

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

NGA Maritime Domain Website
http://www.nga.mil/NGAPortal/MSI.portal

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 meridianal 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.

Dangers.—As a rule outer dangers are fully described, but inner dangers which are well-charted are, for the most part, omitted. Numerous offshore dangers, grouped together, are mentioned only in general terms. Dangers adjacent to a coastal passage or fairway are described.

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

Geographic Names.—Geographic names are generally those used by the nation having sovereignty. Names in parentheses following another name are alternate names that may appear on some charts. In general, alternate names are quoted only in the principal description of the place. Diacritical marks, such as accents, cedillas, and circumflexes, which are related to specific letters in certain foreign languages, are not used in the interest of typographical simplicity. Geographic names or their spellings do not necessarily reflect recognition of the political status of an area by the United States Government.

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

Index-Gazetteer.—Navigational features and place-names are listed alphabetically in the back of the book. The approximate position, along with the Sector and paragraph numbers (e.g. **1.1**), facilitate location in the text.

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 the web sites and expressly disclaims any liability for errors and omissions of these web sites.

Light 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.

Ports.—Directions for entering ports are depicted where appropriate by means of chartlets, sketches, and photos, which facilitate positive identification of landmarks and navigational

aids. These chartlets and sketches are not always to scale, however, and should be used only as a general informational guide in conjunction with the best scale chart. Specific port facilities are omitted from the standard format. They are tabulated in Pub. 150, World Port Index.

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

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

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

Wind Directions.—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.

French Sailing Directions.

Portuguese Sailing Directions.

Spanish Sailing Directions.

Various port handbooks.

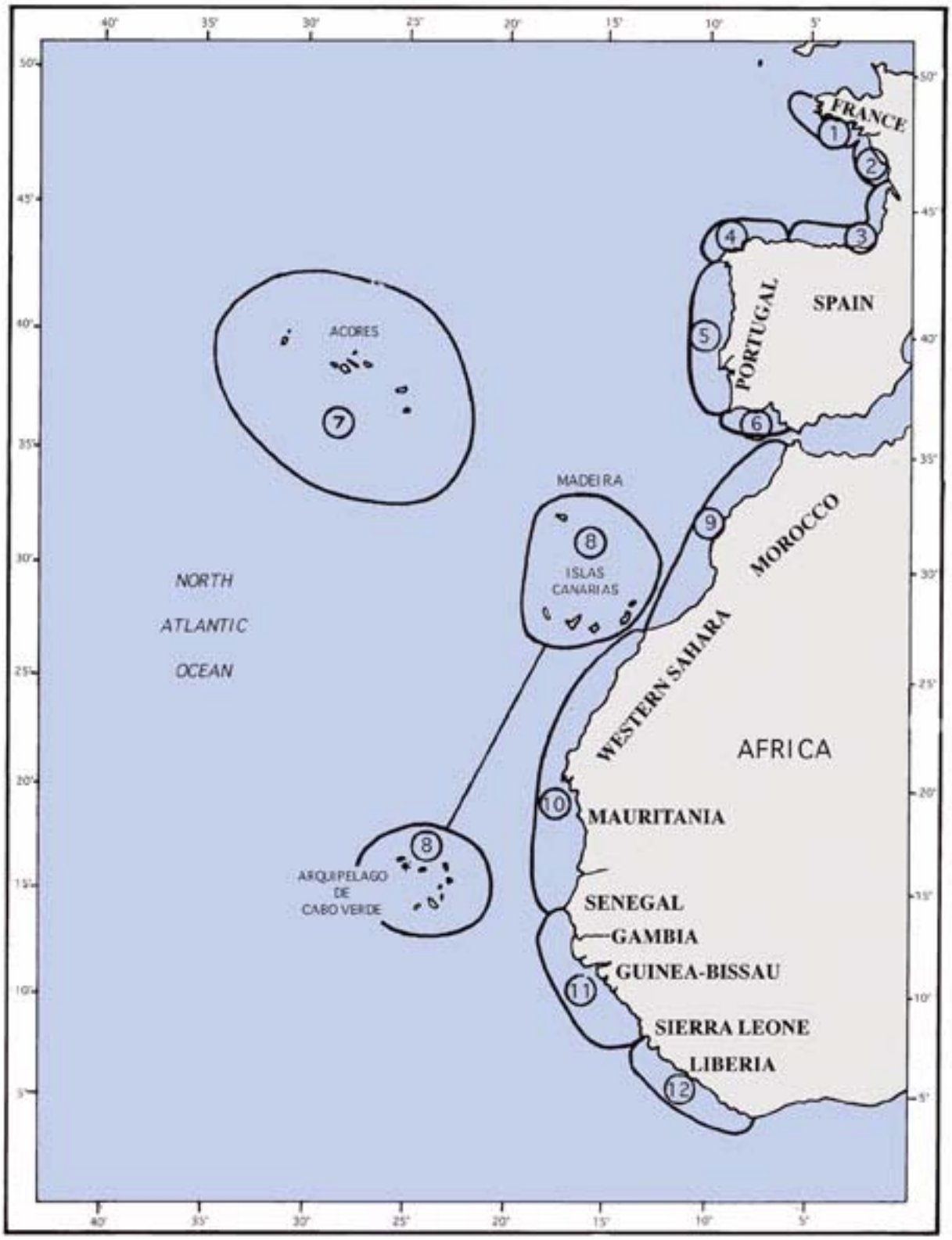
Reports from United States naval and merchant vessels and various shipping companies.

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

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

Internet Web sites, as follows:

1. Bilbao, Port of
   http://www.bilbaoport.es
2. Cadiz, Port of
   http://www.puertocadiz.com
3. Huelva, Port of
   http://www.puertohuelva.com
4. La Coruna, Port of
   http://www.puertocoruna.es
5. Lisbon, Port of
   http://www.portodelisboa.com
6. PORTEL—Autoridades Portuarias
   http://www.ap_puertos/puertos.htm
7. Santander, Port of
   http://www.puertosantander.es
8. Setubal, Port of
   http://www.portodesetubal.com
9. Sines, Port of
   http://www.portodesines.com



SECTOR LIMITS — PUB. **175**

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

Directions

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

Vessel types

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

Time

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

Water level

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

Communications

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

Navigation

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

Miscellaneous

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

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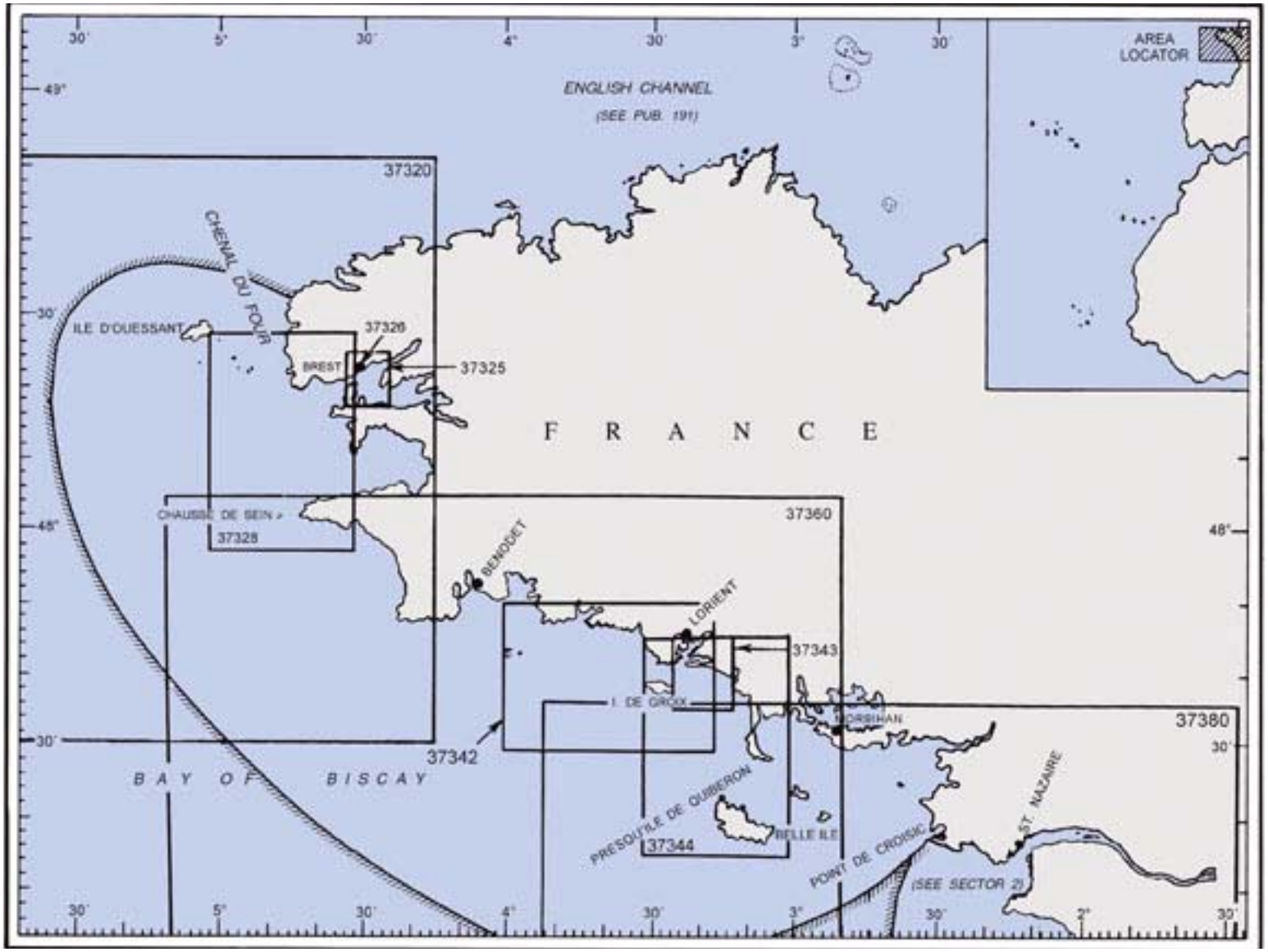


Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR 1 — CHART INFORMATION

SECTOR 1

FRANCE—THE BAY OF BISCAY—ILE D'OUESSANT TO POINTE DU CROISIC

Plan.—This sector describes the W coast of France from Ile d'Ouessant to Pointe du Croisic, 130 miles SE. Presqu'ile de St. Laurent, the NW extremity of mainland France, is the N limit of the description within this sector and is included after Ile d'Ouessant and its surrounding dangers.

General Remarks

1.1 The W coast of France, between Ile d'Ouessant and the entrance of La Gironde, is much indented and bordered by numerous islands, rocks, and sand flats. Southward of La Gironde, as far as the Rio Bidasoa, which forms the boundary line between France and Spain, the coast is low and uniform, with sandy dunes, and generally clear of off-lying shoals. The principal rivers are the La Loire and the Garonne, with the latter known in its lower part as the La Gironde; the smaller ones are the Odet, the Vilaine, the Adour, and the Nive.

The most important islands, which lie principally off the NW part of the coast, are Ile d'Ouessant, Ile de Groix, Belle Ile, Ile d'Yeu, Ile de Re, and Ile d'Oleron.

The Bay of Biscay, called Golfe de Gascogne by the French, is entered between Ile d'Ouessant and Cabo Ortegal, 305 miles SW. The bay is bounded on its E side by the W coast of France and on its S side by the N coast of Spain. It is generally clear and deep throughout.

Winds—Weather.—In the N part of the Bay of Biscay and the NW approaches to the English Channel, gales have been encountered, in several instances, with winds of hurricane velocity. This is particularly true of the open ocean where gales of force 10 to 12 have been observed from practically all points of the compass during the winter months.

An average of 1 to 2 per cent of observations with gale winds occurs throughout this area during the summer months, as compared with 6 to 12 per cent in the stormier cold months. However, only occasionally does a warm weather gale rise to the intensity of force 11 or 12. Generally, gales from the S to NW through W are more numerous than those coming from the N to SE through E.

Tides—Currents.—The general E drift of the North Atlantic strikes the land near Cabo Ortegal in Spain and divides into two branches. The N portion flows E along the N coast of Spain and the S portion flows along the coast of Portugal. In ordinary weather, this drift is slight, but with strong W winds from the Atlantic, a very considerable current is experienced off Cabo Finisterre and along the N coast of Spain.

In the Bay of Biscay, although the general set is E, the currents are irregular and very much influenced by the present and lately prevailing winds in the Atlantic. Inside the 200m curve, the general set is also influenced by local tidal currents.

During and after W winds, the E current in the Bay of Biscay may be very strong. As more water flows into the bay than out of it, the excess water emerges W along the N coast of Spain; this action is less frequent in winter. In addition, there are other ways in which the water is removed and it is believed that the main outflow is formed by a subsurface current which sets W along the N coast of Spain. This current is thought to flow throughout the year irrespective of whether the surface current above it is W or E. Continued strong W winds or gales drive water into the bay faster than the subsurface current can carry it off. This action first produces the effect of a temporary appreciable rise of the sea level. Then, as the strength of the sub-surface current increases the sea level is reduced to normal.

The current setting into the S part of the Bay of Biscay is turned N by the coast of France. It may set NW past Chaussee de Sein and then across the entrance to the English Channel and towards the S end of Ireland. It is reported that this current, known as the Rennell Current, only occurs occasionally but may attain a velocity of up to 1.5 knots. It occurs most often in winter, particularly after unusually strong or continued gales. Therefore, caution should be exercised when approaching the land in thick weather, particularly in the vicinity of Ile d'Ouessant.

A local N current, which runs in opposition to the general circulation, has been reported along the French coast to the S of La Gironde.

The tidal wave that runs N along the W coast of Portugal and Spain advances in a SE direction into the Bay of Biscay and causes the earliest HW to occur near its SE part between Santona and San Sebastian. The wave then expands and produces later HW at places to the W, on the N coast of Spain, and to the N, on the W coast of France.

The tidal range on the W coast of France is generally greater than at other places within the bay. At Brest and Bilbao, the spring tides rise 7.5m and 4.2m, respectively.

Barometric pressure and the direction of the prevailing winds have a marked influence on the water level. Winds from the W can raise the level by 0.2 to 1.4m and those from E can lower it by 0.2 to 0.8m.

The tidal currents are generally only experienced within 12 miles of the French coast. The velocity of these currents varies according to the place, but their rotation is usually clockwise during the spring and summer months and counterclockwise during the fall and winter. As a general rule, the ebb current sets between the SW and NW while the flood current sets between the NE and SE. Within certain bays or off some points, the tidal currents may set in the opposite direction owing to local conditions.

Regulations.—Special regulations apply to tankers laden with hydrocarbons and to vessels carrying dangerous cargo navigating in the approaches to the N and W coasts of France.

The WETREP (West European Tanker Reporting System) is a VTS system, under SOLAS regulation, which operates in the W approaches to Spain, Portugal, France, Belgium, the United Kingdom (including the Shetland Islands), and Ireland. This system is mandatory for all oil tankers over 600 dwt carrying heavy crude oil, heavy fuel oil, or bitumen and tar and their emulsions. It does not apply to warships, naval auxiliaries, or other vessels owned or operated by a contracting government

and used, for the time being, only on government non-commercial service. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Mandatory Access Channels and Waiting Areas, which are navigation controlled, lie in the approaches to several ports along the W coast of France and are indicated on the charts. Tankers laden with hydrocarbons and vessels carrying dangerous cargo, over 1,600 grt, are required to use these approach access channels and associated waiting areas. Special regulations apply to these vessels navigating in the Mandatory Access Channels. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Caution.—Numerous wrecks, some dangerous, lie off the coasts of France and Spain and may best be seen on the chart. Caution is advised when vessels are approaching the shallower waters.

When crossing the Bay of Biscay, allowance should be made for both for the outgoing and incoming currents, but especially the latter. When proceeding S during thick weather for a position W of Cabo Finisterre, an E set is likely to be experienced.

When warm moist winds blow over the cool sea in the bay, fog may be encountered and sound signals may not be heard against the wind.

The coast between Cabo Ortegal and Cabo Finisterre is dangerous to approach at night, especially in winter or in thick weather which is frequent there. At times, not only does a strong current set E towards the land, but tidal currents may also often affect the position of the vessel.

Many of the navigation lights on the mainland, especially along the N coast of Spain, are situated so high that they are frequently obscured by mist, which is often unforeseen, or by low clouds.

It should be noted that the coast of France extending S of the mouth of La Gironde and the whole of the N coast of Spain, have very few harbors of refuge. St. Jean de Luz, Bilbao, Santona, Santander, and Gijon are the only ports in this region which vessels are advised to approach in stormy weather without local knowledge.

Numerous fishing vessels may be encountered within the Bay of Biscay and its approaches.

During summer, numerous pleasure craft may be encountered off the coast of the N part of the Bay of Biscay.

It has been reported that marine farms have been established within many of the estuaries and inlets along the coasts of France and Spain.

Ile d'Ouessant

1.2 Ile d'Ouessant (Ushant) (48°28'N., 5°05'W.) is located 10 miles W of the NW extremity of France and forms an excellent mark for vessels rounding the coast to and from the English Channel. When viewed from N and NW, the E and NE shores appear as high and steep cliffs which gradually slope towards the W and SW sides of the island. It is surrounded by dangers that extend up to 1.5 miles offshore; a chain of islands and reefs extends SE to the mainland.

A light is shown from a conspicuous tower, 50m high, standing on Pointe de Creac'h, near the W end of the island. A racon is situated at the light.

Le Stiff Light is shown from a conspicuous structure, formed by two adjoining towers 28m high, standing near Pointe du Stiff, the NE extremity of the island. A prominent radar tower, 72m high, stands 0.3 mile NE of this light structure.

A lighted buoy, equipped with a racon, and a LANBY, equipped with a radiobeacon and a racon, are moored about 18 miles N and 28 miles W, respectively, of Ile d'Ouessant and indicate a Traffic Separation Scheme (TSS).

Ile de Keller, 30m high, is located close off the NW coast of Ile d'Ouessant. Chaussee de Keller (Keleren), a rocky reef, extends about 1 mile W from Ile de Keller and terminates in Basse Veur, a rock with a depth of 1.3m.

Baie de Lampaul, the largest bay in the island, is entered between Point de Pern, the W extremity of the island, and Ar Pilliged, 1 mile SE. A small drying harbor lies at the head of this bay. Point de Pern is fronted by rocks which extend up to 0.5 mile from it. Ar Pilliged is also fronted by rocks which extend up to 1.5 miles SW of it.

A light is shown from a prominent tower, 28m high with a helicopter platform, standing on An Ividig (Nividic), 0.5 mile WSW of Point de Pern. Another light is shown from a tower, 36m high, standing on La Jument, a rock, which along with Ar Vridig (Ridic), a rock awash, form the outermost dangers off Ar Pilliged.

A light is shown from a tower, 21m high, standing on Men Korn (Corn), a rock, lying 0.5 mile E of the E extremity of Ile d'Ouessant. This rock is the outermost danger in this vicinity and foul ground extends between it and the island. Basse Legounec, a rocky patch, lies close NW of the light and has a depth of 3.2m.

Baie de Stiff, which has a landing place, is located on the NE coast of Ile d'Ouessant and is entered N of Men Korn.

Winds—Weather.—Ile d'Ouessant is very exposed and has an average of 36 days with winds of 31 knots or over during the year. The months of November and January have an average of 6 days with such gales; December has an average of 8 days with such gales.

Anchorage.—Vessels may anchor, in depths of 8 to 13m, sand and mud, within Baie de Lampaul. The holding ground is good, but the anchorage should only be used in good weather. Winds from the W generally cause a high sea which breaks heavily in the entrance. Local knowledge is required.

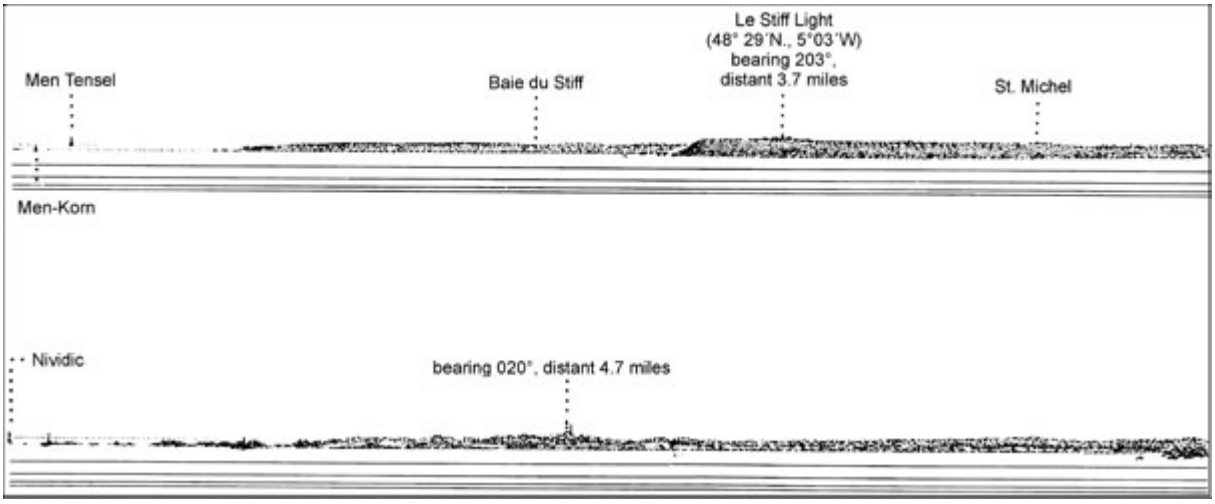
Baie de Stiff affords shelter from S and W winds to vessels with local knowledge. However, during gales, the swell runs along the coast and makes the anchorage untenable.

Regulations.—The Off Ushant (Ouessant) Approach Traffic Separation Scheme (TSS), which is IMO-adopted, is situated NW of Ile d'Ouessant and may best be seen on the chart.

Special regulations are in force for all vessels navigating the Ushant (Ouessant) Approach TSS and Inshore Traffic Zone.

In addition, all vessels are required to reply to any calls from the Ouessant Traffic Control Center, any French coast radio station, or any French government ship or aircraft. Vessels contravening these regulations will be held liable to the French authorities.

The Off Ushant (Ouessant) TSS Reporting System, with full radar surveillance, is maintained for the control of shipping. The system covers a circular area with a radius of 35 miles cen-



Two views of Ile d'Ouessant

tered on Le Stiff radar tower on Ile d'Ouessant. Participation is mandatory for all vessels 300 grt and over entering the area. Vessels report to Ouessant Traffic on VHF channel 13 or 79, giving the vessel's name, call sign or IMO number, position, course, speed, dangerous cargo, defects, and pollution or dangerous cargo lost overboard.

Caution.—Vessels approaching or rounding Ile d'Ouessant are cautioned to avoid being set down on the island by the strong currents in the vicinity.

Explosive disposal areas, which are indicated on the chart, lie NW and SW of Ile d'Ouessant as shown on the chart. Vessels are warned to avoid any craft within these areas which displays a danger signal.

A prohibited area, with a radius of 1 mile, is centered 24 miles SW of Ile d'Ouessant. The limits of the area are best seen on the chart.

Kereon Light

Ile d'Ouessant to the Mainland

1.3 The entire area lying between Ile d'Ouessant and the mainland to the SE is heavily encumbered by numerous small islands, reefs, rocks, and shoals. Vessels without local knowledge area advised not to approach this area.

The principal islands, which appear low and rocky with white beaches, are Ile de Bannec, Ile de Molene, Ile de Trielen, Ile de Quemenes, and Ile de Beniguet. Passage du Fromveur, a channel, leads between Ile d'Ouessant and the dangers to the SE. Chenal du Four and Chenal de la Helle, two narrow channels, lead between these dangers and the mainland.

Kereon (Men Tensel) (48°26'N., 5°02'W.) is the NW of the dangers lying SE of Ile d'Ouessant. A light is shown from a prominent tower, 38m high, standing close W of this island.

Chaussee des Pierres Vertes (48°23'N., 5°03'W.), a group of drying and submerged rocks, forms the SW extremity of the above dangers and is marked by a lighted buoy, moored 1.2 miles WSW.

Chaussee des Pierres Noires, about 6.5 miles long, is a chain of above and below-water rocks, lying about 6 miles SE of Chaussee des Pierres Vertes, which forms the S side of the above dangers. **Les Pierres Noires Light** (48°19'N., 4°55'W.) is shown from a conspicuous tower, 27m high, standing on a drying reef, close within the S edge of the chain. Le Diamant, a rock 8m high, lies close SW of the light and is also conspicuous.

Ile de Molene (48°24'N., 4°58'W.), 26m high, is the largest island of the group. A prominent mill stands in its N part; a conspicuous yellow signal station tower, with a church nearby, stands near its center. Two directional lights are shown from the head of a mole situated on the E side of the island and indicate the N and E approaches to a small harbor, which dries and is used by fishing boats. Small vessels can anchor, in depths of 3 to 4m, rock, about 1.5 miles N of the head of the mole, but local knowledge is required.

Basse Occidentale des Pierres Noires (48°19'N., 4°58'W.), with a depth of 4.7m, lies at the W extremity of the chain and is marked by a buoy moored 0.5 mile SSW.

Les Pierres Noires Light

Basse Royale (48°18'N., 4°50'W.), with a depth of 7m, lies at the E extremity of the chain and is marked by a lighted buoy moored close SSE.

Passage du Fromveur, lying on the SE side of Ile d'Ouessant, is straight and easily navigated by most vessels in good weather. However, when the wind is against the tidal currents, which may set up to 9 knots at springs, the sea within the channel is liable to be very high and turbulent.

Regulations.—Special regulations and restrictions apply to vessels intending to navigate this passage. See France—Regulations for the approaches to Ile d'Ouessant in Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Mainland Coast—Presqu'ile de St. Laurent to Pointe de Sainte-Mathieu

1.4 Presqu'ile de St. Laurent (48°31'N., 4°46'W.), the NW extremity of France, is a small irregular and hilly peninsula which stands 11 miles ENE of Ile d'Ouessant. The coast between this peninsula and Pointe Sainte-Mathieu, 11 miles S, is indented and fronted by rocks, shoals, and reefs which extend, in places, over 2 miles offshore. Several small harbors lie along this stretch of coast, but they are only used by small craft and fishing boats with local knowledge. A conspicuous water tower stands 1 mile E of Presqu'ile de St. Laurent.

Le Four, a reef, lies 1 mile WNW of Presqu'ile de St. Laurent. A light is shown from a tower, 28m high, standing on this reef. Although prominent when fairly close in, the light is reported to be difficult to identify from offshore.

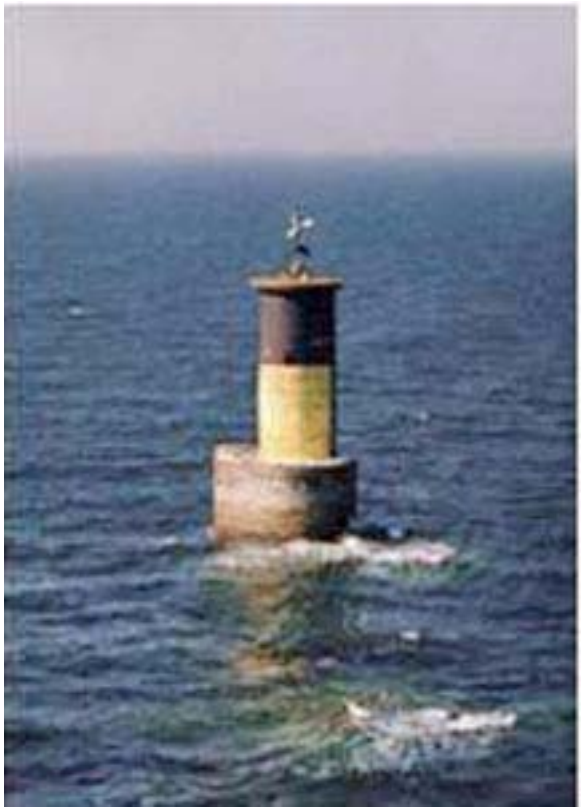
Les Liniou, a group of several high rocks, lies on a reef about 2 miles S of Le Four and can be easily identified by Le Grand Liniou, the principal rock, which is sheer on its W side.

L'Aber Ildut (48°28'N., 4°45'W.), a small tidal harbor, is reached via a narrow fairway which is entered 1 mile S of Les Liniou and bordered by dangers. The harbor, which is fronted by a rocky bar with a depth of 2m, is used by fishing boats, yachts, and small coasters with local knowledge. It dries, but a dredged channel lying in the center of the estuary has depths up to 4.3m and provides anchorage for small vessels at all stages of the tide. A light is shown from a tower, 12m high, standing on the N side of this inlet.

Pointe de Corsen (48°25'N., 4°48'W.), steep and cliffy, is located 3.5 miles SSW of L'Aber Ildut and is very prominent from the S. The coast between is fronted by numerous dangers. A light is shown from a white hut standing on this point and a pylon, 77m high, stands at an elevation of 120m, close ENE of it.

Trezien Light is shown from a conspicuous tower, 84m high, standing on the heights near a town, 0.8 mile NE of Pointe de Corsen.

Les Platresses (48°26'N., 4°51'W.), a group of reefs and drying rocks, lie 3.5 miles NW of Pointe de Corsen. A light is shown from a tower, 23m high, standing on the NE rock of the group.



Le Faix Light

La Valbelle, a group of shoals with depths of 3 to 8.2m, lies 0.8 mile ENE of the light and is marked by a lighted buoy moored close W of it.

Plateau de la Helle (48°26'N., 4°54'W.), a large area of rocky shoals, lies 4.5 miles WNW of Pointe de Corsen. La Helle, 12m high, is an isolated rock which stands on the NW side of this plateau. Le Faix, a drying rock, lies near the NE end of the plateau. A light is shown from a prominent tower, 21m high, standing on it.

Basse Luronne, a shoal with a depth of 4.6m, lies 1 mile NNE of the light and is marked by a buoy, moored close WNW of it.

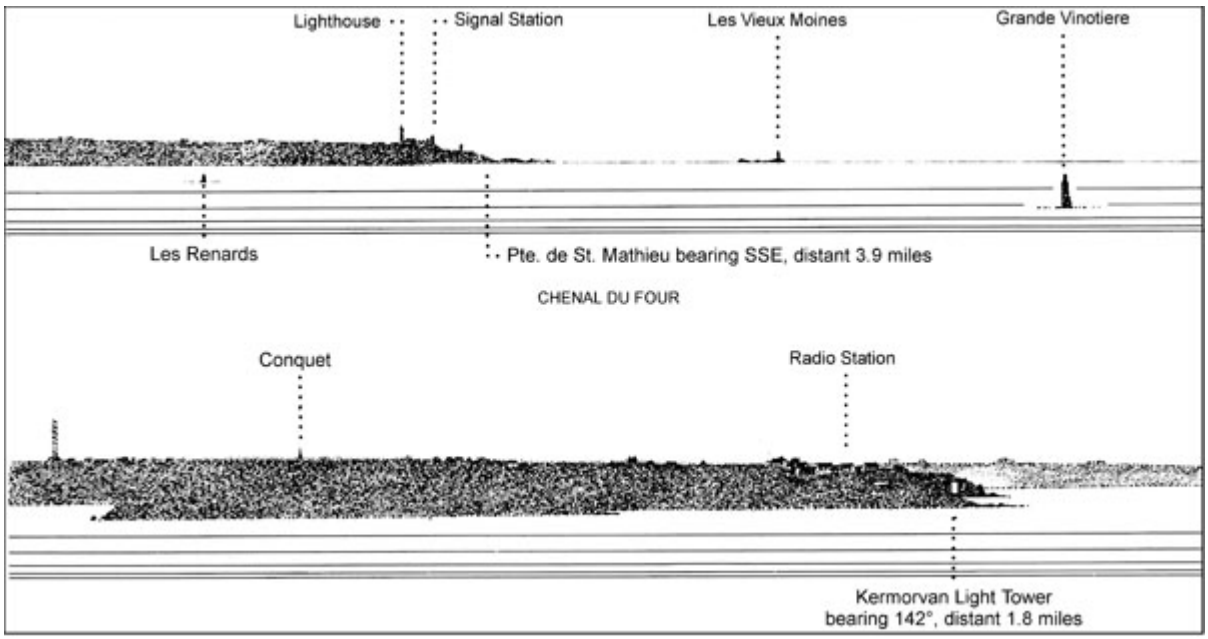
1.5 Chenal du Four (48°23'N., 4°49'W.), passing E of Les Platresses, leads between the NW coast of France and the dangers lying SE of Ile d'Ouessant. The channel is marked by buoys and indicated by ranges which may best be seen on the chart. The fairway has been swept to a depth of 5m on the range line near Basse du Lipari, in its N part, and 7.3m on the range line W of Roche du Tournant, in its S part. The least depth in the channel is a 6m rocky shoal which lies close ENE of the range, 0.5 mile E of Les Platresses Light.

Vessels with drafts of over 7.9m are advised to avoid this channel except at HW. During bad weather, all vessels are advised to use Chenal de la Helle, as the sea breaks heavily in the vicinity of this channel.

From July to September, the visibility in this channel is sometimes poor, even when the weather outside is clear.

Numerous dangers lie adjacent to the fairway and vessels should stay as closely as possible to the range alignments. When altering course, vessels should exercise great care as in places the tidal currents, which may attain rates up to 5.2 knots at springs, set across the fairway.

Several submarine cables lie across the channel and may best be seen on the chart.



Chenal de la Helle

Chenal de la Helle (48°26'N., 4°23'W.) leads between the NW coast of France and the dangers lying SE of Ile d'Ouessant. It passes W of Les Platresses and E of Plateau de la Helle before joining Chanel du Four N of Grande Vinotiere. The channel is marked by buoys and indicated by ranges which may best be seen on the chart. The fairway has been swept to a depth of 7.3m on the range line.

Several submarine cables lie across the channel and may best be seen on the chart.

Numerous dangers lie adjacent to the fairway and vessels should stay as close as possible to the range alignments. In bad weather, this channel is preferable to Chanel du Four, being less dangerous in the approach.

Regulations.—Special regulations and restrictions apply to vessels intending to navigate both Chanel du Four and Chenal de la Helle. See France—Regulations for the approaches to Ile d'Ouessant in Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

1.6 Pointe de Kermorvan (48°22'N., 4°47'W.) is the W extremity of the peninsula of Presqu'ile de Kermorvan. It is surmounted by a hill, 33m high, which stands at the end of a long and narrow neck of land. L'llete, a large rock on which stands an old fort, lies close N of the NW extremity of this peninsula. A light is shown from a prominent tower, 20m high, standing on the point.

Lochrist Light is shown from a tower 49m high, standing 0.4 mile inland, 1.5 miles SE of Pointe de Kermorvan. It is reported that this light is not easily distinguished in daylight.

Anse des Blancs Sablons, a bight, is entered between Pointe de Corsen and Pointe de Kermorvan, 3 miles S. Although open to the W, it provides the only good shelter in this vicinity. Vessels can anchor, protected from SW winds, in depths of 6 to 12m, sand and shells, in the lee of Pointe de Kermorvan. When approaching the head of this bight, caution is necessary as the depths shoal rapidly.

Port du Conquet (48°22'N., 4°47'W.), a narrow drying estuary, is entered between Pointe de Kermorvan and Pointe Sainte Barbe, 0.4 mile SE, and extends for 1 mile. La Louve, a drying rock, lies about 300m SE of Pointe de Kermorvan. A breakwater extends 180m NW from Pointe Sainte Barbe and protects a small harbor which fronts the town of Le Conquet, situated on the S side of the estuary. A main quay, 170m long, has depths of 2.3 to 3.3m alongside. The anchorage roadstead off the harbor entrance is sheltered from E winds and can be used by small vessels with local knowledge, but it is untenable with winds from any other direction.

Grande Vinotiere, a drying reef, lies 0.8 mile WNW of Pointe de Kermorvan and is marked by a lighted beacon.

Pointe des Renards is located 2.5 miles S of Pointe Sainte Barbe. Les Renards, a drying reef, extends 0.3 mile W from the point and is marked by a beacon. Basse des Renards, a rock with a depth of 1.2m, lies 0.2 mile W of this beacon and is marked by a buoy.

Two prominent radio towers, with obstruction lights, stand in the vicinity of Pointe des Renards.

Pointe de Sainte-Mathieu (48°20'N., 4°46'W.) is located at the SW extremity of a hilly peninsula which separates Chenal du Four from the approaches to Brest.

A light is shown from a prominent tower, 56m high, standing on the point. The point can also be identified by a prominent signal station and the ruins of an abbey which are situated close to the light. In addition, a conspicuous radio mast, 100m high, stands 1.7 miles ENE of the light.

Pointe de Sainte-Mathieu Light and abbey ruins

Les Pignons de Keravel are two conspicuous white gables which stand on the crest of a hill, 0.7 mile NE of the point.

Les Vieux Moines, marked by a lighted beacon, is a group of above-water rocks which lie about 0.5 mile SSW of Pointe de Sainte-Mathieu. Roche de la Dorade, a rock with a depth of 9.3m, lies about 200m S of the group.

Caution.—A wreck lies SW of Les Vieux Moines Light, as shown on the chart.

L'Iroise

1.7 L'Iroise (48°12'N., 5°00'W.) is the water area lying to the S of Pointe de Sainte-Mathieu, which is bordered by Chaussee des Pierres Noires to the N and Chaussee de Sein to the S. The E side of L'Iroise is divided into two parts by a large three-pointed peninsula. Avant Goulet de Brest lies on the N side of this peninsula; Baie de Douarnenez lies on its S side.

Between Point de Sainte-Mathieu and Goulet de Brest, the N shore of L'Iroise is rugged, but generally slopes to the sea. The SE shore of L'Iroise, although still high, is less barren and more tree-covered. Pesqu'ile de Quelern, the N section of the three-pointed peninsula, is cliffy and rises to a height of 75m across most of its length.

Chaussee de Sein extends nearly 14 miles seaward and is a great danger to shipping. It lies along the S side of L'Iroise, directly in the path of vessels navigating between Brest and the Bay of Biscay.

Pointe du Toulinguet (48°17'N., 4°38'W.) is the NW extremity of the W section of the three-pointed peninsula. A light is shown from a tower, 49m high, standing on this point and a prominent signal station is situated close to it.

Pointe du Toulinguet Light

Pointe de Pen-Hir, 1.8 miles S of Pointe du Toulinguet, is formed by steep black cliffs. An old signal station stands on the point and a prominent monument, 56m high, is situated 0.4 mile N of it. A group of five prominent detached rocks, the highest being 62m high, lies on a rocky shelf which extends 0.7 mile SW of the point. From offshore, Pointe Pen-Hir forms an impressive landmark and can be easily identified from a considerable distance.

Tides—Currents.—The tidal currents in the middle of L'Iroise are strong and are rotary in a clockwise direction. The N current sets towards the dangers lying SE of Ile d'Ouessant

and the S current sets towards Chaussee de Sein. In thick weather, vessels approaching the area must guard against the actions of these currents.

Caution.—Basse de la Parquette (48°16'N., 4°44'W.), a rock, lies 4.5 miles W of Pointe du Toulinguet and dries 4.9m. A light is shown from a tower, 17m high, standing on this rock.

A chain of drying and submerged rocks extends E between Basse de la Parquette and the W section of the mainland peninsula.

La Vandree, a rock, lies about 2.2 miles WSW of La Parquette and has a least depth of 2.2m. It forms the W extremity of the numerous dangers which extend seaward from Pointe du Toulinguet, and is marked by a lighted buoy, moored 0.7 mile WNW of it.

Basse du Lis, a small group of rocky patches, lies about 2.8 miles S of Basse de la Parquette. It has a least depth of 2.4m and is marked close SW by a lighted buoy.

A chain of dangerous shallow shoals extends ENE between Basse du Lis and Point de Pen-Hir, on the mainland peninsula.

Basse de L'Iroise, an isolated rock with a least depth of 5.1m, lies about 2.5 miles WSW of Basse du Lis. Basse du Laborieux, a detached patch with a least depth of 9.9m, lies about 1.7 miles SW of Basse de L'Iroise. A dangerous wreck, position doubtful, is reported to lie about 1 mile SSW of Basse de L'Iroise.

Numerous submarine cables, most of which are disused, lie in L'Iroise and may be best seen on the chart.

La Parquette Light

Approaches to Brest

1.8 Avant Goulet de Brest (48°18'N., 4°40'W.), the outer entrance to Rade de Brest, lies between Pointe de Sainte-Mathieu and Pointe du Toulinguet, 6.5 miles ESE. It extends NE to abreast of Pointe du Petit Minou.

Vessels can approach the seaward entrance from the W by keeping S of Chaussee des Pierres Noires and N of the chain of dangers which extends E between La Parquette and the mainland.

Vessels from the N can enter via Chenal du Four and those from the S via Chenal du Petit Leac'h.

The shores of Avant Goulet de Brest are cliffy and rise to generally flat plains. Pointe de Creac'h Meur, on the N side, is located 3 miles E of Point de Sainte-Mathieu. A prominent radio mast stands on the point and a fort is situated on a large rock, 0.5 mile NE. A conspicuous water tower stands at the NE side of Anse de Bertheaume, 3 miles ENE of Pointe de Creac'h Meur.

Basse Beuzec, a rock with a depth of 2m, and Roche du Charles Martel, with a depth of 3.7m, are the outermost dangers on the N side of the channel. They lie 1 mile SSE of Pointe de Creac'h Meur and are marked by buoys moored close S.

Chenal du Petit Leac'h, a narrow passage, leads through the dangers extending W from Pointe du Toulinguet into Avant Goulet de Brest. It is marked by beacons and indicated by a range which may be best seen on the chart. The fairway is swept to a depth of 12m and may be used by vessels with local knowledge. Chenal du Grand Leac'h, with a swept depth of 11m, and Chenal du Toulinguet, with a swept depth of 8.5m, lie E of Chenal du Petit Leac'h and lead into it. They are indicated by tracks which may best be seen on the chart. Both these passages are very narrow, bordered by dangers, and used only by small vessels with local knowledge.

Anse de Camaret lies on the S side of Avant Goulet de Brest, 1.7 miles E of Pointe du Toulinguet. Camaret-sur-Mer, a small harbor, is situated on the SW side of the bay and is protected by a breakwater. It mostly dries and is used by yachts, pleasure craft, and fishing vessels.

A wreck, with a depth of 14m, lies about 1.5 miles NNW of Pointe du Toulinguet and is marked on its W side by a lighted buoy. Another wreck lies 0.5 mile SE of it within an anchorage, as best seen on the chart.

1.9 Pointe du Petit Minou (48°20'N., 4°37'W.), the N entrance point of Goulet de Brest, is located 3.8 miles E of Pointe de Creac'h Meur. A light is shown from a prominent tower, 24m high, standing just off the point; a smaller tower stands close SW of the light.

Goulet de Brest (48°20'N., 4°35'W.), the inner entrance to Rade de Brest, is entered from the E end of Avant Goulet de Brest and extends NE to abreast Pointe du Portzic. It is divided into two channels by Plateau des Fillettes and Roche Mengam, both of which dry and lie on a rocky bank, centered 1.1 miles ESE of Pointe du Petit Minou. The former is marked by lighted buoys moored close W, NE, and S of it; a light is shown from a tower, 15m high, standing on the latter. Passe Nord has been swept to 11m, while Passe Sud has been swept to 12m; Passe

Pointe du Petit Minou Light

Nord, being wider, is more commonly used by ocean-going vessels.

Pointe du Portzic (48°22'N., 4°32'W.), the N entrance point of Rade de Brest, is located at the E end of Goulet de Brest, 3.5 miles NE of Pointe du Petit Minou. A light is shown from a prominent tower, 35m high, standing on the point; a signal station is situated near it. Several prominent water towers and a fort stand on the N side of Goulet de Brest. Pointe des Espagnols, located 1 mile S of Pointe du Portzic, is the NE extremity of Presqu'ile de Quelern and also the SE extremity of Goulet de Brest.

Pilotage.—Pilotage is compulsory, as follows:

1. All vessels 50m or more in length.
2. All vessels carrying hydrocarbons, gas, or dangerous cargo.
3. All commercial vessels entering or departing a port area which is reserved for the military.

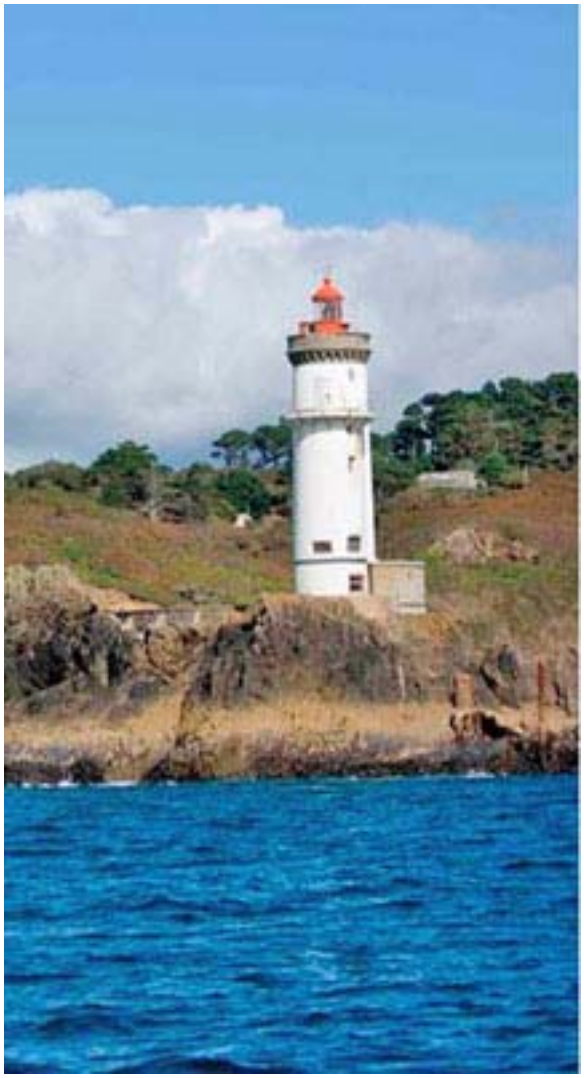
All vessels should contact the pilot vessel directly on VHF channel 12 prior to arriving off Pointe de Sainte-Mathieu.

Pilots board, as follows:

1. In good weather, the pilot will board in a position in Avant Goulet de Brest 2.5 miles NW of Pointe du Toulinguet.
2. In bad weather, the pilot vessel will lead vessels into the entrance of Rade de Brest, where the pilot will board.
3. During strong winds, pilots may also board in the entrance to Camaret Bay or at the E end of Goulet de Brest, between Pointe du Portzic and La Cormorandiere, about 1 mile SSE.

If the pilot vessel is unavailable, vessels must request permission from the pilot control station on Pointe de Portzic (call sign: Pilote Brest) to continue through Goulet de Brest and anchor in Rade de Brest in a position, best seen on the chart, about 0.5 mile SW of the head of Jette Sud, near the entrance to Rade Abri.

Regulations.—A Mandatory Access Channel leads from L'Iroise to a Waiting Area situated S of Pointe de Sainte-Mathieu. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel and maintain a listening watch on VHF channel 16.



Goulet de Brest Light

Vessels should send their ETA at the pilot boarding position in Avant Goulet de Brest at least 48 hours in advance, stating the following:

1. Vessel name, call sign, and nationality.
2. Draft.
3. Cargo.

Vessels proceeding to the Waiting Area situated S of Pointe de Sainte-Mathieu should send their ETA at least 12 hours in advance through Brest-Le Conquet (FFU) and then contact the signal station at Pointe de Sainte-Mathieu by VHF 3 hours in advance.

Vessel Traffic Service.—A Vessel Traffic Service System (VTS) has been established in the approaches to the port. It regulates the movement and anchorage of all vessels while in Avant Goulet de Brest, Goulet de Brest, Rade de Brest, and

Baie de Douarnenez. Its use is mandatory for all vessels 25m or more in length.

The VTS covers Avant Goulet de Brest and Goulet de Brest to the E of a line joining Pointe du Toulinguet light and Saint-Mathieu light, Rade de Brest to the W of the meridian 4°26.0'W, and Baie de Douarmenez.

Vessels over 300 gross tons must contact Brest Port VTS control station on VHF channel 8 or 16, call Brest Approaches, at least 1 hour prior to entering Goulet de Brest. Vessels should state their requested time of passing through Goulet de Brest and reason for entry and whether they are carrying hydrocarbons, gas, dangerous cargo, or contaminated cargo. In requesting authorization to transit Goulet de Brest vessels should specify which channel they prefer (Passe Nord or Passe Sud). Authorization must be requested directly via VHF or through the Brest pilots.

Vessels should wait W of the entrance and not enter Goulet de Brest from seaward or, similarly, from Rade de Brest, without authorization from the VTS control station. Vessels will also be informed, depending on their draft and size, which channel (Passe Nord or Passe Sud) to use when transiting Goulet de Brest.

Vessels must maintain a listening watch on VHF channel 16 during transit and conform with orders given by Brest Port VTS.

Vessels less than 25m in length must not obstruct the passage of larger vessels or submarines.

On arrival into Rade de Brest, vessels should contact Base Navale VTS control station on VHF channel 74.

Foreign vessels entering Baie de Douarnenez should contact the VTS control station, or report through Ouessant Traffic Control, and maintain a listening watch on VHF channel 16.

Caution.—A restricted area, the limits of which are shown on the chart, lies in Avant Goulet de Brest and extends through Goulet de Brest. Anchoring and fishing are prohibited within this area.

A restricted area, the limits of which are shown on the chart, lies in Goulet de Brest, close SW of Roche Mengam. Fishing and diving are prohibited within this area.

Minesweepers frequently carry out exercises in the approaches to the port.

An explosives dumping ground lies W of Presqu'ile de Quelern as seen on the chart.

An obstruction, with a depth of 29.5m, is located in position 48°20.8'N, 4°33.5'W. A second obstruction, with a depth of 24.5m, is located close E of the first obstruction in position 48°20.9'N, 4°33.2'W.

Brest (48°23'N., 4°30'W.)

World Port Index No. 36460

1.10 Rade de Brest, entered from Goulet de Brest, is spacious and affords excellent shelter. The Port of Brest is situated on the N side of the roadstead, just within the entrance. The naval base and its facilities occupy the W part of the harbor and the commercial port is situated in the E part.

The S part of Rade de Brest is generally under the control of the naval forces. Numerous training and special facilities, which are usually prohibited to commercial vessels, lie throughout the area.

Port of Brest Home Page

http://www.port.cci-brest.fr

Winds—Weather.—Winds from the SW predominate throughout the year. During late winter and spring, winds from the N and NE are common, and winds from the W are prevalent in summer and fall.

Gales are frequent in the approaches to the port, reaching an average of 10 days per month in December. In the summer months of June and July, stormy weather attains its smallest incidence with an average of only 2 days per month.

Fog occurs often in summer and attains an average of 9 or 10 days per month in June, July, and August. The least fog is usually expected in December and January, but still may occur on an average of 4 days per month. A considerable amount of haze may also be expected at any time, but more so in late spring and summer when the temperature gradients are shifting from the land to the sea.

Tides—Currents.—Tides rise about 7.5m at springs and 5.9m at neaps.

In Rade de Brest, the tidal currents generally flow E and W in the N part and SE and WNW in the S part. At springs, they attain rates of 2.4 to 3.6 knots in the N part and 1.5 to 2 knots in the S. At neaps, they attain rates of 0.8 to 1.8 knots throughout the roadstead.

In the vicinity of La Vandree, the flood current sets N at about 1.5 knots and the ebb current sets S at about the same rate.

In Goulet de Brest, the flood current sets ENE to E at 2 to 4 knots and the ebb current sets WSW to W at 2.2 to 4.7 knots.

Depths—Limitations.—Rade de Brest has general depths of 11 to 25m in its main part, N of Ile Ronde.

Rade Abri, the harbor fronting the city on the N side, is protected by breakwaters. Port Militaire is situated in its W part; Port de Commerce is situated in its E part. The main entrance through the breakwaters lies 1.9 miles ENE of Pointe du Portzic and has a least depth of 11m.

Banc de St. Pierre lies in the N part of Rade de Brest, 1 mile SW of the main entrance between the breakwaters. It has a least depth of 8.5m at Basse Pennou Pell and is marked by a lighted buoy, moored close S.

Banc du Corbeau lies on the E side of Rade du Brest, about 1 mile SE of the main entrance. It has a least depth of 1.3m and is marked by a lighted buoy, moored close off the NW extremity. An explosives dumping ground, best seen on the chart, is located on the bank.

Basse du Renard lies in the SE part of Rade de Brest, about 0.7 mile NW of Ile Ronde. It has a least depth of 3m and is marked by a lighted buoy moored close W. Vessels should pass SW of this lighted buoy when proceeding to or from the S part of the roadstead.

Port de Commerce may be entered by either of two passages. Passe de l'Ouest, the more commonly used, is entered from Rade Abri. It is 140m wide and has depths of 6.7 to 7.1m.

Passe de l'Est is entered 0.8 mile NE of the main entrance into Rade Abri. It is 120m wide and has a dredged of 5.8m.

Port of Brest

The Port Militaire includes the berths in the W part of Rade Abri and along both banks of the La Penfeld River, which is entered N of the main entrance. Quay d'Armament and Quay des Flotilles, with submarine shelters, front the NW side of Rade Abri. Two piers extending NE into Rade Abri from the SW breakwater are used to accommodate such large vessels as aircraft carriers. This area is reserved for the use of the French Navy and all other vessels are prohibited from entering without authorization.

Berth	Length	Depth alongside
No. 1 West	200m	6.0m
No. 2 West	110m	5.0m
No. 3 West	140m	9.0m
No. 5 West	170m	7.0m
No. 5 North	300m	7.0m
No. 5 East	300m	8.0-10.0m
No. 6 West	150m	8.0m
No. 6 East	175m	9.0m
No. 6 South	230m	12.0m

A large marina, with extensive facilities for yachts, is situated in the NE part of the port.

Port de Commerce is entered at the E side of Rade Abri. It is formed by four basins, fronted by a breakwater, and one basin situated close E.

The harbor has facilities for general cargo, bulk, reefer, container, and tanker vessels. Generally, vessels up to 320m in length and 10.7m draft can be handled.

The port also has extensive facilities for repairs including repair quays, 305 to 430m long, with dredged depths of 8.0 to 10.6m alongside, which can handle vessels up to 550,000 dwt.

In addition, there are three main graving docks. The largest is 420m long and 80m wide, with a depth of 8m over the sill. It can accommodate vessels up to 550,000 dwt.

Aspect.—The prominent spire of St. Pierre Church and a conspicuous water tower stand 1.4 miles N of Pointe du Portzic.

La Cormorandiere, a prominent rock, lies on the S side of the entrance to Rade de Brest, close off Pointe des Espagnols. It dries, 7m, and is marked by a beacon.

Within the military port area, the buildings of the Naval Academy, standing 0.7 mile NE of Pointe du Portzic, and several fuel storage tanks, situated close W of it, are conspicuous.

Chateau de Brest, with its signal tower, and the Port Authority office stand on the E entrance point of the La Penfeld River,

2 miles NE of Pointe du Portzic and is conspicuous. A prominent monument stands 0.3 mile ENE of this building.

St. Martins Church, standing 1 mile NE of Chateau de Brest, dominates the city and is an excellent landmark from all directions.

To the NE of the city, Pont Albert Louppe, a great bridge with three arches, spans the mouth of the L'Elorn River (48°23'N., 4°24'W.) and is an excellent mark from the N part of Rade de Brest. A church, with a belfry, and a water tower stand at Plougastel, 1 mile SE of the above bridge. They are situated on the crest of a hill and are very conspicuous from the approaches.

Ile Longue (48°18'N., 4°31'W.), a peninsula, is located in the SW part of Rade de Brest. A conspicuous white building, with a square tower, stands on its summit, close within the N extremity. A small basin protected by two breakwaters marks the NE corner of the island.

Ile Ronde, a small island, lies 1.7 miles ENE of the N extremity of Ile Longue. It appears black in color and is marked by a beacon.

Anchorage.—Anchorage in Rade de Brest is at the discretion of the pilot. Generally, vessels may anchor in any part of the roadstead clear of the shoals and outside of the charted restricted areas. The bottom is sand and shells or gravel, good holding ground.

Vessels finding it necessary to anchor W of Goulet de Brest can find shelter in Camaret Bay. A good holding berth, in depths of 10 to 14m, gravel and coral, lies near the center of the bay.

Caution.—Several restricted areas, the limits of which are shown on the chart, lie in Goulet de Brest and the N part of Rade de Brest. Anchoring and fishing are prohibited within these areas.

Construction and reclamation operations are being carried out at several locations within the port.

Navigation, anchoring, and fishing are prohibited in the vicinities of Ile Longue and the degaussing ranges in Anse du Fret, when in use. Vessels are prohibited from anchoring near the torpedo range situated E of Ile Longue. They are also prohibited from navigating in this vicinity when the range is in use.

Several other prohibited anchorage areas lie in the S and E parts of Rade de Brest and may best be seen on the chart.

Below-water foundations extend up to 15m from the breakwater heads at the main entrance into Rade Abri.

It has been reported (1997) that the 344° range leading between the entrance breakwaters of Rade Abri is difficult to see.

Submerged submarines may occasionally exercise in Goulet de Brest and at the W side of Rade de Brest. They are escorted by surface vessels which display the appropriate signals.

Avant Goulet de Brest to Pointe du Raz

1.11 Cap de la Chevre (48°10'N., 4°33'W.), 97m high, a bold and cliffy promontory which forms the S extremity of the S section of the three-pointed peninsula which divides the E side of L'Iroise, lies 6.5 miles SSE of Pointe de Pen-Hir. A prominent signal station and flagstaff stand on the cape.

Several rocks and shoals lie up to 4 miles offshore between Pointe de Pen-Hir and Pointe du Van, 5.5 miles S. Basse de Dinan, a rock with a depth of 3m, lies 0.5 mile SSE of Pointe de Pen-Hir.

Le Chevreau, a rock which dries 6m, lies 2 miles SSE of Pointe Pen-Hir and is marked with a beacon. Basse du Chevreau, with a depth of 7.4m, and La Queue du Chevreau, with a depth of 9.6m, lie 1.3 miles WSW and 2 miles SW, respectively, of Le Chevreau.

Le Bouc, a rock standing on a shallow reef, lies 2.8 miles WNW of Cap de la Chevre and is marked close W by a lighted buoy. Basse du Bouc, with a depth of 9.4m, and La Queue du Bouc, with a depth of 9.2m, lie 0.9 mile W and 0.8 mile NW, respectively, of Le Bouc.

Numerous rocks and shoals lie up to about 2.5 miles from Cap de la Chevre.

Basse Vieille, a group of rocks which dries 0.8m, lies 2.5 miles SW of the cape and is marked close SW by a lighted buoy; during periods of heavy swell, the sea breaks with considerable strength on this group of rocks and they can be seen for some distance in clear weather. Shoreward of this group of rocks, the bottom is irregular and there are several rocky patches and shoals.

Basse Wenn, an isolated patch, lies 2 miles W of Basse Vielle and has a least depth of 19.1m.

1.12 Baie de Douarnenez (48°09'N., 4°25'W.), a large open bay, lies on the S side of the three-pointed peninsula which divides the E side of L'Iroise. The bay is entered between Cap de la Chevre, previously described in paragraph 1.11, and Pointe du Van, 9 miles SW. The latter is formed by a conspicuous high and sheer cliff which is fronted by several large rocks. The cliffs which form the NW shore of the bay are bold and cleft by fissures.

Sommet du Menez-Hom (48°13'N., 4°14'W.), 330m high, is the highest part of the elongated skyline which stands about 3 miles E of the E shore of the bay. It is conspicuous and can be seen from some distance seaward.

Douarnenez (48°06'N., 4°20'W.), a small fishing port, lies in the SE part of the bay, 5 miles E of Pointe de Millier. The harbor, situated at the mouth of the Riviere de Pouldavid, is protected by breakwaters and divided into several small basins which have dredged depths up to 5m.

Vessels approaching the harbor must take care to avoid Baz Veur, a rock with a depth of 4.2m, and Basse Neuve, a rock with a depth of 1.6m, lying 0.7 mile and 0.4 mile NNW, respectively, of the entrance. Pilotage is compulsory for vessels of 50m LOA or more. The pilot boards 1 mile N of Isle Tristan or at the anchorage. Anchorage may be obtained, in depths of 3 to 5m, mud, within 0.3 mile E of the harbor, but local knowledge is recommended.

Regulations.—A Mandatory Access Channel leads from L'Iroise into Baie de Douarnenez. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel and maintain a listening watch on VHF channel 16.

The movement and anchorage of all vessels in the approaches and within the bay is controlled by the Brest Port VTS system. Vessels may communicate with the VTS control center through the VHF radio station (Le Raz), situated at Pointe du Raz. See paragraph 1.9 for further information on traffic control for the approaches to Brest.

1.13 Pointe de Morgat, a bold headland, is located 4 miles

NNE of Cap de la Chevre. Anse de Morgat, a small bay, is entered NE of this point. Several dangers lie on the E side of the bay and are centered about 2 miles ESE of Pointe de Morgat. These include Les Verres, a group of rocks 9m high; La Pierre Profonde, a rock 4m high; and Le Taureau, a shoal which dries 1.5m.

Morgat (48°10'N., 4°33'W.), a small harbor, is situated in the NW part of the Anse de Morgat and is used by fishing boats and yachts.

The S shore of Baie de Douarnenez is generally more steep-to than the N shore but it is fronted by numerous rocks and shoals.

Pointe du Milier (48°06'N., 4°28'W.) is located on the S shore of the bay, 5 miles W of Douarnenez. A light is shown from a prominent white house, 6m high, standing on the point and a conspicuous water tower stands 2 miles SE of it.

Pointe de Brezellec is located 8 miles WSW of Pointe du Van. A radio mast stands on the point and another stands 1.2 miles SSW of it.

Pointe du Van (48°04'N., 4°43'W.) lies 2 miles WSW of Pointe de Brezellec. Basse Jaune, an isolated rocky patch which dries 1.3m, lies about 1 mile NNE of Pointe du Van and is marked close SW by a buoy.

Caution.—With W winds, a heavy swell penetrates into the bay as far as Douarnenez.

A measured distance, 8,029.8m long, lies on the S side of the bay and may best be seen on the chart.

Submarines frequently exercise in an area swept to a depth of 28m lying in the approaches to the bay S of Basse Vielle.

1.14 Pointe du Raz (48°02'N., 4°44'W.), at the S side of the entrance to Baie de Douarnenez, lies 2 miles SSW of Pointe du Van and is formed by a high steep cliff fringed with rocks. A prominent signal station, consisting of a tower with a dwelling, stands on the point.

Dangers extend up to 0.8 mile W of Pointe du Raz. La Vieille, a rock, and La Plate, a reef close SW, lie at the W extremity of these dangers. A light is shown from a prominent square tower, 24m high, standing on La Vieille. A light is also shown from a tower, 26m high, standing on La Plate.

Levennec (48°04'N., 4°48'W.), a small and prominent island, is located 3 miles NW of Pointe du Raz. A light, with sectors indicating the fairways, is shown from a tower with a dwelling, 15m high, standing on its summit. Rocky patches and shoals extend up to 0.8 mile from the island, but it can be passed to the E or W.

Chaussee de Sein (48°03'N., 4°55'W.) is a group of islands, dangerous rocks, and shoals which borders the S side of L'Iroise. This group, although less than 2 miles in width, extends for nearly 12 miles and is a major danger to vessels transiting N or S.

Le Chat, a drying reef, lies 3.2 miles WSW of Pointe du Raz, at the E end of Chaussee de Sein. A light is shown from a tower, 31m high, standing on this reef. Passe d'Ar-Men, a narrow passage, lies 7 miles W of Le Chat. It divides Chaussee de Sein into two parts and has a least depth of about 9m. Ar-Men Light is shown from a tower, 37m high, standing on a reef, at the W side of the passage.

Chaussee de Sein Lighted Buoy (48°04'N., 5°08'W.), equipped with a racon, is moored 1.7 miles W of the W

La Vieille Light

Ar-Men Light

Ile de Sein (48°03'N., 4°52'W.), a low and narrow island, is the largest of the group and lies 5 miles W of Pointe du Raz. Sein Light is shown from a tower, 51m high, standing at the NW extremity of the island. Men-Brial Light is shown from a

Ile de Sein Light

tower, 14m high, standing at the NE end of the island. A small harbor, lying at the SE end of the island, is used by fishing boats and yachts with local knowledge.

1.15 Raz de Sein (48°03'N., 4°47'W.) is the navigable channel lying between the E end of Chaussee de Sein and the dangers fronting Pointe du Raz. Vessels bound from the English Channel or Brest to ports on the W coast of France may shorten their route by passing through this channel in favorable weather, when there is usually less sea than W of Chaussee de Sein.

As a general rule, vessels should always avoid Raz de Sein during bad weather and when the sea is against the tidal current. In these conditions, a steep breaking sea is caused. The channel should also be avoided in strong W winds while the tidal currents are running, as similar sea conditions will then prevail to the N or S of the passage.

A dangerous wreck, position doubtful, lies in the S approaches, about 2 miles SSW of Pointe du Raz.

Kornog-Braz (Cornoc-bras), a rocky patch, lies 1.6 miles SW of La Vieille Light and has a least depth of 3.6m. Masklougreiz, a rocky bank, lies in the middle of the S approaches, 0.8 mile E of Kornog-Braz. It has a least depth of 7.4m and breaks heavily in SW winds, especially during the S tidal current.

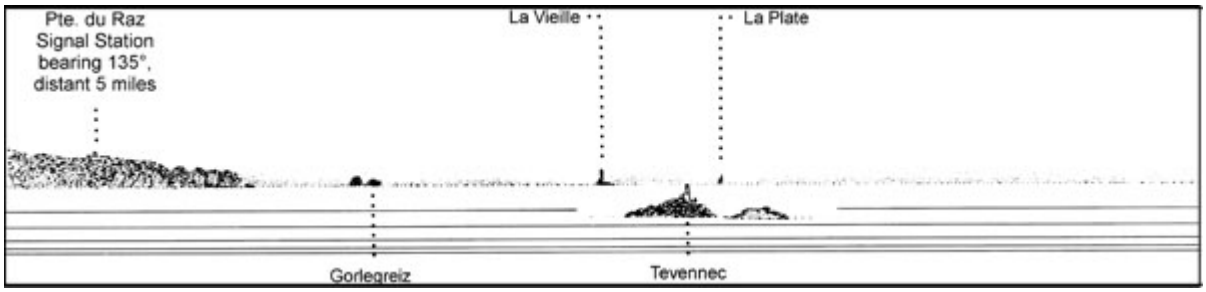
Vessels are advised to pass either E or W of Kornog-Braz and not over it as considerable difficulty in steering may occur in its immediate vicinity.

Levennec Island, in the N approaches, may be passed on either side.

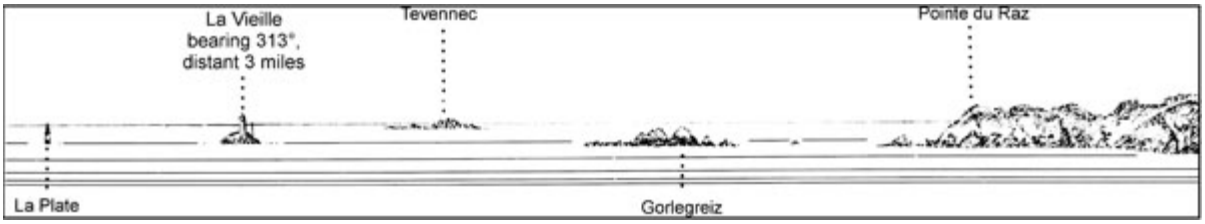
Tides—Currents.—The flood current flows N and attains a rate up to 6 knots in the middle of Raz de Sein. The ebb current flows S through the channel and attains approximately the same rate. The N current begins at about 6 hours after HW Brest and the S current begins about 1 hour before HW Brest.

Eddies are formed with both the flood and ebb currents near La Vieille and may extend up to 0.5 mile N and S of this rock. During the flood current, eddies may also occur N of Levennec Island.

Regulations.—Special regulations and restrictions apply to vessels intending to navigate this channel. See regulations for the approaches to Ile d'Ouessant in Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.



Raz de Sein from N



Raz de Sein from SE

L'Iroise to Pointe de Penmarc'h

1.16 Pointe de Feunteun-Aod (48°02'N., 4°42'W.), a small headland, is located 2 miles ESE of Pointe du Raz. A conspicuous water tower stands 1 mile NE of this point. Shoal water, reefs, and rocks front the point and extend offshore up to about 1.5 miles W and S. In addition, a dangerous wreck lies 0.9 mile W of the point.

Roche Moulleg, with a least depth of 5.1m, lies 1.4 miles WSW of the point. An-Hinkinou (Ninkinou), a rocky patch with a least depth of 3.6m, lies 1.5 miles SSE of the point. Basses Piriou, with a least depth of 6.8m, lies 1.1 miles ESE of An-Hinkinou. These dangers lie along the seaward edge of the shoal water and vessels approaching Raz de Sein from the SE should take care to clear them.

Pointe de Plogoff, round and fringed by reef, rises from the sea in a broad mass, 1.9 miles ESE of Pointe de Feunteun-Aod. It can easily be identified by the conspicuous chapel of Notre Dame de Bon Voyage which stands near its summit. A conspicuous hotel stands at the head of Anse du Loc'h, a small and shallow bay, entered 0.6 mile E of Pointe de Plogoff.

Pointe de Lervily (48°00'N., 4°34'W.), low and fronted by reefs, is located 3.6 miles SE of Pointe de Plogoff. A light is shown from a prominent tower, 10m high, standing on this point.

Pointe de Lervily Light

Baie d'Audierne is formed by a long and fairly smooth bight which extends between Pointe de Lervily and Pointe de la Torche, 13 miles SE.

Port d'Audierne (48°01'N., 4°32'W.), a small fishing port, is entered close NE of Pointe de Lervily, inside the mouth of the Riviere Le Goyen. An inner harbor, lying within the river, dries and an outer harbor, lying outside and close W of the river mouth, is protected by a breakwater. An entrance channel is dredged to a depth of 1m. La Gamelle, a rocky shoal, lies 1 mile S of the river entrance and is marked by buoys. This shoal dries and several stranded wrecks lie on it. A light, with sectors indicating the approach, is shown from a tower, 15m high, standing on the W side of the river. The harbor is used by fishing vessels and yachts. Local knowledge is recommended as depths in the approach and entrance are subject to frequent changes. Vessels can obtain anchorage, in depths of 3 to 6m, off the breakwater.

Porz Poulhan, a small haven, is located 4 miles ESE of Pointe de Lervily and is protected by breakwaters. It is used by small craft and a light is shown from the W side of the entrance.

A dangerous wreck, position doubtful, lies about 2 miles offshore, 3 miles S of Porz Poulhan.

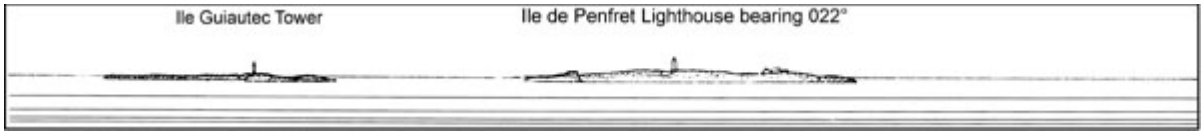
Pointe de la Torche (47°50'N., 4°21'W.) is located at the S end of Baie d'Audierne. The three belfries of Notre Dame de Tronoen stand 1.5 miles NE of the point and are conspicuous from the S part of the bay.

Anse de la Torche, a small foul bay, lies between Pointe de la Torche and Porz-Carn, 0.5 mile SW.

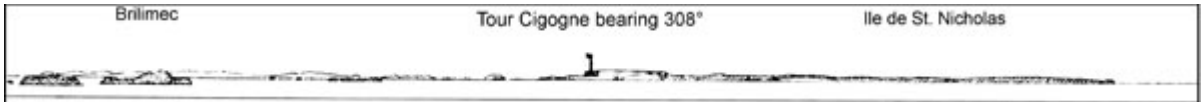
Caution.—A submarine cable extends seaward from a point on the shore in the vicinity of Anse de la Torche.

A restricted area, the limits of which are shown on the chart, lies in the vicinity of Anse de la Torche and extends 3 miles seaward; anchoring, dredging, and trawling are prohibited within this area.

1.17 St. Guenole (47°49'N., 4°23'W.), a small fishing port, lies within a bight fronted by reefs, 1.5 miles SSW of Anse de la Torche. The harbor is protected by a breakwater and entered through a narrow and tortuous channel which leads between the reefs. There are depths of 2 to 2.5m in the entrance channel and 2.5 to 3m alongside the quay which is used by fishing vessels and yachts. The entrance channel is indicated by beacons and lighted ranges, but local knowledge is recommended.



Iles de Glenan from SSW



Iles de Glenan from SE

Pointe de Penmarc'h (47°48'N., 4°22'W.), low and fronted by foul ground, is located close S of St. Guenole. Eckmuhl Light is shown from a conspicuous tower, 65m high, standing on the point. A prominent disused lighthouse and a coast guard signal station stand close SW of the light. A small detached breakwater lies close off the point.

The area in the vicinity of Pointe de Penmarc'h affords no shelter in strong S winds and during such times, vessels should remain well offshore as a heavy swell may be preferable to the breaking seas which occur closer to the land.

Roches de Penmarc'h is an extensive group of reefs, shoals, and rocks which fronts Pointe de Penmarc'h and extends up to 2.5 miles offshore. Even in good weather, large vessels are advised to remain at least 5 miles off this part of the coast.

Menhir, a reef partly above-water, lies at the W extremity of the group, 1 mile W of the point. A light is shown from a prominent tower, 21m high, standing on this reef.

Les Etocs, a large group of broken rocks up to 9m high, lies near the middle of Roches de Penmarc'h, 2 miles SE of the point. A prominent beacon stands at the E end of this group.

Several narrow and shallow channels lead through Roches de Penmarc'h but are only used by small craft with local knowledge.

Tides—Currents.—Tides off the point rise about 5.2m at springs and 4.1m at neaps.

The principal direction of the flood tidal current off Pointe de Penmarc'h is NE at a rate up to 2 knots. The flood current divides at the point, one branch setting E towards Iles de Glenan, and the other setting N towards Baie d'Audierne. The ebb tidal current follows a reverse pattern, setting approximately at the same rate and with the branch currents meeting W of the point.

Pointe de Penmarc'h to Isle de Groix

1.18 Le Guilvinec (47°48'N., 4°17'W.), a small fishing port, is located 3.7 miles E of Pointe de Penmarc'h. The harbor, which can be contacted on VHF channel 12, lies within the mouth of a river and is protected by breakwaters. It has dredged depths of 2.5 to 5m and a small fishing fleet is based here. A large prominent fish market building stands at the W side of the harbor.

Foul ground, reefs, and shoals extend seaward up to about 3 miles from the harbor. Baz Spinec, with a depth of 3.8m, lies 2.7 miles SSW of the harbor and is marked by a lighted buoy. Lost Moan, a large drying reef, lies 0.5 mile SE of the harbor; a light is shown from a tower, 13m high, standing on it. Foul ground extends up to 2.5 miles S and SE from this reef. Men Corn, a shoal with a depth of 3.8m, lies 2.5 miles SSE of the harbor, at the outer edge of the foul ground. A wreck, with a depth of 13m, lies 2.2 miles SE of Men Corn.

Approach channels, indicated by ranges, lead from SW and S through the reefs and shoals to an entrance channel, but it is difficult to enter with strong winds from between W and WSW. Local knowledge is recommended.

Lesconil, a small drying harbor, lies 6.5 miles E of Pointe de Penmarc'h and is protected by breakwaters. It is used by fishing boats and yachts with local knowledge. Karreg Greiz, a shoal with a depth of 4.1m, lies 1.8 miles SSE of the harbor entrance and is marked by a lighted buoy. A conspicuous water tower stands at Pont-l'Abbe, 5 miles N of Lesconil.

Iles de Glenan

1.19 Iles de Glenan (47°42'N., 4°00'W.) are a large group of islands, islets, and reefs which lie on an extensive bank, surrounded by shoal water, 16 miles ESE of Pointe de Penmarc'h.

Ile de Penfret (47°43'N., 3°57'W.) lies near the E extremity of Iles de Glenan and is prominent. This island is the largest of the group and an extensive sailing school is situated on it. A light is shown from a conspicuous tower, 24m high, standing at the N end of the island and a prominent disused signal station stands on the S end.

Ile de Penfret Light

A conspicuous fort, with a blacktopped lookout tower, stands on Ile Guiautec, 1.7 miles W of Ile de Penfret. A prominent factory chimney, 21m high, stands on Ile du Loc'h, 1.7 miles WSW of Ile de Penfret. A prominent disused light, 15m high, stands on Le Huic, to the NW.

La Jument, a rock awash, lies on a bank about 4 miles SW of Ile de Penfret and is marked by a lighted buoy, moored 1 mile S. This rock, fringed by foul ground, is the S danger of Iles de Glenan and vessels are cautioned not to pass N of the lighted buoy.

Les Laouennou, a shoal, lies 3.5 miles SSE of Ile de Penfret and is marked by a buoy, moored close SE. It is the SE danger of Iles de Glenan. Basse Perennes, a shoal with a depth of 6m, lies 6 miles WSW of Ile de Penfret and is marked by a lighted buoy, moored close W. Numerous other rocks and shoals lie within these dangers.

Several narrow channels lead between the islands and shoals of Iles de Glenan, but they are only used by small vessels with local knowledge.

Plateau de la Basse Jaune (47°43'N., 3°51'W.), an extensive rocky bank, lies centered about 4 miles E of Ile de Penfret. Basse Jaune, a rock which dries 0.6m, lies 4.7 miles E of Ile de Penfret. It forms the E extremity of the bank and is marked by a lighted buoy, moored close E.

Karek Corn Loc'h, a shoal patch with a depth of 6.8m, lies 1.2 miles W of Basse Jaune. It forms the SW side of the bank and is marked by a buoy moored close SW.

Basse Doun, a small bank, lies 3.2 miles E of the E side of Plateau de la Jaune and has a least depth of 14.6m.

Ile aux Moutons (47°47'N., 4°02'W.), a small rocky island, lies on a plateau of shoal water and drying reefs, 4.5 miles NW of Ile de Penfret. A light is shown from a tower dwelling, 17m high, standing on this island.

Ile aux Moutons Light

Basse Rouge, a small drying reef, lies 1.7 miles WSW of Ile aux Moutons. It forms the SW edge of the plateau and is marked by a lighted buoy, moored close SW.

Les Pourceaux, a detached reef which dries in places, lies 1.2 miles SE of Ile aux Moutons. It is marked by a lighted buoy, moored close NW, and a beacon, standing at its SE side. Navigable channels lead both N and S of this reef.

Pointe de Penmarc'h to Isle de Groix (continued)

1.20 Anse de Benodet (47°51'N., 4°07'W.) is entered between Pointe St. Oual, located 2 miles ENE of Lesconil, and Pointe de Mousterlin, 6 miles ENE. The shores of the bay are low but they are backed by wooded dunes over which several houses and belfries can be identified.

The approaches to the bay are encumbered by numerous rocky patches and reefs which extend NW from Ile aux Moutons. Roches de Mousterlin, with depths of less than 0.9m, extends 1.7 miles S of Pointe de Mousterlin and is marked by a lighted buoy, moored close S.

The bay can be entered through three channels which lead between these dangers. Chenal de L'Ouest and Grand Chenal are narrow channels which lead N into the bay and have least depths of 2.2m and 5.1m, respectively. Vessels using these channels are advised to have local knowledge.

Passage de l'Est leads NW into the bay and has a least depth of 6.1m. It is the widest entrance channel and the dangers lying adjacent to the fairway are well marked.

Loctudy (47°50'N., 4°10'W.), a small harbor, is located at the W side of the bay. It lies on the S side of the mouth of the Riviere de Pont l'Abbe and is used by pleasure craft and fishing vessels. There are depths of 2 to 4m alongside the quays. Vessels with drafts up to 5m can enter at springs; vessels with drafts up to 3.8m at neaps. A yacht marina is situated at Ile Tudy in the entrance of the river. Local knowledge is recommended and pilots are available at Concarneau (47°52'N., 3°55'W.). The harbor monitors VHF channel 12.

Benodet (47°52'N., 4°07'W.), a small port, lies within the mouth of the Riviere Odet, at the N end of Anse de Benodet. There are several marinas in the vicinity; the harbor has extensive facilities for yachts and pleasure craft. There is a small quay, which dries, and mooring buoys in the river which can handle coastal vessels up to 3,000 dwt. The approach channel and entrance fairway, with depths of 4m, are indicated by lighted ranges and lead between the drying reefs which front the river mouth. Local knowledge is recommended as the tidal currents in the fairway can attain rates up to 2.8 knots. Pilotage is compulsory for vessels over 50m in length and may be obtained from Concarneau (47°52'N., 3°55'W.). Vessels should send an ETA 18 hours in advance and advise of any changes immediately. The pilot boards in position 47°48.8'N, 4°00.1'W (2.5 miles NNE of Ile aux Moutons Light) or 1 mile S of Les Verres Beacon on the entrance leading line.

Vessels may anchor, in depths of 13 to 15m, sand and rock, within the outer channels in Anse de Benodet.

1.21 Baie de la Foret (47°52'N., 3°53'W.) is entered between Beg Meil, located 2.8 miles E of Pointe de Mousterlin, and Pointe de Cabellou, 2.3 miles E. Beg Meil, the W entrance point of the bay, is a low sandy point on which stands a conspicuous signal station with a radio mast. A prominent large white hotel stands 0.2 mile W of the signal station.

A conspicuous water tower and a factory chimney stand 2.5 miles NNE of Point de Cabellou. The belfry of the church at Beuzec, at the NE side of the bay, is also conspicuous and can be seen above the trees.

An extensive yacht marina is situated at Port la Foret, in the NW part of the bay.

The shores and entrance points of the bay are fronted by extensive reefs, shoals, and foul ground which are marked at their outer sides by lighted buoys and beacons.

1.22 Concarneau (47°52'N., 3°55'W.) (World Port Index No. 36620), a small port, is located on the E side of Baie de la Foret, at the mouth of the River Moros.

Tides—Currents.—Tides rise about 4.9m at springs and 3.8m at neaps. The tidal currents in the bay attain rates up to 1.5 knots at springs, but are greatly affected by winds.

Depths—Limitations.—The port consists of an outer harbor, which dries, and an inner harbor, which has dredged depths of 3 to 5m. The entrance fairway, 100m wide, leads over a bar which has a depth of 5.5m. Within the harbor, a channel, which has a dredged depth of 3m over a minimum width of 35m, leads to the inner harbor. A marina, used by pleasure craft and yachts, is situated in the outer harbor. The inner harbor has facilities for fishing vessels and coasters. Vessels up to 105m in length have been accommodated with drafts up to 6.2m at springs and up to 5m at neaps.

Aspect.—The W approach channel leads NE to join the E approach channel, about 4 miles SW of the harbor entrance. It passes between Ile aux Moutons and Les Pourceaux. A secondary channel passes S of Les Pourceaux and, although wider and deeper than the one passing N, is not well marked.

The E approach channel leads NNW and NW to a position E of Ile aux Moutons. It passes E and N of Plateau de la Basse

Jaune and NE of Ile de Penfret. The channel then leads NE to the harbor entrance and is indicated by a lighted range. A conspicuous tower building rises from a large block of flats standing on the W side of the river.

Pilotage.—Pilotage is compulsory for vessels of 50m and over in length and all vessels carrying hydrocarbons, gas, or dangerous cargo. However, all vessels without local knowledge are advised to use the services of a pilot.

Vessels should send a request for pilot and ETA message at least 18 hours in advance through Brest-Le Conquet (FFU). Pilots may be contacted on VHF channel 12 or 16 and will usually board about 1 mile SSW of the Le Cochon beacon tower on the entrance leading line. The station also provides pilots for Loctudy and Benodet.

Regulations.—Mandatory Access Channels lie in the E and W approaches to Concarneau and may best be seen on the chart. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into these channels and maintain a listening watch on VHF channel 16.

All other vessels should maintain a listening watch on VHF channel 16 when approaching the port. All commercial vessels should also obtain permission to enter the harbor in order to ensure that a berth is available.

Anchorage.—Good anchorage can be taken, in depths of 13 to 16m, sand and mud, in the outer part of the bay, but local knowledge is recommended.

1.23 Pointe de Trevignon (47°47'N., 3°51'W.), barren and rocky, is located 5.3 miles SE of Concarneau. A light is shown from a tower, 8m high, standing on the point. This light is obscured on some bearings to the S and SE by Chateau de Trevignon, which stands near the extremity of the point. Several prominent white houses stand on the SE side of the point. A small boat harbor, protected by a breakwater, lies on the NW side of the point.

Pointe de Travignon Light

Numerous dangers extend up to 1.5 miles W and 2 miles SSE of the point. Men an Treas, a drying rock, is located 2 miles SE of the point. It lies at the outer edge of the dangers and is marked by a buoy, moored close SW. Le Dragon, another dying rock, is located 1.5 miles W of the point. It lies at the outer edge of the dangers and is marked by a lighted beacon.

Pointe de Raguenez, located 2.2 miles E of Pointe de Trevignon, is bordered by a reef on which Ile de Raguenez stands. Foul ground extends up to about 0.2 mile SE of this islet and is marked by a beacon.

Ile Verte (47°46'N., 3°48'W.), located 1 mile S of Pointe de Raguenez, is covered with grass. It is fringed by foul ground and marked by a beacon. A dangerous wreck is reported to lie 1.2 miles S of this islet.

Pointe de Beg-ar-Vechen (47°48'N., 3°44'W.), marked by a light, is located 2.5 miles ENE of Pointe de Raguenez. Port Manec'h, a small boat harbor, lies close N of the point at the W side of the entrance to a river.

The Riviere L'Aven is the W branch of the river; the Riviere de Belon is the E branch. Their entrances are fronted by bars which dry 0.9m, but can be crossed at HW by small vessels with local knowledge.

Small vessels with local knowledge can also anchor, sheltered from all N winds, off Pointe Beg-ar-Vechen, in depths of 5 to 10m, sand. However, this anchorage is unsafe in any S wind or swell.

The approaches to the river are encumbered with isolated shoal patches, reefs, and foul ground. Les Verres, a drying reef, lies on a small bank, surrounded by shoal water, 1.7 miles SE of Pointe Beg-ar-Vechen. It is located at the SE edge of the dangers and is marked by a ruined beacon. A narrow passage used by small craft with local knowledge leads between this reef and the coast. Ar Gazeg, a shoal, with a least depth of 4.3m, lies at the SW edge of the dangers, 2.2 miles SSW of Pointe Beg-ar-Vechen.

Caution.—A foul area lies about 1 mile SSW of Pointe de Beg-ar-Vechen.

1.24 Pointe de Beg-Morg (47°47'N., 3°40'W.), fairly steep, is located 3 miles SE of Pointe de Beg-ar-Vechen and fronted by a reef. Foul ground extends up to 0.3 mile SE of the point and is marked by a buoy.

A dangerous wreck, existence doubtful, is reported to lie about 3 miles S of Pointe de Beg-Morg.

Port de Brigneau, a small harbor which dries, lies at the entrance to a river, 0.5 mile NE of Pointe de Beg-Morg. It is protected by a breakwater and used by fishing vessels and pleasure craft. The approaches are indicated by a sector light and a buoy, moored 0.6 mile SE of Pointe de Beg-Morg. This outer area is reported to be dangerous in SE winds or swell.

Port de Merrien, a small haven, lies 0.7 mile E of Port de Brigneau in the lower reach of an entrance to the River Merrien. It is sheltered by rocky ledges which extend S from each entrance point and are marked by buoys. This shallow haven dries and is used by fishing boats and yachts.

Port de Doelan, a small harbor which dries, lies 1.8 miles ESE of Port de Merrien at the entrance to a river. It is partly sheltered by a mole which extends from the W side of the entrance. The harbor is used by fishing boats and yachts and can be approached via a channel which is indicated by a lighted range.

Anse du Pouldu (47°45'N., 3°32'W.) is located SE of Port de Doelan and affords good anchorage sheltered from N and E

winds. The bottom is mostly sand and mud, except in the S part, where it becomes rocky and shoal. However, with S and W winds, this bay becomes dangerous.

The mouth of the Riviere de Quimperle (La Laita) lies at the head of the bay and several extensive yacht marinas are situated within the river.

Le Fort Bloque stands at the SE side of the bay, 5 miles SE of Port de Doelan. Grand Cochon, a drying reef, is located 1.2 miles SW of the fort. It lies near the outer end of a group of shoals, rocks, and reefs which extend seaward at the SE side of Anse du Pouldu. The Grand Cochon and nearby dangers are covered by the green sector of the Doelan light.

Pointe de Talut (47°42'N., 3°27'W.), a low point, is located 5.5 miles SE of the entrance to the Riviere de Quimperle. The ruins of a fort and a stone pillar stand on this point. A light is shown from a tower, 8m high, standing on Pointe de Kerroc'h, 0.5 mile WNW of Pointe de Talut.

Anse de Stole, a small bay, lies 1 mile ENE of Pointe de Talut. It is sheltered from the NE and NW and is used by small craft and yachts. The approaches to the bay are encumbered by several shoals. Les Trois Pierres, with a least depth of 1.2m, lies 0.9 mile SE of Pointe de Talut, at the outer edge of these dangers.

Caution.—An outfall pipeline extends 1.3 miles SW from Pointe de Kerroc'h. A restricted area, within which anchoring and fishing are prohibited, lies in the vicinity of this pipeline and may best be seen on the chart.

A dumping ground area, the limits of which are shown on the chart, lies in outer part of Anse du Pouldu.

Ile de Groix

1.25 Ile de Groix (47°38'N., 3°27'W.) lies in the approaches to Lorient and is separated from the mainland by Coureau de Groix, a deep and navigable channel nearly 3 miles wide. The island is 40m high and generally flat-topped with peaked cliffs along its coasts. Its S shore is exposed to heavy seas and has no safe harbors.

Pen Men (47°39'N., 3°30'W.), the NW extremity of the island, is fringed with drying reefs. A light is shown from a prominent tower, 28m high, standing 0.3 mile SE of the point.

Basse de Groix, a shoal with a least depth of 12m, lies 2.3 miles W of Pen Men. During strong winds from seaward, heavy seas are usually formed in its vicinity.

Pointe Beg Melen, with a conspicuous signal station and radio mast standing on it, is located 0.5 mile E of Pen Men. Pointe du Grognon is located 0.7 mile E of Pointe Beg Melen and an old fort stands on it.

Port Tudy (47°39'N., 3°27'W.), a small harbor, lies 1.6 miles ESE of Pointe du Grognon and is entered between two moles. It has depths of 2 to 3m and is used by ferries, yachts, and fishing vessels with local knowledge.

Port Lay, a small drying boat harbor, is situated 0.5 mile W of Port Tudy.

Pointe du Spernec, a flat-shaped headland, is located 0.4 mile E of Port Tudy and bordered by a reef. Foul ground extends up to 0.4 mile from the point and is marked by a buoy.

Basse Melite, a drying patch, is located 0.5 mile ENE of Pointe de Spernec. It lies at the outer edge of foul ground and is marked by a buoy, moored close N.

Pointe de la Croix Light

Pointe de la Croix, the E extremity of Ile de Groix, is located 1.4 miles ESE of Port Tudy. A light is shown from a tower standing on the point and a fort stands near it.

Pointe des Chats (47°37'N., 3°25'W.), the SE extremity of the island, is located 1 mile S of Pointe de la Croix. A light is shown from a tower with a dwelling, 15m high, standing on this low point.

Pointe des Chats Light

Shoal depths of 7.3m and less and several wrecks lie in an area which extends up to 1.5 miles E of the E shore of the island.

A group of drying rocks extend up to 0.9 mile SSE of Pointe des Chats and are marked by a beacon. Basse des Chats, a rocky shoal, is located 1.7 miles SE of the same point and has a least depth of 3.6m. It lies at the outer edge of the dangers in this area including a dangerous wreck and is marked by a lighted buoy, moored close SE.

Basse du Guihel, consisting of two rocky heads with depths of 8.2m, lies about 4 miles E of Pointe des Chats and has been reported to break in a heavy sea. A number of wrecks lying E of the island in this vicinity may best be seen on the chart.

Locmaria (Loc Maria), a small drying harbor, lies within a bay, 0.7 mile WNW of Pointe des Chats. It is open to the S and entered between reefs which extend S from both sides of the bay. This harbor is used by fishing boats and yachts with local knowledge.

Pointe de l'Enfer, the S extremity of Ile de Groix, is located 1.7 miles W of Pointe des Chats. It is generally sloping and fronted by shoal water and rocks. A conspicuous water tower stands near the middle of the island, 0.7 mile N of the point.

Pointe St. Nicolas, with a small inlet on its N side, is located 1.1 miles WNW of Pointe de l'Enfer and a prominent beacon stands 0.5 mile NW of it. Another beacon stands at Kerigant, 0.8 mile E of the point.

Caution.—Explosives dumping ground areas, the limits of which are shown on the chart, lie 1.3 miles NW and 2 miles S of Pen Men and 1.3 miles E of Pointe de la Croix.

A restricted area, the limits of which are shown on the chart, extends between the N shore of Ile de Groix and the mainland, E of Pointe du Talut; anchoring and fishing are prohibited within this area due to the existence of cables.

Numerous wrecks lie in the vicinity of Ile de Groix and may best be seen on the chart.

Vessels proceeding at high speed, on several measured distance courses, may be encountered in the waters between Iles de Glenan and Ile de Groix.

Lorient (47°44'N., 3°22'W.)

World Port Index No. 36680

1.26 The port is formed by the junction of the Riviere Le Blavet and the Riviere Le Scorff. Its main facilities consist of a commercial harbor at Port de Kergroise and Port Militaire, a naval establishment, which occupies both sides of the Riviere Le Scorff. In addition, a submarine base is situated on the N bank of the Riviere Le Ter, close W of the commercial harbor and there are extensive moorings for fishing vessels and yachts.

Port of Lorient Home Page

http://www.morbihan.cci.fr/port

Winds—Weather.—In general, W winds are prevalent throughout the year and reach their highest incidence in June and July. Winds from the NW are generally more common than SW, but the latter sometimes brings fog. Winds from the NE usually occur most often in spring and fall. Gales occur mostly in December.

Temperatures average between -1C° in January and 27C° in July. Ice is usually not a problem.

Fog occurs mostly in the winter, when it averages about 4 days a month; this is generally of the radiation type. Sea fog occurs mostly between March and October with poor visibility of 5 miles or less, reaching up to 30 per cent of observations.

Tides—Currents.—Tides rise about 5m at springs and 3.8m at neaps.

The tidal currents at springs may attain rates up to 3.8 knots in the entrance channel, between La Jument and the Citadel. Floods in the upper part of the rivers may cause the outgoing current to run continuously on the surface, even in the narrow channels. When this occurs, the incoming current runs as usual at varying depths below the surface.

Off Lorient, the normal rate of both the tidal currents is about 1 knot. However, with floods the ebb current may be increased up to about 2.5 knots.

Depths—Limitations.—Lorient should be approached via Coureau de Groix, which lies between Ile de Groix and the mainland. The approach, which passes E of Ile de Groix, is recommended only for vessels with local knowledge.

The entrance to the port lies between Pointe de Talut and Point de Graves, 3.8 miles ESE, and is encumbered by numerous reefs and shoals. Bank des Truies, with a least depth of 2.9m, lies 2.3 miles SE of Pointe du Talut and is marked by a lighted buoy, moored close W. Basse de Gavres, with a least depth of 4.8m, lies 0.8 mile SSE of Pointe de Gavres. Both shoals lie at the outer edge of the dangers located in the entrance.

The port may be entered through two channels divided by a group of drying reefs known as Les Truies and Les Errants. They join and form a single channel about position 0.7 mile NNW of Pointe de Gavres.

Passe du Sud is entered 0.6 mile SW of Pointe de Gavres. It has a least depth of 3.6m and is generally only used by fishing vessels and small coasters with local knowledge.

Passe de l'Ouest, the main entrance channel, is entered 1.8 miles SE of Pointe du Talut and has a least depth of 8.5m. It leads 2 miles NE and then continues for 2 miles in a N direction from the junction with Passe du Sud to the commercial port.

The Riviere Le Blavet is entered at the NE end of the harbor and leads to berths at Rohu and Hennebont, lying 1 mile and 6 miles, respectively, upriver. Coasters up to 80m in length, with drafts up to 4m at HWS and 3m at HWN, can reach Hennebont.

Generally, vessels up to 250m in length, with a maximum draft of 12.8m, can be accommodated in the port, depending on the tide and swell.

The commercial harbor is divided into the new and old sections of Kergroise and Keroman, respectively, with an oil wharf situated between them. The oil wharf is 112m long and has a depth of 9.2m alongside. Tankers up to 180m in length can be handled with drafts up to 9.7m at HWS and 9.3m at HWN.

The basins and quay at Kergroise, S of the oil berth, are only used by fishing vessels. A channel leads NW from close S of the entrance to these basins to a submarine base.

The main quay at Keroman, situated N of the oil berth, is 568m long and has depths of 8.3 to 10.2m alongside. A new quay, situated close N of the main quay, is 150m long and has a depth of 10m alongside. A ro-ro terminal, with a depth of 8m, is situated N of the new quay.

Extensive facilities for yachts are situated at a number of marinas within the port area and in a wet dock basin, maintained at a depth of 4m, entered N of the ro-ro terminal.

Port Militaire, the naval dockyard and base lie within a restricted area at the N end of the harbor.

There are also extensive repair facilities in the port; the largest drydock is 203m long and 36m wide, with a depth of 7m on the sill.

Aspect.—The reaches of the entrance channels are indicated by lighted ranges, which may best be seen on the chart; the fairway is marked by lighted buoys and beacons.

A conspicuous house and a church stand on the W side of the entrance at Larmour-Plage, 1.5 miles NW of Pointe de Gavres. A prominent lighted beacon (Les Trois Pierres), 18m high, stands 0.7 mile NW of Pointe de Gavres.

Les Trois Pierres Light

A conspicuous church spire stands on the E side of the entrance at Port Louis, 1.3 miles N of Pointe de Gavres. La Citadelle de Port Louis is situated adjacent to the E side of the channel, close WNW of this church spire. A conspicuous signal station stands on the NW buttress of La Citadelle de Port Louis.

Ile St. Michel is located 0.9 mile NNE of La Citadelle de Port Louis and a narrow and shallow secondary channel leads E of it.

A conspicuous silo stands close N of the oil berth and a conspicuous observation tower, which looks like a lighthouse, stands 0.5 mile N of the N end of the main commercial quay.

Pilotage.—Pilotage is compulsory for vessels and tows 60m or more in length, vessels over 150 grt not equipped with VHF, and all vessels carrying hydrocarbons or dangerous cargo.

Vessels should send their ETA at Coureau de Groix to the pilot station, through Brest-Le Conquet (FFU), 6 hours in advance or on departure from a previous port of call. Vessels expected to arrive between 0100 and 0800 are advised to send an ETA before 1800 the previous day.

Vessels should then contact the pilot station 1 hour before arrival on VHF channel 16; at night, vessels should contact the signal station at Port Louis.

Pilots generally board 3 miles ENE of Pen Men Light for Passe de l'Ouest or 2 miles S of Pointe de Gavres for Passe du Sud.

If the pilot vessel is not in position due to bad weather, inbound vessels should anchor 1.8 miles NE of Port Tudy (Ile de Groix) and establish contact with the pilot station 1 hour in advance on VHF channel 16 in order to receive instructions.

Regulations.—A Mandatory Access Channel lies W and N of Ile de Groix and leads through Coureau de Groix to the main entrance channel. It is 1 mile wide and may best be seen on the chart. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel and maintain a listening watch on VHF channel 16.

Other vessels intending to use the access channel should first establish a listening watch on VHF channel 16.

All inbound vessels should send an ETA message to the harbormaster 48 hours before arrival at the pilot boarding station and confirm their ETA 24 hours before arrival. The message should include vessel name, call sign, cargo, ETA, length, and draft.

In addition, all vessels carrying hydrocarbons or dangerous cargo in bulk should send a message to the harbormaster 6 hours before arrival at the pilot boarding station. This message must include the intended movement of the vessel (entry or departure), details of the cargo, draft, and any defects in maneuverability.

Deep-draft or large vessels, prior to navigating the narrow parts of the fairway, should contact the harbormaster, via VHF, and obtain confirmation of a passage without danger.

All vessels carrying more than 500 cubic meters of hydrocarbons or other dangerous cargo in bulk, prior to navigating the narrow parts of the fairway, should contact the harbormaster and request priority use of the passage. Normally, these vessels are authorized to enter the port from 2 hours before to 1 hour after HW, provided the wind is less than 33 knots and the visibility is more than 700m.

When navigating the entrance channel below La Citadelle de Port Louis, vessels should not exceed a speed of 13 knots. When above La Citadelle de Port Louis, vessels should not exceed a speed of 10 knots. In addition, vessels should reduce speed when passing other vessels moored alongside the main quays or anchored in the roadstead.

Vessels must not secure to naval mooring buoys, dolphins, or harbor service craft without permission.

Commercial vessels must not enter the restricted military areas of the port without prior special permission.

Warships over 130m in length must obtain prior permission from the Military Commandant before entering the port at night.

Anchorage.—Vessels waiting for a pilot or the tide are advised to anchor, in depths of 18 to 22m, sand, 1.8 miles NE of Port Tudy.

Caution.—The local authorities should be contacted for the latest information concerning permitted dimensions for entry. Vessels may be subject to a reduction of 0.5 to 1.5m in draft in order to allow for heavy swells.

The entrance fairways are very narrow in places and subject to silting; deep-draft or large vessels are advised to stay as close as possible to the range lines.

Submarines exercise in the vicinity of Ile de Groix and in the approaches to the port.

Submarines and associated escort vessels may be encountered in the approaches and entrance channels of the port.

Restricted areas, the limits of which are shown on the chart, lie within the military sections of the harbor.

Restricted areas, within which anchoring is prohibited, lie in the approaches to the port and may best be seen on the chart.

Restricted areas, within which anchoring and diving are prohibited, lie adjacent to the fairway channel and may best be seen on the chart.

Spoil ground and excavation areas, the limits of which are shown on the chart, lie adjacent to the fairway channel.

Several mooring buoys may be encountered within the harbor area situated adjacent to the fairways.

Ferries may be encountered within the harbor area.

Local magnetic anomalies exist in the upper reaches of the entrance channel; deflections of 15 to 20° have been reported.

When the visibility in the narrow parts of the entrance channel is less than 700m, vessels of about 100m or more are advised not to enter or depart.

Lorient to Presqu'ile de Quiberon

1.27 Pointe de Gavres (47°41'N., 3°22'W.), the E entrance point of Lorient Harbor, is low and bordered with foul ground. Several prominent buildings are situated amongst the woods near the end of this point, and the town of Ban Gavres stands 0.7 mile N of it.

The coast between Pointe de Gavres and Beg an Aud, 12.5 miles SE, consists of a long sandy bight backed by dunes. The belfry of the church standing at Plouhinec, 4.5 miles E of the Pointe de Gavres, is prominent; two conspicuous radio masts, 106m high, stand 1.5 miles S of it near the coast.

Caution.—Several exercise areas lie off the coast between the entrance to Lorient and the entrance to Baie de Quiberon, 30 miles SE. They are used by French naval vessels and anti-aircraft batteries for firing practice. On all occasions when navigation is restricted in these areas, the date and positions are published in the local Notice to Mariners and broadcast by radio. Generally, red flags are flown from signal stations situated along the shore and the seaward limits of the firing areas are patrolled by safety launches displaying red flags. At night, red rockets are fired from the signal station situated nearest the firing area and the patrolling craft carry a red light at the masthead and two white lights vertically disposed. The area along the coast to the NW of Etel is most hazardous due to small arms fire, which is controlled from onshore, and no patrolling of the seaward limit.

1.28 Etel (47°39'N., 3°12'W.), a small harbor, is situated on the E bank of the Riviere d'Etel, 1 mile above the entrance. It is used by yachts and fishing vessels and must be approached over a bar, which generally has a charted depth of 0.3m but which has been known to dry. Local knowledge is essential as the bar, being composed of sand, shifts in wind and sea. With onshore winds and an outgoing tidal current, the sea breaks right across the entrance and makes entry impossible.

The current in the river can reach 5 knots on the flood and 6 knots on the ebb.

A light is shown from a pylon structure standing at the NW side of the river mouth; a conspicuous water tower is situated on the E side of the river, about 0.5 mile inland. A prominent radar dome stands near the shore, 0.8 mile N of the river mouth. Vessels up to 4m draft can enter and berth alongside a small quay at HW springs. The harbor may be contacted by VHF and directions for entering may be given.

A restricted area, within which anchoring is prohibited, lies off the mouth of the river. It extends up to 0.5 mile seaward and may best be seen on the chart.

Note.—The Centre Regional Operationnel de Surveillance et du Sauvetage (CROSS) is situated at Etel (call sign: Crosse Etel) and provides a marine navigation, meteorological, and surveillance and information service for the area between Raz de Sein and the French/Spanish border. The center monitors VHF channel 16.

1.29 Beg an Aud (47°32'N., 3°10'W.), the NW extremity of Presqu'ile de Quiberon, is located 7 miles SSE of Etel. Islets, reefs, and shoals extend up to about 3 miles NNW of this point and up to 2.5 miles from the coast. The largest islet, Ile Teviec, lies 1.6 miles N of Beg an Aud and is surrounded by reefs and rocks.

Roches de Magoero and Basse Roheu extend up to about 2 miles S from a point on the shore, 2 miles NW of the mouth of the Riviere d'Etel. Roheu Beacon stands on a drying rock near the S extremity of these dangers.

Basse Leno, an isolated rocky patch, lies in the approaches to the Riviere d'Etel, about 1.5 miles SW of the entrance. It has a least depth of 3m and vessels should pass to the S of it.

Poulhaut, a rock 5m high, lies 1.4 miles S of the mouth of the Riviere d'Etel and is fringed with foul ground.

Les Pierres Noires, a drying reef, lies 3.1 miles SSW of the mouth of the Riviere d'Etel and 2.2 miles from the coast. It is the outer danger in this vicinity and is marked by a beacon.

Basse Ledan, a rock 6m high, An Aoter, a drying rock, and Roche Guille, a rock with a depth of 3.7m, lie 1.4 miles NNW, 1.1 miles NW, and 0.6 mile WNW, respectively of Beg an Aud. These rocks lie at the W side of the dangers which extend NW from the point.

Presqu'ile de Quiberon

1.30 Beg el Lan (47°28'N., 3°08'W.) is the SW extremity of Presqu'ile de Quiberon, a peninsula which extends S from the mainland. Chateau Turbault, a conspicuous structure with a small castellated tower, stands on the point. Reefs extend up to 0.4 mile S from the point and are marked by a buoy moored 0.3 mile S.

From the W, Presqu'ile de Quiberon can be identified by a prominent square tower standing on the crest of a hill, 1.2 miles SE of Beg an Aud and two conspicuous water towers standing 1 mile N of Beg el Lan. The town of Quiberon stands in the S part of the peninsula.

Port Maria (47°29'N., 3°08'W.), a small harbor, lies in the bight formed between Beg el Lan and Beg er Vil, 1 mile E. It is enclosed by breakwaters and used by fishing vessels and ferries. During strong winds from SW to SE, heavy breakers may make the entrance dangerous. The N part of the harbor dries; the S part of the harbor has depths of to 3 m. The approach, which is encumbered by shoals and reefs, is indicated by a lighted range. Baz an Treac'h, a rocky patch, lies at the outer edge of these dangers, 0.7 mile S of the harbor. It has a least depth of 1.1m and is marked by a buoy, moored close SSE.

A light is shown from a prominent tower, 25m high, standing at the N side of the harbor. The prominent church at Quiberon stands 0.3 mile NE of the light.

Off-lying danger.—Plateau des Birvideaux (47°29'N., 3°17'W.), an extensive rocky bank with a least depth of 2m, lies centered 6.5 miles W of Beg el Lan. A light is shown from a prominent tower, 36m high, standing on the shallowest part of this bank. In bad weather, the sea breaks heavily over it and vessels are advised to give this danger a wide berth.

Pointe de Conguel (47°28'N., 3°05'W.), the SE extremity of Presqu'ile de Quiberon, is located 2.1 miles ESE of Beg el Lan. This point is low, sandy, and fronted by reefs and foul ground.

Les Birvideaux Light

Chaussee de Teignouse (47°28'N., 3°12'W.) is an extensive area of rocks, reefs, and shoals extending seaward from Pointe de Conguel. These dangers lie up to 2.2 miles SE, 2.3 miles S, 1.7 miles SW, and 1.3 miles WSW of the point. They are marked by beacons, buoys, and lighted buoys which may be best seen on the chart.

La Teignouse Light

La Teignouse Light, a sector light, is shown from a prominent tower, 20m high, standing on a drying rock, 1.5 miles SE of Pointe de Conguel.

Coureau de Belle-Ile (47°24'N., 3°06'W.) is the passage which leads between Presqu'ile de Quiberon and Belle Ile.

Belle Ile

1.31 Belle Ile (47°20'N., 3°11'W.) is located with Pointe des Poulains, its NW extremity, lying 7 miles SW of Beg el Lan. It is fringed with rocks and reefs and appears long and flat. The W and S coasts are formed of steep cliffs, up to 50m high, which can be seen from a considerable distance.

A light is shown from a tower with a dwelling, 18m high, standing on Pointe des Poulains.

Sauzon, a small and shallow harbor, is situated 1.5 miles SE of Pointe des Poulains and protected by breakwaters. It has depths of 3m in the outer part and is used by yachts and fishing boats.

Pointe de Taillefer, the NE extremity of the island, is located 4 miles SE of Pointe des Poulains. A prominent coast guard station stands on this point.

Port du Palais (47°21'N., 3°09'W.), a small harbor, is located 1 mile S of Pointe de Taillefer. It is protected by breakwaters and sheltered from S and W winds. The harbor consists of an outer part, with an entrance 40m wide, a small wet dock, with an entrance 10m wide, and a marina. There is a depth of 2m inside the harbor; the entrance channel has a depth of 2.9m. The harbor is used by fishing vessels, ferries, and yachts. The Citadel, a conspicuous building, stands at the N side of the harbor.

Vessels can anchor 1.4 miles off the harbor in Rade du Palais. This roadstead provides an excellent holding ground of sand and mud, in depths of 9 to 18m.

Pointe de Kerdonis, the E extremity of the island, is located 5.3 miles SE of Pointe de Taillefer. A light is shown from a prominent tower with a dwelling, 14m high, standing on this point.

Port Goulphar (47°18'N., 3°14'W.), an inlet used by fishing boats, is located on the SW coast, 5 miles SSE of Pointe des Poulains.

Goulphar Light is shown from a conspicuous tower, 52m high, standing 0.5 mile N of the inlet.

Off-lying dangers.—Les Poulains, a ridge of drying rocks and shoals, extends up to 1 mile W and 0.4 mile N of Pointe des Poulains. It is marked by buoys and breaks heavily in bad weather. Two detached shoals, with depths of 10m, lie 1.7 miles WNW and 0.9 mile NW of the point.

Bancs de Taillefer, with a least depth of 8.3m, lies between 1.5 and 3 miles NE of Pointe de Taillefer.

Basse du Palais, a rocky head with a least depth of 8.4m, lies about 2 miles SE of Pointe de Taillefer and should be avoided by vessels intending to anchor in Rade du Palais.

Basse de la Rade, with a least depth of 7.2m, lies about 0.7 mile SE of Pointe de Kerdonis. Vessels rounding the point are advised to stay at least 1.5 miles offshore.

La Truie, an isolated shoal, lies 0.6 mile offshore, 1.7 miles SE of Port Goulphar. It has a least depth of 1.1m and is marked by a beacon.

Caution.—The SW side of Belle Ile is bold and rocky, with numerous indentations and coves. It is fully exposed to the W and S and swells roll heavily onto this shore, especially in the winter months. Anchorage is not recommended anywhere along this stretch of shore, except in summer months by small vessels with local knowledge. In addition, wavemeter buoys may be encountered along this stretch of coast.

Extensive unsurveyed areas, the limits of which may be seen on the chart, lie off the SW coast of the island.

A restricted area, within which fishing and anchoring are prohibited, lies in the vicinity of Port Goulphar. It extends up to 1.3 miles seaward and may best be seen on the chart.

A restricted area, the limits of which are shown on the chart, extends between the N shore of the island and Prequ'ile de Quiberon. Due to the existence of power cables, anchoring, fishing, dredging, and trawling are prohibited within this area.

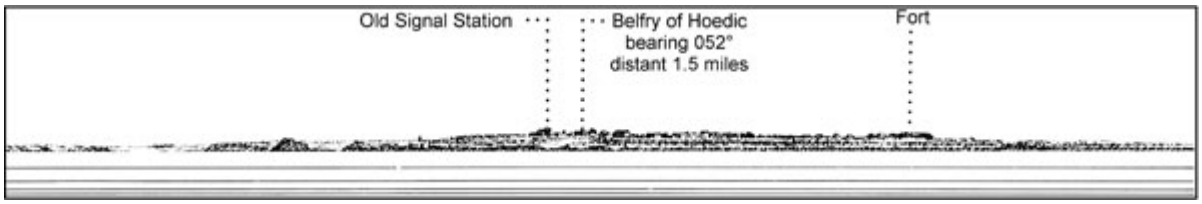
Baie de Quiberon

1.32 West approach.—Chaussee du Beniget (47°25'N., 3°15'W.) is a detached area of islets, rocks, reefs, and foul ground which lies in the SW approach to the bay and extends between 2.5 and 5 miles SE of Pointe du Conguel. Les Esclassiers, a group of drying rocks, lies at the NW end of this area and is marked by a beacon. Le Grand Coin, a wedge-shaped islet, 11m high, is located at the SE end of the area.

Passage de la Teignouse (47°26'N., 3°05'W.), available to ocean-going vessels, leads between the S end of Chaussee de Teignouse, previously described in paragraph 1.30, and the N end of Chaussee du Beniguet. The channel leading between the dangers is well marked by lighted buoys and beacons and has a least depth of 12m. Recommended tracks and ranges may best be seen on the chart. In the vicinity of this channel, the tides rise about 5.3m at springs and 4m at neaps. Generally, in the S part of the fairway, the flood current runs NE and the ebb current runs SW; both attain rates up to 3.7 knots.

Ile Houat (47°23'N., 2°58'W.), an irregular island 31m high, is located 6.5 miles SE of Pointe du Conguel and surrounded by foul ground. The belfry of the church standing in the village of Port St. Gildas, at the NE end of the island, is prominent. A small and shallow harbor, protected by a breakwater, fronts the village and is used by fishing boats. La Vieille, a rock 14m high, lies 0.7 mile NNE of the harbor, and formed by three conical blocks, is very conspicuous.

Le Rouleau, an above-water rock, lies close off the SW extremity of the island and is marked by a beacon. Numerous shoals extend up to 1 mile S and E of it. Bonen Bras, a drying rock, lies 0.3 mile off the NW extremity of the island and is marked by a beacon.



Ile Hoedic

Passage du Beniguet (47°24'N., 3°00'W.) leads between the SE end of Chaussee du Beniguet and the dangers lying NW of Ile Houat. Although the narrowest part of the channel is 270m wide and there is a least depth of 15.5m, this passage should only be used by small vessels with local knowledge as there are several shoals lying adjacent to the fairway and the tidal currents are very strong.

Chaussee de l'Ile aux Chevaux is an extensive chain of islets, rocks, and shoals which lies parallel to the SW side of Ile Houat. Ile aux Chevaux, an islet 15m high, is located near the middle of this chain, 1.8 miles S of the island. Basse Occidentale, a rocky patch, has a least depth of 5.8m. It lies 2.2 miles NW of Ile aux Chevaux and is the W danger in this vicinity.

1.33 Ile Hoedic (47°20'N., 2°52'W.), 22m high, is situated 3 miles SE of Ile Houat and surrounded by shoals and foul ground. A church, with a prominent steeple, stands in the village near the center of the island; a prominent disused signal station stands close N of it. The small boat harbors of L'Argol and La Croix are located on the N and S shores, respectively, of the island. Vessels can anchor, in a depth of 13m, about 1 mile NE of the island.

Les Grands Cardinaux, a group of reefs and rocks, extend about 2 miles SE of Ile Hoedic. A light is shown from a prominent tower, 27m high, standing on a rock near the outer edge of these dangers. This light generally marks the SE and seaward end of the chain of islands and dangers extending SE from Presqu'ile de Quiberon.

A dangerous wreck, position doubtful, is reported to lie about 5.5 miles NE of Les Grands Cardinaux Light.

Basses du Chariot, with a least depth of 0.9m, lies about 1 mile S of the SW extremity of Ile Hoedic. It is located at the outer edge of the dangers in this vicinity and is marked by a buoy, moored close S.

Vessels rounding Ile Hoedic are advised to pass at least 1.5 miles S of Les Grands Cardinaux Light and at least 1 mile E of it.

Passage des Soeurs, a narrow channel, leads E of Chaussee de l'Ile aux Chevaux and the dangers lying SE of Ile Houat and W of Ile Hoedic. It has a least known depth of 5.5m and is only recommended for small vessels with local knowledge.

Caution.—Restricted areas, the limits of which are shown on the chart, extend along the S side of Chaussee du Beniget, between Ile Houat and the SE end of Chaussee de la Teignouse, and from the NE side Ile Houat to the E side of Baie de Quiberon. Due to the existence of power cables, anchoring, fishing, dredging, and trawling are prohibited within these areas.

1.34 South approach.—Plateau du Four (47°17'N., 2°38'W.), a dangerous and extensive bank of drying rocks and shoals, lies on the E side of the S approach to Baie de Quiberon. A light is shown from a prominent tower, 27m high, standing on a rock near the N end of the bank.

Bonen du Four, a shoal with a least depth of 2.1m, lies at the NW extremity of the bank and is marked by a lighted buoy, moored 1 mile NW of the light.

Goue Vas, a shoal with a least depth of 2.2m, lies off the SE

end of the bank and is marked by a lighted buoy, 3 miles S of the light.

Banc de Guerande, with depths of 7.2 to 14m over most of its length, lies with its N part located 3.5 miles SW of Plateau du Four Light. This bank is marked near its SW extremity by a lighted buoy. During SW gales, seas have been reported to break across the entire bank and crossing it at such times may be dangerous.

Basse Capella, with a least depth of 6.7m, lies at the NW end of Banc de Guerande and is marked by a lighted buoy moored 5 miles SW of Plateau du Four Light.

Passe de l'Est leads N between Les Grands Cardinaux and Basse Capella and then in a NW direction towards the bay.

Plateau de l'Artimon, with a least depth of 11m, is located with its shallowest part lying 2.7 miles NE of Ile Hoedic. A heavy sea exists over this bank in rough weather, but it usually does not break. Vessels are advised not to anchor on this bank as the rocky nature of the bottom would probably foul the anchor.

Plateau de la Recherche, an extensive rocky bank with two main heads, is located with its W end lying 4.9 miles NNE of the NE extremity of Ile Hoedic. It extends ENE for 5 miles and has depths of 2 to 8m. Several wrecks lie in the vicinity of this bank and may best be seen on the chart. The W head, known as Roche de Locmariaquer, is marked by a lighted buoy; the E head, known as Roche de Sarzeau, is marked by a buoy.

An obstruction, with a depth of 13.7m, lies about 2.5 miles WNW of the W extremity of Plateau de la Recherche and is marked by a buoy.

Tides—Currents.—Tidal currents in the SE approach to Baie de Quiberon generally set NNE on the flood and SW on the ebb. They attain rates up to 2 knots on both tides with the current running continuously to the full rise or fall.

1.35 Baie de Quiberon (47°30'N., 3°00'W.) is entered between Pointe de Conquel and Pointe du Grand Mont, 9.5 miles ENE. It affords good sheltered anchorage, in depths of 9 to 18m, sand and mud.

The shore at the head of the bay is low and much indented by inlets and drying banks. At the sides, especially the E shore, the land is higher with numerous hills.

Banc de Quiberon is located with its S and shallowest part lying 1.7 miles E of Pointe de Conquel. It extends N for about 2 miles and has a least depth of 1.5m. The bank is marked at its S end by a lighted buoy and at its N end by a buoy.

Port Haliguen (47°29'N., 3°06'W.), a small harbor, lies 1.5 miles NE of Pointe de Conquel and is protected by breakwaters. It has general depths of 1.4 to 3.4m and is mostly used by yachts and fishing boats. Local knowledge is recommended as the approaches are encumbered by several shoals and shellfish beds that lie in the vicinity of the entrance. An airport is situated close S of the harbor.

Vessels may anchor, in depths of 3 to 11m, sand and mud, with good holding ground, E of Port Haliguen between Banc de Quiberon and the shore bank.

Beg Rohu (47°31'N., 3°07'W.), a small spur, lies 1.5 miles NNW of Port Haliguen and is bordered by reefs. A prominent fort stands on this point. Port d'Orange, a small drying boat harbor, lies close off the town of St. Pierre de Quiberon, 0.7 mile NNW of Beg Rohu.

The N part of the bay is encumbered with numerous obstructions, rocks, and shoals which extend up to about 1.5 miles from the shore. Most of this area is only available to small craft at HW. Several small boat harbors are situated at resorts along the shore.

Caution.—A wreck containing explosives lies about 1.2 miles NE of Beg Rohu. It is marked by a buoy; navigation in its vicinity is prohibited.

Numerous oyster beds are situated in the N part of the bay and are marked by orange buoys.

1.36 The **Riviere de Crac'h** (47°34'N., 3°01'W.) is entered at the NE side of Baie de Quiberon, 6.5 miles NNE of Pointe de Conquel. The entrance channel is indicated by a lighted range and leads over a bar with a charted depth of 1.5m. La Trinite-sur-Mer, a major center for yachts and local oyster boats, is situated on the W bank of the river, 2 miles above the mouth. Small vessels up to 50m in length and 3m draft can reach this harbor at HW. Local knowledge is recommended as the approaches are encumbered by numerous reefs and shoals.

Pointe du Grand Mont (47°30'N., 2°51'W.), the E entrance point of Baie de Quiberon, is formed of steep cliffs, 35m high. A prominent disused signal station stands on its extremity and the conspicuous square steeple of Abbaye de St. Gildas of Rhuys stands 0.5 mile E.

Plateau du Grand Mont, a shallow bank, extends up to 2.3 miles WSW of Pointe du Grand Mont. Basse de la Chimere, a shoal with a depth of 3m, lies at its outer extremity and is marked close SW by a buoy. Vessels without local knowledge should pass W of this buoy as numerous shoals lie scattered across the bank.

Morbihan (Golfe du Morbihan) (47°33'N., 2°55'W.), entered 4.1 mile NW of Pointe du Grand Mont, is an extensive basin into which the Riviere d'Auray, the Riviere de Vannes, and the Riviere de Navalo discharge. It is encumbered with islands, islets, and rocks, between which lie narrow passages. Several marinas are situated within the basin.

The main approach to Morbihan is from the S, passing W of Plateau du Grand Mont, and then through Grand Chenal, an entrance channel marked by buoys and beacons. This channel has a least depth of 5.4m, but local knowledge is required. Navigation within the basin requires caution as the tidal currents are very strong and unmarked oyster beds exist in many parts. The main channel within the basin leads NE for 9 miles to the city of Vannes.

Caution.—Firefighting aircraft operate occasionally in areas within the basin; they scoop up water to fight forest fires. Anchoring is prohibited in these areas and navigation may be prohibited without any previous warnings.

1.37 Port Navalo (47°33'N., 2°55'W.), a small drying harbor, lies within a bay on the E side of the entrance to Morbihan. It has a depth of 1m and is used by fishing vessels and ferry boats.

Port de Crouesty (47°32'N., 2°54'W.), an extensive yacht harbor, is entered through a dredged channel which leads ENE from the N end of Grand Chenal. It has depths of 2 to 3m within the basins and there is a least charted depth of 1.7m in the entrance.

Port de Vannes (47°39'N., 2°45'W.), a small harbor, lies at

the head of the Riviere de Vannes and consists of an outer basin and a wet dock. Tides rise about 3.4m at springs and 2.7m at neaps.

The wet dock has an entrance 10m wide and is used as a marina. Yachts with drafts up to 2.4m can be accommodated. The outer part of the harbor is used by ferries and small coasters. Vessels up to 700 dwt, 65m in length, and 4m draft can enter at HW.

La Vilaine

1.38 The estuary of La Vilaine lies at the NE end of a wide and unnamed bay entered between Pointe du Grand Mont and Pointe du Castelli, 14 mile ESE. Several small drying harbors lie along the shores of this wide bay but are frequented by only local small craft. The bay extends E to Barrage d'Arzal, a dam with a small lock.

Pointe de Saint Jacques (47°29'N., 2°48'W.), a low point, is located on the N side of the estuary, 2.5 miles ESE of Pointe du Grand Mont, and marked by a light. Le Bauzec, a rocky ledge, lies about 1.2 miles WSW of the point and is marked by a beacon. A narrow channel, used by small craft, passes to the N of this ledge. Plateau de St. Jacques, with depths of less than 5m, extends up to 1 mile S of the point.

Pointe de Penvins is located 5 miles E of Pointe de Saint Jacques, at the E side of the entrance to the Riviere de Penerf. A prominent chapel, which looks like a mosque, stands on this low point. Rade de Penerf, an open roadstead lying S of the point, provides good anchorage to ocean-going vessels, but is exposed to winds from seaward. The best berth, in a depth of 8.5m, good holding ground, lies about 1 mile SE of Pointe de Penvins.

Plateau des Mats, an extensive rocky shoal, extends E from the E side of the river mouth. It dries in places and the seaward edge is marked by buoys.

Pointe du Castelli (47°22'N., 2°34'W.) is fringed by reefs and rocks and should not be closely approached. A prominent coast guard station, with a radio mast, stands on the point. The small drying harbor of Piriac lies 0.7 mile NE of the point and affords shelter to small craft in S winds; however, in N winds, a heavy surf is formed off the entrance.

Plateau de Piriac, a rocky bank with numerous dangerous patches, extends up to 2 miles seaward from the vicinity of Pointe de Castelli and is marked by a lighted buoy.

A number of small boat harbors are situated along the shore to the N of Pointe de Castelli. However, numerous shoal patches and areas of foul ground lie off this section of the coast and only small craft with local knowledge should approach this part of the bay.

Ile Dumet (47°25'N., 2°37'W.), fringed by drying rocks, lies 3.5 miles NW of Pointe du Castelli. This low and barren island is a bird sanctuary. A light is shown from a structure, 6m high, standing on an old square fort near the E end of the island. Another old fort stands on the N extremity of the island.

Plateau de l'Ile Dumet, an extensive rocky area, extends up to 1.2 miles NE of the island. It has a least depth of 1.2m and is marked by a lighted buoy, moored at the E end.

Caution.—The channel lying between Plateau de Piriac and Ile Dumet should not be used by large vessels; it may be used by small vessels with local knowledge.

Several dangerous wrecks lie in the approaches to La Vilaine and may best be seen on the chart.

Mussel beds, marked by stakes, may be encountered in the waters off the shores of the bay, E of Ile Dumet.

1.39 La Vilaine (47°30'N., 2°30'W.) is generally approached between the E end of Plateau de la Recherche and Ile Dumet. It is entered between Pointe du Halguen and Pointe de Kervoyal, 2.2 miles WNW, and provides access to the small craft harbors of Roche Bernard and Redon, situated 8 miles and 28 miles, respectively, above the entrance. Canals of the extensive inland waterway system connect Redon with Saint Malo, Nantes, and Lorient.

The entrance channel leads over a broad bar and between extensive tidal flats. It was reported to have a least charted depth of 0.9m (1981). Local knowledge is required.

Within the river entrance, an isolated church stands at Penestin, 1 mile SE of Pointe du Halguen. It has a pointed spire and is very conspicuous.

Pointe de Penlan, located 2 miles E of Pointe Kervoyal, is marked by a lighthouse which stands on a cliff and is easy to identify.

Arzal Dam, with a lock, obstructs the river at Vielle Roche, 5 miles above the entrance. The lock is 85m long, 13m wide, and has a depth of 2m on the sill. The channel above the lock is generally maintained at a depth of 4.5m, but this depth may be reduced when flood water is released at the dam. The tides rise up to 5.5m at springs and 4.3m at neaps.

The yacht harbors of Port d'Arzal and Port de Camoel are situated close above the dam on the N and S banks, respectively.

Caution.—The depths in the estuary of La Vilaine are liable to change. The charted depths should not be relied on as considerable silting frequently takes place downstream of the dam.

In strong SW winds, the sea may break across the entrance channels.

Rade de Croisic

1.40 Rade du Croisic (47°20'N., 2°33'W.), an open roadstead, occupies the S part of a bay lying between Pointe du Castelli and Pointe du Croisic, 5 miles S. It affords good shelter from E winds, but is exposed completely to the W.

Pointe du Croisic (47°18'N., 2°33'W.), long and low, extends from a narrow isthmus occupied by the town of Le Croisic. A prominent church, hospital, and water tower stand in the town. The point is fringed by a reef and shoals extend up to 1 mile NW of it and are marked by a buoy.

Le Croisic, a small drying harbor, is situated on the N side of the point and is protected from the W by a long breakwater. It is entered by a dredged channel, which leads over a shallow bar, and is used by fishing boats and yachts. The approach fairway is indicated by lighted ranges, but local knowledge is recommended.

Caution.—An ODAS buoy is located in position 47°14.3'N, 2°47.4'W.

1.41 Piriac Tanker Terminal (47°21'N., 2°34'W.), formed by an offshore multi-point mooring berth, is situated at the seaward end of a submarine pipeline which extends 1.2 miles SW

from the S side of Pointe du Castelli. The outer end of the pipeline is marked by a buoy. A number of anchor buoys, anchors, and chains lie in an area with a radius of 500m from the buoy. The pipeline is reported (1996) not in use.

La Turballe, a small drying harbor, is situated 2.2 miles N of Le Croisic. It has a depth of 1.2m in the entrance and is also used by fishing boats and yachts. Local knowledge is recommended.

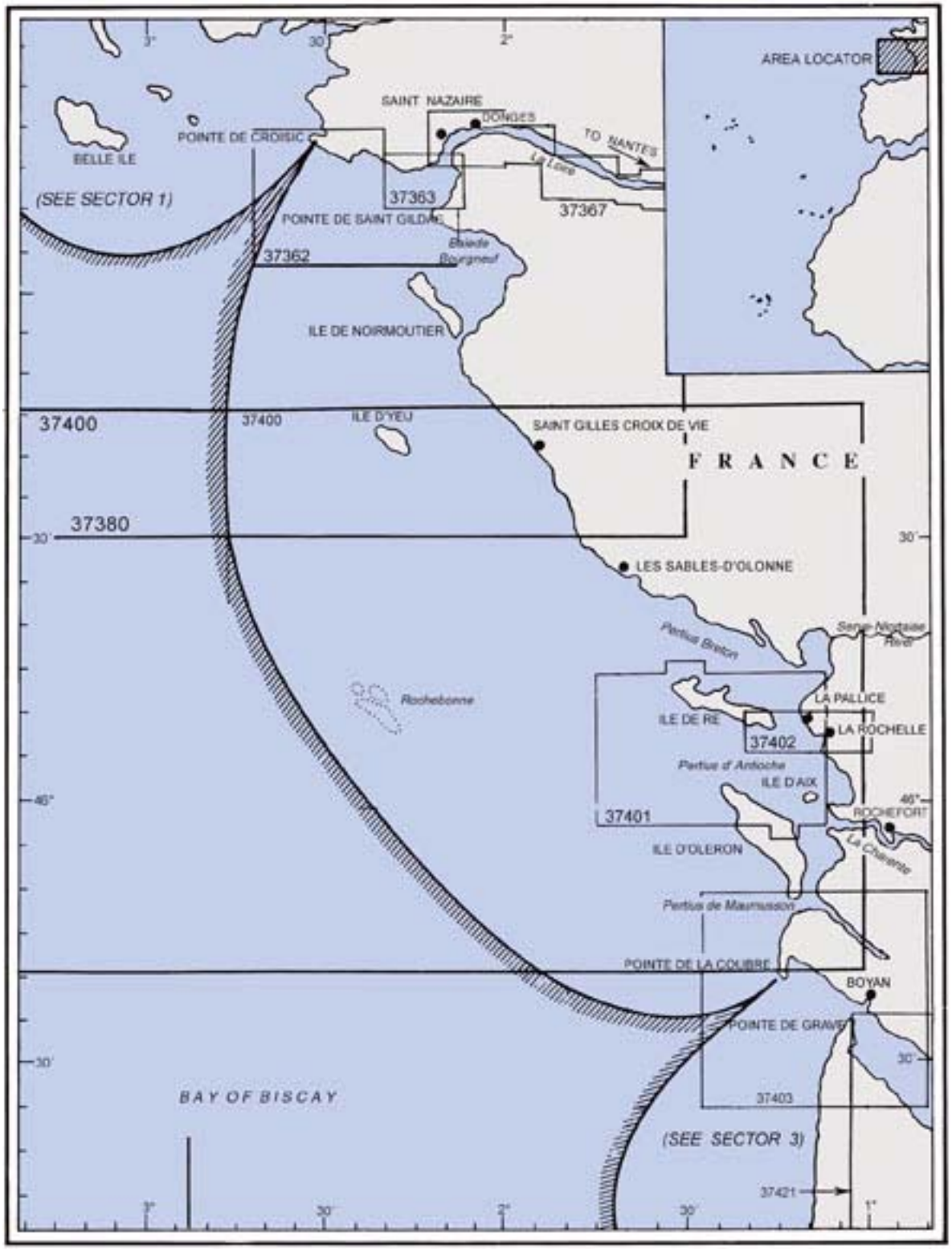
The terminal is used by military tankers up to 40,000 dwt. Two range beacons, standing on the shore near several oil tanks, indicate the direction of the pipeline at about 45m NW of it; the front beacon shows a sector light.

Pilots for the above oil berth should be requested from St. Nazaire for boarding at a prearranged time and place.

Large vessels generally approach the terminal berth by passing N of Plateau du Four.

Regulations.—A Mandatory Access Channel, which leads NE to the terminal, lies NW of Plateau du Four and may best be seen on the chart. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel and maintain a listening watch on VHF channel 16.

Other vessels intending to use the access channel should first establish a listening watch on VHF channel 16.



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

SECTOR **2** — CHART INFORMATION

SECTOR 2

FRANCE—THE BAY OF BISCAY—LA LOIRE TO POINTE DE LA COUBRE

Plan.—This sector describes the W coast of France from the Estuary of the La Loire, including St. Nazaire and Nantes, to Pointe de la Coubre, 110 miles SSE. The description is from the N to S, including the offshore islands and dangers.

La Loire Estuary

2.1 The Estuary of the La Loire comprises the area fronting the mainland between Pointe du Croisic and Ile du Pilier (47°03'N., 2°21'W.). It is roughly divided into two parts by Plateau de la Banche, a dangerous shoal area, and can be entered from the S by Chenal du Sud or from the N by Chenal du Nord; the latter is generally only used by small vessels with local knowledge.

2.2 North side.—Baie du Pouliguen (47°16'N., 2°23'W.), a shallow bay, lies on the N side of the estuary. It is entered between Pointe de Penchateau, located 5.6 miles ESE of Pointe du Croisic, and Pointe de Chemoulin, 5 miles ESE.

Basse Lovre, a rocky shoal, lies 0.7 mile off the mainland shore, 3.2 miles WNW of Pointe de Penchateau. It has a least depth of 1m and is marked by a buoy. A prominent church stands at Batz-sur-Mer, 2.7 miles WNW of Pointe de Penchateau; a conspicuous water tower stands at Kermoisan, 1 mile E of it.

La Baule, a large coastal resort, occupies the N shore of the bay. Le Pouliguen, a small harbor mainly used by yachts, is situated on the W side of the bay, 1 mile N of Pointe de Penchateau. It is entered through a channel marked by beacons and fronted by a bar which dries at LW. Pornichet, an extensive yacht marina, is situated on the E side of the bay, 2.4 miles WNW of Pointe de Chemoulin. It is protected by breakwaters and connected to the shore by a bridge, 250m long.

The bay is fronted by a chain of reefs and drying shoals which extend 5 miles ESE from Pointe de Penchateau. It may be entered by several narrow channels which lead through the reefs, but local knowledge is recommended.

Pointe de Chemoulin (47°14'N., 2°18'W.) is the NW entrance point of the La Loire. A conspicuous coast guard station stands on its extremity. A conspicuous television mast, 80m high, stands 2 miles NE of the point; a prominent water tower, 44m high, stands close S of it.

Le Grand Charpentier, a rocky reef, lies 1.5 miles SW of Pointe de Chemoulin at the outer edge of the dangers fronting Baie du Pouliguen. A light is shown from a conspicuous tower, 27m high, with a helicopter platform, standing on this reef.

2.3 South side.—Pointe de St. Gildas (47°08'N., 2°15'W.), fringed by reefs, is the SE entrance point of La Loire. A light is shown from a framework tower with a dwelling, 17m high, standing on the point.

Ile du Pilier (47°03'N., 2°22'W.) is located 7 miles SW of Pointe de St. Gildas. A light is shown from a conspicuous square tower, 34m high, standing in the N part of the island. A prominent disused light tower and a conspicuous disused signal station, consisting of a white house with a red roof, stand close to it.

Le Grand Charpentier Light

Les Chevaux, a group of rocky patches and shoals, extend up to 2.5 miles WNW of this island and are marked by a lighted buoy.

Caution.—Chaussee de Boeufs (46°56'N., 2°26'W.), a chain of reefs and shoals, extends up to about 8 miles SW of Ile du Pilier and is marked by buoys. This chain is reported to be very dangerous because of the tidal currents which set down on it and the general level of poor visibility found in this vicinity.

Plateau de la Banche, an extensive rocky bank, lies centered 10 miles NW of Ile du Pilier. It dries in places and is marked by buoys moored near the outer edges. A light is shown from a prominent tower, 30m high, standing in the SW part of the bank. This bank is reported to be especially dangerous in SW gales, when vessels may be driven on to it.

La Banche Light

2.4 Plateau de la Lambarde, a rocky shoal bank, lies centered 4 miles E of Plateau de la Banche Light. Parts of this shoal bank are awash at LW; it is marked by buoys.

Basse Michard, a rocky shoal with a least depth of 8.1m, lies

3.3 miles WNW of the N end of Plateau de la Banche. Basse de l'Astrolabe, an isolated rocky shoal with a least depth of 8.7m, lies 2.8 miles SSE of Basse Michard.

Banc de Guerande (47°11'N., 2°40'W.) is described with Baie de Quiberon in paragraph 1.34.

La Couronnee, an extensive drying reef, lies centered 2.6 miles WSW of Pointe de St. Gildas. A lighted buoy, equipped with a racon, is moored close NW of its NW extremity.

Caution.—Numerous wrecks, some dangerous, lie in the estuary and the approaches to the river and may best be seen on the chart.

Numerous fishing vessels may be encountered within the estuary and the approaches to the river.

Fishing, regulated dumping, and sand removal areas, the limits of which are shown on the chart, lie in the estuary and approaches to the river.

La Loire

2.5 La Loire, one of the principal rivers in France, is about 600 miles long, but is available to ocean-going vessels only as far as Nantes, 30 miles above the mouth. It is entered between Pointe de St. Gildas and Pointe de Chemoulin, about 6.5 miles NNW. The river then narrows to a width of about 1 mile abreast of Saint Nazaire, which lies on the N bank, about 5 miles above the entrance.

That section of the river lying between Saint Nazaire and Nantes is known as La Loire Maritime; the ports of Montoir, Donges, Paimboeuf, Cordemais, Basse-Indre, Haut-Indre, and Coueron stand along its banks.

Port du Boucau (St. Gildas), La Gravette, Port de Comberge, and Le Pointeau are small shallow harbors lying along the E bank of the river within 7 miles of Point de St. Gildas. They are protected by breakwaters and used by fishing boats and yachts.

Winds—Weather.—At Saint Nazaire, winds predominate from the SW and W for a good part of the year. Winds from the N are fairly common in the summer; gales occur frequently in the winter months.

Fog is most frequent from September to December within the river, but sea fog predominates from May to October and is also common in April and May in the estuary.

Temperatures are generally mild, ranging from 33°C in the summer to -6°C in winter. Ice is not a problem.

Tides—Currents.—Tides at the entrance to the river rise about 5.3m at springs and 3.9m at neaps.

Tidal currents in the outer approaches to the river are comparatively weak and rotate clockwise. When the tide at Brest is rising, they generally set NE towards the off-lying dangers in the estuary. Closer to the river entrance, the tidal currents become rectilinear and increase in velocity, attaining maximum rates up to 4 knots at springs off Saint Nazaire.

Depths—Limitations.—Vessels up to 350m in length and 16.1m draft can enter the river and reach the facilities at Donges.

Chenal du Sud, the main approach channel, is entered about 13 miles WSW of Ile du Pilier. It leads ENE between Ile du Pilier and Plateau de la Banche, and then NE between Plateau de la Lambarde and Pointe de St. Gildas.

Passe des Charpentiers, 300m wide, leads NNE from the inner end of Chenal du Sud and across the bar at the entrance to the river. It is about 4 miles long and maintained to a depth of 13.2m.

Chenal de Bonne-Anse, leads NE for 2.5 miles from the inner end of Passe des Charpentiers to the roadstead of Saint Nazaire. Its outer and inner parts are maintained at dredged depths of 13.2 and 12.4m, respectively.

Chenal du Nord, the secondary approach channel, leads ESE for about 15 miles to the entrance of Passe des Charpentiers. It passes between the mainland on the N side of the estuary and Plateau de la Banche, and then between Le Grand Charpentier and Plateau de la Lambarde. This channel has least depths of 4.2 to 6.6m and, although fairly easy to navigate in good weather, is generally only used by small vessels with local knowledge.

Aspect.—Chenal du Sud is marked by lighted buoys; its seaward entrance is marked by SN1 Lighted Buoy (47°00'N., 2°40'W.), which is equipped with a racon and moored about 13 miles WSW of Ile du Pilier.

Passe des Charpentiers and Chenal de Bonne-Anse are marked by lighted buoys. The former channel is also indicated by a lighted range which may best be seen on the chart.

In addition to those described with the approaches to the estuary, the following are also prominent:

1. A suspension bridge, with a vertical clearance of 54m, which spans the river close above Saint Nazaire
2. A light tower, 19m high, standing on Pointe de l'Aigillon, 1.5 miles ENE of Pointe de Chemoulin
3. Tour du Commerce, a white tower, standing 1.1 miles NE of Pointe de l'Aigillon
4. A disused light tower, 26m high, standing above the surrounding trees, 0.2 mile NE of the Tour du Commerce.

Pilotage.—Pilotage is compulsory for all vessels over 75m in length and for vessels of more than 150 nrt carrying oil products, gas, or dangerous cargo.

Vessels should send an ETA message through Saint Nazaire (FFO) 18 hours in advance; any amendments to this ETA of more than 2 hours should be sent at least 4 hours prior to arrival. Vessels should then contact the pilot station on VHF channel 12 when within range.

Pilots generally board at a position in Chenal du Sud, about 4.5 miles WSW of Pointe de St. Gildas in the vicinity of the La Couronnee Lighted Buoy. Vessels from the N may request the pilot to board in a position ESE of Le Grand Charpentier.

Regulations.—A Mandatory Access Channel, the limits of which are shown on the chart, lies in Chenal du Sud and leads to the river entrance. A Waiting Area, the limits of which are shown on the chart, lies on the N side of the approach channel, 6 miles W of Pointe de St. Gildas.

All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel or the waiting area and maintain a listening watch on VHF channel 16.

The WETREP (West European Tanker Reporting System) is a VTS system, under SOLAS regulation, which operates in the W approaches to Spain, Portugal, France, Belgium, the United Kingdom (including the Shetland Islands), and Ireland. This system is mandatory for all oil tankers over 600 dwt carrying heavy crude oil, heavy fuel oil, or bitumen and tar and their emulsions. It does not apply to warships, naval auxiliaries, or other vessels owned or operated by a contracting government

and used, for the time being, only on government non-commercial service. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) operates in the approaches to the river and can be contacted on VHF channel 14 (call sign: Loire Ports Control). Participation in the VTS is mandatory for all commercial vessels.

Inbound vessels should send a report to the VTS Control Center 48 hours before arrival. They should then contact the Saint Nazaire VTS Port Control Center on VHF channel 14, when entering the estuary. While transiting the area, vessels must maintain a listening watch on VHF channels 14 and 16.

Anchorage.—Vessels waiting to enter the river may obtain anchorage, in depths of 11 to 13m, close E of Plateau de Lambarde and S of Le Grand Charpentier.

Vessels may also anchor, in depths of 19 to 28m, good holding ground, within the Waiting Area situated SSW of Plateau de Lambarde. Vessels not obliged to do so should obtain permission from the authorities prior to entering this designated area.

Caution.—Information concerning the dredged depths in the fairways should be requested from the local authorities, due to continual silting in the river. Water level reports are broadcast for the river between Saint Nazaire and Nantes.

Ferries cross the river at several points, which are indicated on the chart, and may be contacted on VHF channel 12.

Submarine pipelines and cables cross the river and may best be seen on the chart.

Several power lines, with minimum vertical clearances of 47m, span La Loire Maritime.

A bridge, with a vertical clearance of 54m, crosses the river close above Saint Nazaire. Another bridge, with a vertical clearance of 50m, crosses the river at Nantes.

Several buoys, associated with dredging operations, may be moored in the approaches and in the river.

The ranges do not always indicate the deepest part of the fairway; due to silting, pilots sometimes use different reference aids.

Saint Nazaire (47°16'N., 2°12'W.)

World Port Index No. 36850

2.6 Saint Nazaire, an important commercial port and shipbuilding center, lies on the N bank of La Loire, 5 miles within the entrance. The main harbor, which was a former German submarine base, consists of an outer tidal basin and two inner wet dock basins entered through locks. Several shipbuilding ways and shipyards are situated on the N side of the river, close above the main harbor.

Port of Saint Nazaire Home Page

http://www.nantes.port.fr

Tides—Currents.—Tides at Saint Nazaire rise about 5.5m at springs and 4.2m at neaps.

Off the port, the tidal currents run in the direction of the channel at normal rates of 2 to 3 knots. Rates up to 4 knots have been reported with some of the higher spring tides.

Depths—Limitations.—The entrance to the outer basin, formed by two moles, is 124m wide. This basin and entrance channel are dredged to a depth of 5.5m, but are subject to silting. A quay, situated along the inner side of the E mole, is dredged to a depth of 4.5m over a length of 210m.

Vessels enter the wet dock basins via a lock which is 211m long and 30m wide. Bassin de Saint Nazaire is situated N of the lock and has 1,744m of total quayage, with depths of 9m alongside. Penhoet Basin, situated N of Saint Nazaire Basin, is entered through a passage, 34m wide, spanned by a swing bridge. It has 2,262m of total quayage, with depths of 9m alongside. Small craft and yachts up to 50m in length can enter the wet dock basins through a small lock, 53m long and 13m wide. There are facilities for fishing, general cargo, tanker, bulk, reefer, and ro-ro vessels. Vessels up to 185m in length, 28.5 beam, and 8.5m draft can be accommodated within the wet dock basins.

There are also extensive repair facilities. Joubert Dry Dock, the largest in the port, is situated at the SE corner of Penhoet Basin. It is 350m long, 50m wide, and has depths on the sill of 8m at LWS and 13.5m at HWS. This dock can also be used as a lock and can handle vessels up to 250,000 dwt.

Pilotage.—See La Loire in paragraph 2.5 for information concerning pilotage, traffic control, and regulations.

Anchorage.—Grande Rade provides good anchorage off St. Nazaire, in depths of 11 to 14.6m, sand and mud. Anchorage is also available in Petite Rade, E of the harbor, in depths of 7 to 9m, mud.

Large vessels are advised to arrive at Grande Rade just prior to HW and enter the basins without anchoring.

Caution.—The tidal currents frequently set across the entrance to the outer basin and the best time to enter is at SW after HW or after LW, if the draft is suitable.

Construction is in progress (2002) in the vicinity of the Petite Rade.

2.7 **Montoir** (47°18'N., 2°08'W.), an industrial port, lies on the N side of La Loire Maritime, between 1.5 and 3 miles above Saint Nazaire.

Depths—Limitations.—The fairway leading to Montoir is dredged to a depth of 13.2m. Deep-draft vessels can be accommodated alongside the river terminals but may only berth at HWS.

The main facilities, from W to E, include the following:

1. A ro-ro berth, which can accommodate vessels up to 180m long.
2. A ro-ro berth, 130m long, with a dredged depth of 7.5m alongside, which can handle vessels up to 140m in length.
3. A container quay, 610m long, with a dredged depth of 11m alongside, which can handle vessels up to 12m draft.
4. An LNG terminal formed by two berths with dredged depths of 12m alongside. It can handle vessels up to 60,000 dwt, 280m in length, and 13m draft.
5. A bulk terminal formed by a quay, 819m long, with a dredged depth of 12.5m alongside. It can handle vessels up to 140,000 dwt, 280m in length, and 13.5m draft.
6. A liquid chemical berth, 220m long, with a depth of

10m alongside, which can handle vessels up to 40,000 dwt, with a maximum draft of 13.5m.

7. A coal terminal formed by a berth, 248m long, with a dredged depth of 16m alongside. It can handle vessels up 140,000 dwt, 300m in length, and 16m draft.

Pilotage.—See La Loire in paragraph 2.5 for information concerning pilotage, traffic control, and regulations.

2.8 Donges (47°18'N., 2°04'W.) (World Port Index No. 36860), a major oil and LPG port is situated on the N bank of La Loire 5 miles above St. Nazaire, is fronted by a large refinery.

Tides—Currents.—Tides rise about 5.6m at springs and 4.3m at neaps.

Depths—Limitations.—The fairway leading to the port is dredged to a depth of 13.2m.

The port, consisting of six main berths, can handle fully-loaded tankers up to 120,000 dwt and partially-loaded tankers up to 300,000 dwt. Generally, vessels up to 350m in length and 16m draft can be accommodated alongside.

Pilotage.—See La Loire in paragraph 2.5 for information concerning pilotage, traffic control, and regulations.

2.9 La Loire Maritime, extending above Saint Nazaire, also consists of several private industrial quays. These are situated at Le Carnet, 2.5 miles above Donges on the S bank, and Coueron, Basse-Indre, and Haut-Indre which lie 15, 17, and 19 miles, respectively, above Donges on the N bank. These quays can handle vessels up to 7m draft depending upon the state of the tide.

A power station fuel pier is situated on the N bank at Cordemais, 7.5 miles above Donges. It can handle vessels up to 30,000 dwt and 9m draft.

A quay, 140m long, is situated at Indret on the S bank, opposite Basse-Indre. It is used by naval vessels up to 6m draft.

A quay at Paimboeuf, on the S side of the river above Donges, can accommodate a chemical tanker with a maximum length of 160m and a maximum draft of 7.1m.

2.10 Nantes (47°13'N., 1°33'W.) (World Port Index No. 36900), an important commercial port, is located along both sides of La Loire, about 30 miles above Saint Nazaire. The river here is divided into two branches by Ile de St. Anne; the N branch is known as Bras de la Madeleine and the S branch as Bras de Pirmil. A lock connects the port to the Nantes-Brest Canal and the inland waterway system.

Tides—Currents.—Tides rise about 6m at springs and 4.6m at neaps.

The tidal currents at the port vary with the height of the river. When it is low, the flood currents attain rates up to 2.5 knots, but when the river is high, the currents are imperceptible. The rates of the ebb currents vary from 2 to 4 knots depending again on the height of the river.

Depths—Limitations.—The fairway in the river between Donges and Nantes has dredged depths of 8.3 to 4.6m, but is subject to silting.

The main commercial facilities include the following:

1. Quai de l'Arquillon, 398m long, has a depth of 4m alongside and is used by passenger vessels.
2. Quai de Roche Maurice, 747m long, has depths of 5.1 to 9.1m alongside and is used by bulk vessels.
3. Quai Wilson, 1,472m long, has depths of 5.6 to 7.1m alongside and is used by reefer, bulk, and container vessels.
4. Quai Chevire, 454m long, has depths of 7.6 to 9.6m alongside and is used by container and timber vessels.

In addition, there are seven private tanker and chemical berths, with 753m of total quayage and depths of 6 to 9.5m alongside.

Generally, vessels up to 225m in length can be handled, with drafts up to 9.5m at HWS and 8.5m at HWN.

Pilotage.—See La Loire in paragraph 2.5 for information concerning pilotage, traffic control, and regulations.

Baie de Bourgneuf

2.11 Baie de Bourgneuf (47°05'N., 2°15'W.) is entered between Pointe de St. Gildas and Pointe de L'Herbaudiere, the NW extremity of Ile de Noirmoutier, located 7 miles SSW. It is generally only frequented by small vessels with local knowledge proceeding to the small ports of Pornic and Noirmoutier.

The bay is well-protected from the N and E winds, with partial shelter from the S. Winds from the W, especially during the ebb tidal currents, can raise a heavy sea and make the entrance quite dangerous. Except in the N part, where there are steep cliffs, the coast is very low and bordered by rocks and sand banks. There are several good anchorages in the bay, but navigation is difficult due to the numerous shoals and mud banks which extend into it.

Ile de Noirmoutier (46°59'N., 2°14'W.), which forms the SW side of the bay, is low and separated at its S extremity from the mainland by Goulet de Fromantine, a narrow passage. This island is fronted on its N and W sides by numerous rocks and shoals.

Pointe de L'Herbaudiere (47°02'N., 2°18'W.), the NW extremity of the island, is low and bordered by drying flats and numerous rocks which extend up to 3 miles seaward. A prominent radio mast stands on the point; a conspicuous water tower stands 1.7 miles ESE of it.

Pointe de Devin is located 2 miles S of Pointe de L'Herbaudiere on the W side of Ile de Noirmoutier. It forms the N end of the SW coast of the island and is marked by a light. From this point, the shore trends SE and consists of low and barren sand dunes backed by inconspicuous saltpans. The shore between this point and Pointe de la Loire, 3 miles SE, is fronted with rocks and drying flats which extend a considerable distance seaward.

Groulet de Fromantine, a narrow channel, leads between Pointe de la Fosse, the S extremity of Ile de Noirmoutier, and the mainland. It is used by small vessels with local knowledge including the ferry from Ile d'Yeu. A conspicuous water tower stands 0.9 mile NW of Pointe de la Fosse.

The channel is crossed by a conspicuous cantilever road bridge, with a vertical clearance of 24m, which has a navigable span 85m wide. Fromentine, a small town and resort, stands on the mainland at the S end of Baie de Bourgneuf. It has a small harbor which can be approached through Groulet de Fromantine. A sand bar extends across the N approaches to the channel, about 2.5 miles NNE of Pointe de la Fosse, and forms the controlling depth. The shallow passage through the bar dries 1m, but is subject to frequent changes. The tidal currents in the

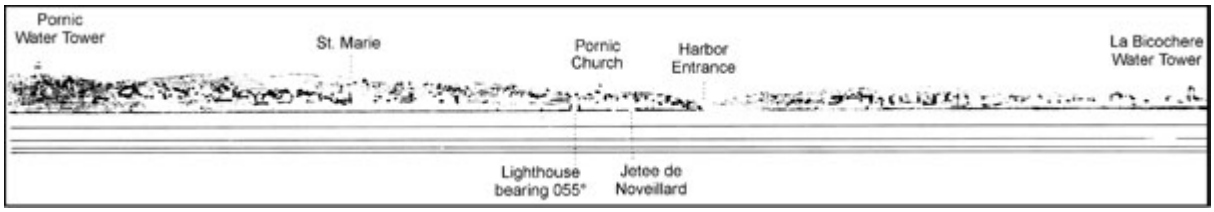
narrow channel off Pointe de la Fosse attain rates of 4 to 5 knots at times.

Caution.—An area, within which anchoring and fishing are prohibited, extends between Pointe de L'Herbaudiere and Ile du Pilier and may best be seen on the chart.

2.12 Pointe des Dames (47°01'N., 2°13'W.), the NE extremity of Ile de Noirmoutier, is located 3.5 miles ESE of Pointe de L'Herbaudiere. A light is shown from a tower, 19m high, standing on the point. However, it is reported that only the top of this tower is generally visible above the surrounding trees. The N shore of the island between this point and Pointe de L'Herbaudiere is fronted by shoals, reefs, and foul ground that extend up to about 2.5 miles seaward.

Basse de Martroger, a drying reef, extends 1.1 miles seaward. A light is shown from a tower, 16m high, standing on the N end of this reef, 1.6 miles NE of Pointe de L'Herbaudiere.

Grand Sece, marked by a beacon, dries 2.1m and lies in the middle of a group of shoals, 1.5 miles NE of Ile de Pilier and 2.2 miles NNW of Pointe de L'Herbaudiere. Banc de la Blanche, with a least depth of 2.6m, lies 2.2 miles ENE of Grand Sece. It is located at the outer edge of the dangers and is marked by a buoy moored 0.5 mile N.



Approach to Pornic

Basse des Peres, with a least depth of 2.6m, lies 3.5 miles E of Grand Sece and is marked by a buoy moored close SE. Pierre Moine, a drying reef, lies 2.7 miles NNE of Pointe des Dames and is marked by a light.

La Couronnee, a rocky shoal which dries, lies in the N part of the entrance to Baie de Bourgneuf, about 2.3 miles WSW of Pointe de St. Gildas. It is marked by a buoy and should be avoided even at HW, as the sea often breaks heavily on this danger.

Banc de Kerouars, which extends E for about 4 miles from La Couronnee, and has several shallow and dangerous patches on it.

Notre Dame, a drying rock marked by a beacon, lies 1.3 miles offshore, 5 miles SE of Pointe de St. Gildas. It is located at the NW extremity of a chain of drying and submerged reefs and shoals which extend into the bay.

Baie de Bourgneuf is bordered by extensive flats and may be entered through Chenal de la Pierre, the N channel, or Chenal du Centre, the S channel; however, local knowledge is required. Many areas outside of these entrance channels are obstructed by shell fish farms.

2.13 Pornic (47°07'N., 2°06'W.), a small tidal harbor, lies at the head of an inlet on the NE shore of the bay. It is entered through a channel which dries and is marked by beacons and buoys. Tides within the inlet rise 5.4m at springs and 4m at neaps. The harbor is mainly used by small ferry vessels, pleasure craft, and fishing boats. An extensive yacht marina is situated close W of the entrance to the inlet. Vessels up to 50m in length can enter with drafts to 3.4m at HWS and 2.1m at HWN. The bottom is mud throughout, but in some places it only thinly covers a rocky layer and caution is required. Anchorage can be taken, in depths of 3 to 4.9m, sand and mud, off the inlet with local knowledge.

L'Herbaudiere (47°01'N., 2°18'W.), a small tidal harbor, is situated close E of Pointe de L'Herbaudiere and protected by breakwaters which form an entrance, 25m wide. A sand bar lies close N of the entrance and has a charted depth of 0.5m. The harbor is mainly used by fishing boats, which berth in a basin on the W side, and yachts, which berth in an extensive marina on the E side. Small vessels can enter at HW, with drafts up to 4m at springs and 3m at neaps; local knowledge is required.

Noirmoutier en l'Ile (47°00'N., 2°15'W.), a small drying harbor, lies 1.2 miles S of Pointe des Dames and is protected by a long jetty. It is formed by the meeting of three canals and is mainly used by fishing boats. Small craft can enter at HW with drafts up to 2.5m at springs and 1m at neaps.

Small tidal boat harbors are also situated at La Bernerie-en-Retz and Le Collet, on the E side of the bay, and at Port des Brochets, Port des Champs, Port de L'Epoids, and Port du Pont-Neuf, on the SE side of the bay.

Ile d'Yeu

2.14 Ile d'Yeu (46°43'N., 2°21'W.), located 12.5 miles SW of the S end of Ile de Noirmoutier, is a good landmark when approaching La Loire from the S.

There is no shelter in the vicinity of this island during NW gales; however, an area on its E side remains relatively calm because of the shallower depths in this vicinity.

The SW part of Ile d'Yeu is steep and attains a height of 30m, but the SE part is low and flat.

Pointe des Corbeau (46°41'N., 2°17'W.) is the E extremity of the island. A light is shown from a prominent tower, 19m high, standing on this point. Le Corbeau, a rock which dries, lies close E of this point and is marked by a beacon.

Port de la Meule, a very small drying harbor, is located on the S coast of the island, 2.5 miles W of Pointe des Corbeau. It lies at the head of a narrow inlet and is used by fishing boats. A light is shown from a tower, 6m high, standing at the W side of the entrance to the inlet. A conspicuous coastguard station is

situated 0.6 mile E of the harbor and a prominent radio mast, 73m high, is reported to stand near it.

Ile d'Yeu Light (formerly Petite Foule) is shown from a prominent tower, 38m high, standing on a hill near the W end of the island.

Pointe du Butte (46°44'N., 2°24'W.), the W extremity of the island, is fronted by foul ground. Les Chiens Perrins, a group of low rocks, extends up to 0.7 mile seaward from the point and is marked by a light.

Les Chiens Perrins Light

Port Joinville (46°48'N., 2°21'W.), a small harbor, is located on the N side of the island, 2 miles E of Pointe du Butte. It affords good shelter and is used by fishing vessels, yachts, small ferries, and coasters. The harbor consists of a marina, three main basins, and a small wet dock. The entrance channel, which is indicated by a range, is dredged to a depth of 1.5m; there are depths of 1.5m within the main basins. The wet dock, which is entered through a gate, is maintained at a depth of 3.7m. The harbor is accessible to small vessels with drafts up to 6m at HWS and 4.5m at HWN.

Small vessels, with local knowledge, can approach the harbor from the E by passing S of La Sablaire, a shoal marked by a buoy, or from W by keeping at least 1 mile offshore. In good weather, vessels can anchor, in depths of 6 to 8m, sand and gravel, off the entrance to the harbor. Passenger vessels may anchor in an area 0.4 mile ESE of the port entrance.

A large water tower, 50m high, stands 0.4 mile SW of the harbor. It is the most conspicuous object on the whole island and can be seen from a considerable distance.

Caution.—Winds from the NW to NE raise a considerable swell in the outer part of the harbor and render it unsafe.

A restricted area, the limits of which are shown on the chart, extends NE between the E part of Ile d'Yeu and the mainland. Due to the existence of submarine cables, anchoring, dredging, and trawling are prohibited within this area.

Numerous wrecks, some dangerous, lie in the vicinity of the island and may best be seen on the chart.

Drift net fishing is carried out in the vicinity of the island.

Mainland Coast—Ile de Noirmoutier to Les Pertuis

2.15 Pointe de Notre Dame de Monts (46°53'N., 2°09'W.), the S entrance point of Goulet de Fromantine, is low and sandy. The coast, extending S and then SE from the point, consists of a line of wooded sand dunes amongst which numerous villas and apartments are visible from seaward. It is fronted by an extensive shallow flat and affords no shelter from S or W winds. Basse de l'Aigle, a rocky shoal with a least depth of 2.9m, is located 5.7 miles SW of Pointe de Notre Dame de Monts. It lies at the outer edge of the flat and is marked by a buoy, moored 1 mile SW.

Pont d'Yeu, a bank of rock and sand, extends SW between the mainland coast and Ile d'Yeu. It breaks during fresh NW winds and dries in its N part. A buoy is moored in a depth of 5.5m, about 5.5 miles NE of Port Joinville and marks the SW extremity of the shallower part of this bank. Vessels navigating between Ile d'Yeu and the mainland should pass to the W of this buoy.

Conspicuous water towers stand at La Grande Croix and St. Jean de Monts, located 4 and 7 miles SE, respectively, of Pointe de Notre Dame de Monts.

Pointe de Grosse Terre (46°42'N., 1°58'W.), located 14 miles SSE of Pointe de Notre de Dame, consists of black rocky cliffs, 12 to 14m high. Dunes attaining the same height surround the point, and a light is shown from a prominent tower, 17m high, standing on it. A rocky ledge, which dries up to 5m, extends up to 0.4 mile S of the point and is marked by a lighted buoy. A conspicuous water tower stands 1 mile NNE of the light tower.

Pointe de Grosse Terre Light

2.16 Saint Gilles Croix de Vie (46°42'N., 1°57'W.), a small harbor, lies at the mouth of a river, on the S side of Pointe de Grosse Terre. It is protected from seaward by Pointe de la Garene, a narrow sand strip, and a breakwater.

The harbor is approached from the SW and entered through a channel which is marked by buoys and indicated by a range. A bar, lying outside the entrance, has a depth of 0.5m and the tides here rise about 5.3m at springs and 4.2m at neaps. The harbor basins, which are used by yachts and fishing vessels, have depths of 1.5m and dry in places. Vessels up to 60m in length can enter, with drafts up to 5.5m at HWS and 3.5m at HWN; local knowledge is recommended. During good weather, vessels can anchor, in depths of 3 to 4m, sand and mud, off the entrance and in the shelter of Pointe de Grosse Terre; however, anchorage farther out is exposed to all but E winds.

Several prominent water towers stand E and S of the harbor.

Caution.—A restricted area, the limits of which are shown on the chart, extends up to 25 miles SW from shore in the vicinity of Pointe de Grosse Terre. Due to the existence of submarine cables, anchoring, dredging, and trawling are prohibited within this area.

Several wrecks, some dangerous, lie up to 10 miles offshore between Pointe de Gross Terre and Pointe de l'Aiguille and may best be seen on the chart.

An explosives dumping area, with a radius of 0.5 mile, lies centered about 3 miles ENE of the E end of Ile d'Yeu.

2.17 Pointe de l'Aiguille (46°29'N., 1°48'W.), low and fringed by drying rocks, is located 14 miles SSE of Pointe de Gross Terre. The coast between is fronted by sunken rocks which extend up to about 0.5 mile offshore.

L'Armandeche Light is shown from a conspicuous tower, 39m high, standing on the point. A prominent fort and a disused signal station, consisting of a white house with tower, also stand on the point. A conspicuous water tower stands 0.4 mile NNE of the light.

Les Barges d'Olonne, consisting of a large group of shoals and drying rocks, extends up to 2 miles W of Pointe de l'Aiguille. La Grande Barge, a reef which dries 4.5m, lies in the NW part of the group. A light is shown from a conspicuous tower, 29m high, surmounted by a helicopter platform standing on this reef.

Les Barges Light

Petit Barge, a drying rock, lies in the SW part of the group and is marked by a lighted buoy. Basse Vermenou, a rocky patch with a least depth of 7.4m, lies 3 miles WNW of Pointe de l'Aiguille and breaks in heavy weather.

During bad weather, the area inshore of Basse Vermenou becomes a mass of breakers and should not be approached.

2.18 Les Sables d'Olonne (46°30'N., 1°48'W.) (World Port Index No. 36960), a small resort town and commercial port, is situated at the E side of Pointe de l'Aiguille. The harbor consists of an outer tidal basin, an inner wet basin, and a marina.

Tides—Currents.—Tides rise about 5.3m at springs and 4.2m at neaps.

The tidal currents in the approaches are weak and, even in the entrance generally, do not exceed 1 knot. When the flushing lock is open, the flood and ebb currents may attain rates of 1.5 and 2 knots, respectively.

Depths—Limitations.—The entrance channel is dredged to a depth of 1.5m and leads between the heads of the breakwaters which are 40m apart. An extensive yacht marina is situated in the N part of the harbor and the outer tidal basin has facilities for fishing vessels. The wet dock is entered through a gate, 17m wide. Generally, tanker, general cargo, and bulk vessels up to 110m in length and 16m beam can be handled, with drafts up to 6.3m at HWS and 4.5m at HWN.

Aspect.—The large buildings of the town are conspicuous from seaward. Vessels may approach the outer roadstead from the SSW or SE through two main channels which are indicated by ranges. An entrance channel then leads NNW from the roadstead and between the harbor breakwaters. Local small craft may also approach the roadstead from the SW through an inshore secondary channel.

Pilotage.—Pilotage is compulsory for vessels over 50m in length and for vessels of more than 150 nrt carrying hydrocarbons, gas or dangerous cargo. Vessels should send an ETA message 18 hours in advance and contact the port 1 hour in advance on VHF channel 12 or 16. Amendments to the ETA of more than 2 hours should be sent 4 hours in advance. Pilots will usually board in the vicinity of the outer roadstead. During bad weather, they may board within the shelter of the breakwaters.

Regulations.—A Mandatory Access Channel, the limits of which are shown on the chart, lies in the SSW approach to the port. It is 300m wide and leads to a small Waiting Area situated close S of the harbor entrance.

All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report to Semaphore de Saint-Sauveur or Semaphore des Baleines prior to their entry into this channel or the waiting area and maintain a listening watch on VHF channel 16. These vessels must remain at least 7 miles off the coast unless they are entering the port of Les Sables d'Olonne.

All other vessels intending to use the access channel should first establish a listening watch on VHF channel 16.

Anchorage.—Vessels can anchor, in depths of 9 to 12m, sand and mud, in the outer roadstead.

Caution.—Vessels without local knowledge and not obliged to take a pilot are still advised to do so.

A wreck, with a minimum unsurveyed clearance of 15m, is reported to lie in position 46°32.8'N, 1°56.9'W.

2.19 Pointe du Grouin du Cou (46°21'N., 1°28'W.),

formed by steep cliffs, is located 16 miles SE of Les Sables d'Olonne. The coast between is fronted by drying rocks and several shoals. A coastal bank, with depths of less than 5m, extends up to 2 miles offshore near the SE end of this part of the coast and, with winds from seaward, forms a line of breakers.

A light is shown from a prominent tower, 16m high, standing on Pointe du Grouin du Cou.

Bourgenay and Jard-sur-Mer, two small yacht marinas, are situated 6 and 10.5 miles SE, respectively, of Les Sables d'Olonne. Their entrances are fronted by reefs; local knowledge is required.

Banc du Grouin du Cou, with depths of 7 to 12m, extends up to 8 miles W of Pointe du Grouin du Cou and heavy seas form on it during fresh NW winds with an outgoing current. It is reported that passing over this bank in bad weather is dangerous as the sea may break even when it appears smoother farther out.

Plateau de Rochebonne

2.20 Plateau de Rochebonne (46°10'N., 2°27'W.), an extensive rocky shoal, is located about 30 miles SW of Pointe d'Aiguille and is one of the most dangerous shoals lying off the W coast of France. The sea often breaks on it in bad weather and when approached from the W, it is reported to be very difficult to identify.

The shoal extends for about 7 miles in a NW-SE configuration and has a least depth of 3.3m at La Congree, its NW end. It is marked by four lighted buoys moored at the NW and SE ends and along the NE and SW sides.

Caution.—Caution is necessary when navigating in the vicinity of Plateau de Rochebonne as the shoals are steep-to on all sides and soundings in the approaches give no adequate advance warning.

During heavy weather, the lighted buoys marking this danger may not be identified, either visually or on radar, until vessels are within the shoal area. In addition, their positions should never be wholly relied upon, especially in or after gales. All vessels therefore should give this shoal area a wide berth.

An IMO-adopted restricted area, the limits of which are shown on the chart, has been established around Plateau de Rochebonne. This area, within a circle of 7 miles radius, is to be avoided by all vessels carrying hydrocarbons.

Les Pertuis

2.21 The area known as Les Pertuis consists of the channels of Pertuis Breton, Pertuis d'Antioche, and Pertuis de Maumusson, and the islands of Ile de Re and Ile d'Oleron, which all lie off the mainland between the parallels of 46°21'N and 45°47'N. The bottom within this area is generally mud, with irregular depths which increase when leading into Pertuis d'Antioche and decrease when leading into Pertuis Breton.

Ile de Re (46°12'N., 1°26'W.), the island which separates Pertuis Breton from Pertuis d'Antioche, is moderately low; its W end is fronted by extensive rocky flats. It is separated at the E end from the mainland by Coureau de la Pallice, which is spanned by a bridge. For further information, see Pertuis Breton in paragraph 2.23.

Pointe des Baleines (46°15'N., 1°34'W.), the NW extremity of Ile de Re, is very low. A light is shown from a prominent octagonal tower, 57m high, standing on the point. A disused light stands close N of the light; a coast guard signal station, with a white tower and a radio mast, stands close S of it.

Pointe des Baleines Light

Les Baleineaux, also known as Haut Banc du Nord, lies at the outer end of a drying reef which extends up to 1.5 miles NW of Pointe des Baleines. A light is shown from a prominent tower, 32m high, standing on Les Baleineaux. Several rocky ledges, with depths of less than 3m, lie up to 1.5 miles NW of Les Baleineaux and break in heavy weather. Depths of 10m or less lie up to 6 miles NE of Pointe des Baleines.

In heavy weather, with winds from S through NW, Ile de Re is covered with spray and nearly invisible. In addition, heavy seas usually run over depths of less than 20m in its vicinity.

2.22 Ile d'Oleron (46°00'N., 1°22'W.) is low and has numerous sand dunes covered with pine trees. The highest dunes attain heights of about 28m and stand in the S part of the island. The NE coast of the island forms the S side of Pertuis d'Antioche. A viaduct crosses Coureau d'Oleron which separates the SE coast of the island from the mainland. Pertuis de Maumusson separates Pointe de Gatseau, the S extremity of the island, from the mainland.

Pointe de Chassiron (46°03'N., 1°25'W.), the NW extremity of Ile d'Oleron, is low, sandy, and fringed by reefs and foul ground. A light is shown from a conspicuous tower, 46m high, standing on this point and a prominent coast guard signal station stands close N of it.

Pointe de Chassiron Light

Roche d'Antioche dries 4.3m and lies near the edge of the foul ground which extends up to about 1.5 miles NE of the point. A light is shown from a tower, 27m high, standing on this drying rock.

From Pointe de Chassiron, the W side of the island trends S for 6 miles to Pointe de Chardonniere and then SSE for 11 miles to Pointe de Gatseau. Most of this W shore is fronted by drying rocks which extend up to 1 mile seaward. The belfry of the church at St. Pierre d'Oleron, which resembles a light tower, stands 7.5 miles SE of Pointe de Chassiron and is conspicuous from seaward.

La Cotiniere (45°55'N., 1°20'W.), a small fishing boat harbor, lies on the W coast of the island, 8 miles NW of Pointe de Gatseau. It is entered through a narrow and shallow channel which leads between the shoals fronting the shore and local knowledge is required. Entry is reported to be dangerous during winds or swells from the SW to W.

Caution.—Numerous wrecks, some dangerous, lie up to 10 miles seaward of the W coast of Ile d'Oleron and may best be seen on the chart.

2.23 Pertuis Breton is the channel which lies between the mainland coast, on the N side, and the N shore of Ile de Re, on the S side. It extends into Coureau de la Pallice, a narrow passage, at the head and is mainly used by small vessels, fishing boats, and pleasure craft. Fosse Orientale de Chevarache, a comparatively deep trough, leads through the central part of the channel. A bank lying across the E end of the channel at the N entrance to Coureau has a least charted depth of 2.2m.

The mainland coast extending E of Pointe du Grouin du Cou, previously described in paragraph 2.19, consists of dunes and marshland. A conspicuous water tower stands 3 miles E of the point, and the town of La Faute, with its prominent church spire, is situated 3 miles farther ESE. A jetty, 160m long, extends seaward from the resort village of La Tranche, 1.7 miles E of Pointe du Grouin. It is used by ferry boats from Saint Martin de Re.

The sea breaks heavily along this stretch of coast in bad weather and the drying flats, which front most of the shore, are dangerous for small craft at such times.

Pointe du Lizay, the N extremity of Ile de Re, is located 2.2 miles NE of Pointe des Baleines and is fringed by rocks.

Ars-en-Re, a yacht harbor, lies at the head of Le Fier d'Ars, a small drying bay entered E of Pointe du Lizay. The shores of the bay are bordered by salt marshes. A narrow and shallow approach channel is indicated by ranges and marked by buoys and beacons.

Pointe de Grouin (Loix), located 4 miles ESE of Pointe du Lizay, is low and fronted by a rocky ledge. La Rocha, a rocky spit, extends about 2.5 miles ENE from this point and is marked by a lighted buoy. Les Islattes, a drying reef, fronts the point and is marked by a beacon.

2.24 St. Martin de Re (46°13'N., 1°22'W.), a small harbor, lies 2.5 miles SE of Pointe de Grouin. It is protected by breakwaters and consists of two tidal basins and a wet dock. A narrow entrance channel, which dries, leads between rocky flats and is indicated by a range. Tides off the entrance rise about 6.1m at springs and 4.7m at neaps. The tidal basins, which dry, are mostly used by fishing boats. The wet dock is entered through a gate, 12m wide, and has depths up to 3.1m; it is mostly used by yachts and pleasure craft.

Vessels may obtain anchorage NE of La Rocha, in depths of 11 to 20m, mud, excellent holding ground. Small vessels can anchor, in depths of 5 to 7m, mud with good holding ground, in the roadstead off the entrance to St. Martin de Re. Local knowledge is recommended for anchoring off and entering St. Martin de Re.

Pointe du Couronneau, located close E of St. Martin de Re, is fronted by a series of rocky ledges. A beacon stands near the outer edge of these ledges, 0.6 mile NE of the point.

La Flotte and Rivedoux Plage, two small drying boat harbors, are situated 1.7 and 4.1 miles SE, respectively, of Pointe du Couronneau. They should only be approached by small craft with local knowledge.

2.25 Anse de l'Aiguillon (46°17'N., 1°10'W.) is entered between Pointe de l'Aiguillon, located 11.6 miles SE of Pointe du Grouin du Cou, and Pointe St. Clement, 3 miles E. The shores of this bay at the head of Pertuis Breton are low, marshy, and encumbered by mussel beds.

A prominent old tower stands on Pointe de l'Aiguillon and a conspicuous power transformer stands on a hill 2.7 miles NW of it.

A shallow channel, which is marked by beacons, leads through the center of the bay to the entrance of the La Sevre Niortaise River.

Marans (46°19'N., 1°05'W.), a small harbor, lies on the La Sevre Niotaise River, 3.5 miles above its mouth. A lock, 104m long and 11m wide, connects the harbor to a canal. Vessels up to 60m in length and 10m beam, with drafts up to 4.4m at HWS and 3.5m at HWN, can transit the river channel. It is reported (1991) that only small craft with local knowledge enter the harbor which closed to commercial traffic. Pilotage is compulsory for vessels over 40m long; see La Pallice, paragraph 2.29, for further information.

Pont de l'Ile de Re, a conspicuous bridge, spans Coureau de

la Pallice between Pointe Sablanceaux, the E extremity of the island, and a point on the mainland, 1 mile N of the port of La Pallice. The bridge has a vertical clearance of 30m and two navigational passages lead under it and are marked by lighted buoys. Vessels pass S between the 10th and 11th piers counting from Pointe Sablanceaux and N between the 13th and 14th piers.

Caution.—Restricted areas lie in the approaches to and exits from the navigational passages beneath the Pont de l'Ile de Re bridge and may best be seen on the chart; anchoring, fishing, and waiting are prohibited within these areas.

A restricted area, the limits of which are shown on the chart, extends between the E end of Ile de Re and the mainland. Due to the existence of submarine cables and pipelines, anchoring, dredging, and trawling are prohibited within this area.

Numerous shellfish farms lie along the shores of Pertuis Breton.

2.26 Pertuis d'Antioche, the deepest and principal channel within Les Pertuis, lies between the S shore of Ile de Re and the NE shore of Ile d'Oleron. It extends in a ESE direction and leads to the port of La Pallice.

Lighted Buoy PA (46°06'N., 1°42'W.) is moored 11 miles SW of Pointe des Baleines and marks the outer W approach to Pertuis d'Antioche. A wreck, with a depth of 21m, lies close E of this lighted buoy.

Pointe de Chanchardon, located 4 miles SE of Pointe des Baleines, is the SW extremity of Ile de Re. It is low, sandy, and fronted by a drying rocky ledge extending up to 2.3 miles SSE of it. A light is shown from a tower, 20m high, standing on the outer extremity of the above ledge.

A conspicuous tower stands at Carola, 1.7 miles NW of Pointe de Chanchardon and a prominent water tower is situated 3.7 miles E of the point.

2.27 Pointe de Chauveau (46°09'N., 1°17'W.), the SE extremity of Ile de Re, is fringed by a rocky ledge which dries and extends about 0.8 mile seaward. A light is shown from a prominent tower, 31m high, standing on the S edge of this ledge and beacons are situated close E and 0.5 mile W of it. The roadstead of Rade de la Pallice lies ENE of this point.

Plateau de Chauveau, a rocky bank with depths of less than 9m, extends up to 2 miles S of Pointe de Chauveau and is marked on its S side by a lighted buoy.

Plateau de Lavardin, a rocky bank with depths of 2 to 9m, lies 0.7 mile E of Plateau de Chauveau. Le Lavardin, a drying rock, is located on this bank, 1.3 miles E of Plateau de Chauveau Light. A light is shown from a prominent tower, 21m high, standing on this drying rock. In heavy weather, the sea breaks over the N part of this rocky bank.

Roche du Sud, a shoal with a depth of 5.8m, lies 1.7 miles SSW of Le Lavardin Light and is marked by a lighted buoy moored close W. Rocher d'Amour, a rocky bank with a least depth of 4m, lies about 1 mile SE of Le Lavardin Light.

Le Clone, a rocky bank with a least depth of 17m, lies 2.7 miles SSW of Pointe de Chauveau Light. During strong SW winds, heavy seas form over this bank but do not break.

Fosse d'Antioche, a comparatively deep trench, lies in the central part of Pertuis d'Antioche. A bar extends across the W entrance to this trench and has a least charted depth of 19m.

Pointe de Chauveau Light

Pointe des Boulassiers is situated 3.7 miles SE of Pointe de Chassiron, the NW extremity of Ile d'Oleron, which has previously been described in paragraph 2.22. The coast between is fronted by a rocky shelf which dries and extends up to nearly 1 mile offshore. Les Palles, a group of rocks which dry 1.5m, is located 1.7 miles E of Pointe de Chassiron. It lies at the outer edge of the shelf and is marked by a beacon.

Port du Douhet, a small yacht marina which dries, is situated 1 mile SE of Pointe des Boulassiers.

Pointe des Saumonards, located 4 miles ESE of Pointe des Boulassiers, is the NE extremity of Ile d'Oleron. The point is low and tree-covered, with a prominent old fort standing on it.

2.28 Ile d'Aix (46°01'N., 1°10'W.), a small low island, is located 3 miles NE of Pointe des Saumonards. Fort Liedo, a prison, stands on the N side of the island, and being surrounded by trees, is not easily seen. The Citadel, a fort, stands on Pointe Sainte Catherine, the S extremity of the island, and can be identified somewhat more easily. A light is shown from a prominent structure, consisting of two towers 17m high, standing at the W side of Pointe Sainte Catherine. One tower is used for the light; the other carries the screen for the red sector. A disused signal station, consisting of a white house with a grey tower, stands 300m NNE of the light structure.

La Longe, the shallower part of which is called Le Boyard, is an extensive sand bank which lies between Ile d'Aix and Pointe des Saumonards. A least depth of 2.2m lies on the N part of Le Boyard, but it dries 1.6m at its S end. A buoy, moored about 2.7 miles NW of Pointe Saumonards, marks the NW end of La Longe, and another buoy, moored 2.1 miles ESE of the same point, marks the SE end of Le Boyard.

Fort Boyard, a large round isolated structure, stands on the NE part of Le Boyard and is marked by a light.

The navigable channels passing NE and SW of Le Boyard are described with the approach to La Charente in paragraph 2.31.

Caution.—A restricted area, the limits of which are shown on the chart, extends across Pertuis d'Antioche to the N of Pointe de Chassiron. Due to the existence of submarine cables, anchoring, dredging, and trawling are prohibited within this area.

La Pallice (foreground)

La Pallice (La Rochelle-Pallice) (46°10'N., 1°14'W.)

World Port Index No. 37000

2.29 The port of La Pallice is situated on the E side of Coureau de la Pallice, the channel which separates Ile de Re from the mainland. It is the only harbor between La Loire and La Gironde which can accommodate large vessels. The principal approach is through Pertuis d'Antioche but small vessels can approach through Pertuis Breton.

Port of La Pallice Home Page

http://www.larochelle.port.fr

Winds—Weather.—Winds attain the highest frequency from the W nearly year round. Winds from the SW are frequent in spring, but calms may occur anytime, reaching their greatest occurrence in October. Gales occur frequently in winter, on average 7 days per month. Fog also occurs mostly in winter, but only at a rate of 4 days per month; in summer, fog is almost non-existent.

Temperatures vary from an average of 32°C in summer to -6°C in winter; ice is generally not a problem.

Tides—Currents.—Tides rise about 6m at springs and 4.8m at neaps.

In the entrance to Pertuis d'Antioche, the flood tidal current sets in an E direction and the ebb current sets in a W direction. Both attain a maximum rate of 2 knots. In the S entrance of Coureau de la Pallice, the flood current sets in a N direction and the ebb current sets in a S direction. Both attain a maximum rate of 1.7 knots.

Depths—Limitations.—A long bridge on piles extends W and S for 1,100m from the mainland and terminates in an artificial island known as Mole d'Escale. A passenger facility and a freight rail station stand on this island. In addition, a tanker terminal pier extends 420m S from the S end of the island.

Berths on the E side of the island have dredged depths of 10.5 to 12.5m; berths on the W side have dredged depths of 14.5 to 16m. Tank vessels up to 120,000 dwt, 280m in length, and 16m draft can be handled here, depending upon the tide.

The outer basins of the tidal harbor have berths with dredged depths of 9 to 14.5m and can accommodate vessels up to 100,000 dwt and 12m draft. A new wharf lying S of the outer tidal basin has a berth, 180m long, with a dredged depth of 14m alongside.

The wet dock is 565m long and 201m wide. It has about 1,100m of total quayage and can be entered through a lock, 167m long and 21.3m wide. Vessels up to 165m in length and 21m beam can enter, with drafts up to 9m at HWS and 8m at HWN. The port has facilities for general cargo, bulk, passenger, ro-ro, and tanker vessels.

Aspect.—The landmarks and navigation aids in the approaches to La Pallice are described under Les Pertuis (paragraph 2.21), Pertuis Breton (paragraph 2.23), and Pertuis d'Antioche (paragraph 2.26).

A directional light and a range, which may best be seen on the chart, indicate the approach through the S part of Coureau de la Pallice to the harbor entrance. Prominent warehouses and a tower stand on Mole d'Escale.

An aeronautical lighted beacon and an aeronautical radiobeacon are situated about 1.5 miles NE and 5.5 miles ENE, respectively, of the port.

Pilotage.—Pilotage is compulsory for vessels 55m and over in length proceeding to La Pallice (La Rochelle-Pallice), La

Rochelle-Ville, and La Charente; vessels under 55m in length proceeding to La Pallice need not obtain a pilot providing they can communicate with the port authority via port radio.

Vessels should send an ETA message to the pilot station at least 12 hours in advance and confirm any amendments of more than 1 hour at least 4 hours in advance. This message should include the name of the vessel, call sign, ETA at Plateau de Chauveau Lighted Buoy, length, draft, whether the vessel is equipped with a working bow or stern thruster, and any damage.

Pilots generally board 1 mile S of Plateau de Chauveau Lighted Buoy, moored 1.5 miles S of Plateau de Chauveau Light. Vessels should contact the pilot by VHF 2 hours before arriving at the boarding place.

Pilots for La Charente board in the waiting anchorage area 2 miles S of Plateau de Chauveau Lighted Buoy. Vessels requiring a pilot for La Charente must alert the pilot when they anchor.

Regulations.—A Mandatory Access Channel, the limits of which are shown on the chart, leads through Pertuis d'Antioche to a Waiting Area situated NW of Ile d'Aix. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel or the waiting area and maintain a listening watch on VHF channel 16.

All other vessels intending to use the access channel should first establish a listening watch on VHF channel 16.

Vessels less than 20m in length, ferries, fishing boats, and yachts shall keep out of the way of large vessels navigating the approach channels.

Anchorage.—Vessels can anchor, in depths of 11 to 15m, mud with good holding ground, in the designated Waiting Area lying NW of Ile d'Aix. However, this anchorage is not sheltered from W winds.

Vessels can also anchor, in depths of 10 to 13m, mud, in Rade de la Pallice. This anchorage is well-sheltered, but may be congested and caution is necessary to avoid the obstructions, shoals, and wrecks in the vicinity. It is entered from Pertuis d'Antioche via a comparatively deep channel which leads between Plateau de Chauveau and Plateau du Lavardin.

Caution.—A dumping ground area, the limits of which are shown on the chart, lies in the vicinity of Le Lavardin Light. A danger area, marked by a buoy, lies within the limits of this dumping ground area.

Numerous wrecks, some dangerous, lie in the approaches to the port and may be best seen on the chart.

Development and construction are being carried out in the S part of the port.

Vessels without local knowledge, which are not obliged to take on a pilot, are still advised to do so.

2.30 La Rochelle-Ville (46°09'N., 1°09'W.) (World Port Index No. 37010), the old port, is situated on the S side of the city at the head of an inlet. It is one of the largest coastal and deep-sea fishing ports in France and is equipped to process fish in considerable amounts. It is also a major yachting center.

Tides—Currents.—Tides rise about 6.1m at springs and 4.9m at neaps.

Depths—Limitations.—The entrance fairway has a least depth of 0.2m and narrows to a width of 35m at the inner end. It leads over Plateau du Lavardin and passes between Rocher d'Amour and Le Lavardin.

The main harbor comprises of a tidal basin, an outer wet basin, and inner wet basin. In addition, an extensive yacht marina is situated on the S side of the harbor entrance.

The tidal basin has an entrance 25m wide. It dries in places and is used by yachts and pleasure craft. The inner wet dock has an entrance 10.2m wide. It is maintained at a depth of 3m and is used mostly by yachts and pleasure craft up to 35m in length and 9m beam.

The outer wet dock has an entrance 16.3m wide. It is maintained at a depth of 4.3m and mostly used by fishing vessels up to 100m in length and 14m beam.

Aspect.—A lighted range indicates the entrance fairway which leads ENE from Coureau de la Pallice. Its inner part is also marked by buoys. A light is shown from Tour Richelieu, a conspicuous red tower 17m high, which stands on the N side of the approach fairway.

Tour St. Nicolas and Tour de la Chaine, both large and prominent fortress towers, stand on the E and W sides, respectively, of the entrance to the tidal basin. Tour de la Lanterne, a large round tower with a spire, stands on the N side of the harbor entrance close W of Tour de la Chaine.

In the city, the belfry of the cathedral and the spire of a church are situated 0.3 mile N and 0.5 mile NE, respectively, of Tour St. Nicolas and are conspicuous.

Caution.—A danger firing area, the limits of which are shown on the chart, lies close S of the approach channel.

It is recommended to stay exactly on the alignments of the entrance fairway ranges as the channel is narrow and the bottom consists of hard sand which can cause severe damage.

Note.—It was reported (1991) that the port was no longer open to commercial shipping traffic.

2.31 La Charente, a river, is approached at the head of Pertuis d'Antioche, with Ile d'Aix, on the N side, and the SE coast of Ile d'Oleron, on the S side. The outer approach is encumbered by La Longe and Le Boyard, which have been previously described in paragraph 2.28.

Pointe Arceau is located on the SE side of Ile d'Oleron, 3 miles S of Pointe des Saumonards. The shore between lies below the level of HW and is drained by numerous canals. Boyardville (La Perrrotine), a yacht marina, is situated 1.2 miles S of Pointe des Saumonards and is sheltered by a mole, marked by a light.

Passage de l'Est, leading between Ile d'Aix and La Longe, forms a clear channel from Pertuis d'Antioche to the roadstead of Rade de l'Ile Aix. Both sides of this passage are steep-to and caution is necessary in the vicinity of Le Boyard, as the ebb tidal current sets WNW at a rate of up to 1.4 knots.

Rade de l'Ile d'Aix (46°00'N., 1°12'W.) lies between Ile d'Aix, previously described in paragraph 2.28, and Le Boyard. It provides good anchorage, in depths of 10 to 15m, mud, and is well-sheltered, except from fresh NW winds. These may raise a choppy sea which is dangerous to small boats.

Rade de Trousses (45°58'N., 1°13'W.), a roadstead lying 2 miles SE of Pointe des Saumonards, provides good anchorage, in depths of 9 to 11m, mud. It is sheltered from all but NW winds and can be reached through Passage de l'Ouest which

Pointe de la Perrotine Light

leads W of Le Boyard. Several obstructions are reported (1993) to lie within a small area at the NW side of this channel.

2.32 La Charente is about 200 miles long; the small ports of Rochefort and Tonnay-Charente are located 10 and 13.5 miles, respectively, above its mouth. The river is entered through a channel which leads ESE and SE from Rade de l'Ile d'Aix and is restricted by a bar of very soft mud with a depth of 0.5m. The bottom is nearly fluid and vessels with drafts up to 1.2m more than the height of the tide can usually pass through it. The bottom of the river is formed of harder mud and the depths in the fairway are stable.

Two large conspicuous dish-shaped radar antennae, 37m high, stand at Soubise, a naval air station situated on the N bank of the river, 6 miles above the mouth.

Several bridges and power cables span the river; they have a minimum vertical clearance of 26m.

The river entrance fairway is indicated by a lighted range; within the river, range beacons, consisting of posts surmounted with discs, mark the reaches of the channel up to Rochefort. Vessels are restricted to a speed of 12 knots in the river.

Tides—Currents.—Tides in the river entrance rise about 6.3m at springs and 5m at neaps.

In the confined areas of the river, the tidal currents attain a rate of 4 knots at springs; elsewhere, they attain a rate of 2 knots. In the vicinity of the river bends, the tidal currents sometimes set across the channel and caution is advised.

2.33 **Rochefort** (45°56'N., 0°58'W.) (World Port Index No. 37040), a small port, is situated on the W bank of the river, 10 miles above the entrance. It is a transshipment area for the upper reaches of the river.

The main harbor facilities consist of two wet dock basins, one of which is only used by yachts and pleasure craft. The wet dock basin used by commercial shipping is entered through a lock 104m long and 18m wide. It has 1,125m of total quayage and is generally maintained at a depth of 6.4m, but silting is a problem. Vessels up to 115m in length and 16m beam can transit the lock at HW and can enter with drafts up to 6m at springs.

Tonnay-Charente (45°56'N., 00°53'W.) (World Port Index No. 37050), a small port, is situated on the N bank of the river, 3.5 miles above Rochefort.

The harbor consists of main riverside berth, 200m long, with depths of 5.5 to 7.3m alongside, depending upon the tide. In addition, there are three berths, each 60m long, and a private berth, 75m long. Generally, vessels are limited to a length of 115m due to the difficulty of maneuvering in the narrow river channel. Vessels with the maximum length are usually limited to a draft of 5.5m, but coasters and small vessels can be handled with drafts up to 6.3m at HWS and 5.3m at HWN. A power line, with a vertical clearance of 35m, extends across the Charente 1.5 miles above Rochefort.

2.34 **Pertuis de Maumusson** (45°48'N., 1°15'W.) separates Pointe de Gatseau, the S extremity of Ile d'Oleron, from Pointe d'Arvert (Pointe Espagnole), located on the mainland. The channel is entered between Banc de Gatseau and Banc des Mattes which extend seaward up to 1.5 miles from the above points. It is about 0.3 mile wide and leads over a sand bar with a usual low water depth of 1.5m. Local knowledge is required as this bar shifts continually and the depths vary. It is reported that local boatmen will act as unofficial pilots.

The approach is marked by a lighted buoy, moored about 2.4 miles W of Pointe d'Arvert. The channel is marked by beacons and buoys which are moved as necessary to conform to the changes in the sand banks. The ocean swell, which rolls directly onto the banks, forms a large area of breakers and renders the channel and seaward approach dangerous in bad weather, especially during the outgoing tidal currents. During fresh W winds, the most favorable time to cross the bar is during the hour immediately before HW.

A lookout tower, consisting of a pylon surmounted by a T-shaped topmark, stands at Gardour, 1.5 miles SE of Pointe d'Arvert. It is situated on a sand hill, with an elevation of 77m, and can be seen from the offing.

Tides—Currents.—The incoming tidal current may be felt some distance to seaward; however, the outgoing current, which runs strongly and attains a rate of 3.7 knots at springs, turns N just outside the entrance and decreases in strength. Off the bar, the flood current runs ESE and the ebb current runs WNW; they attain rates at springs up to 2.8 and 3.3 knots, respectively.

Caution.—Several dangerous wrecks lie in the seaward approaches to Pertuis de Maumusson and may best be seen on the chart.

2.35 **Coureau d'Oleron** (45°51'N., 1°11'W.), a tortuous channel, connects Pertuis d'Antioche with Pertuis de Maumusson. It leads through an extensive area of sand banks, drying mud flats, and rocky shoals which front both the mainland and the E side of Ile d'Oleron. The fairway has a least known depth of 0.3m and vessels should not attempt to navigate it without local knowledge. It is reported that local boatmen will act as official pilots.

Viaduc d'Oleron spans Coureau d'Oleron and connects the island to the mainland, about 4 miles within the entrance of Pertuis de Maumusson. This bridge has a vertical clearance of 15.1m over a width of 60m where it spans the fairway.

The channel leads from the inner end of Pertuis de Maumus-

son between Banc Trompe Sot and Banc Bourgeois. It then trends N and passes between Rocher d'Ade and Fort du Chapus and then NE between Banc d'Agnas and Rocher de Daire. From the latter, it rounds Banc Lamouroux to the E and enters the S part of Pertuis d'Antioche. The fairway is marked by buoys and beacons, but is encumbered by unstable shoals.

Le Chateau d'Oleron (45°53'N., 1°11'W.), a small harbor, lies on the W side of Coureau d'Oleron. The outer harbor basin dries 1.5m and is entered through an entrance, 10m wide. It is mostly used by fishing craft which work the local oyster beds.

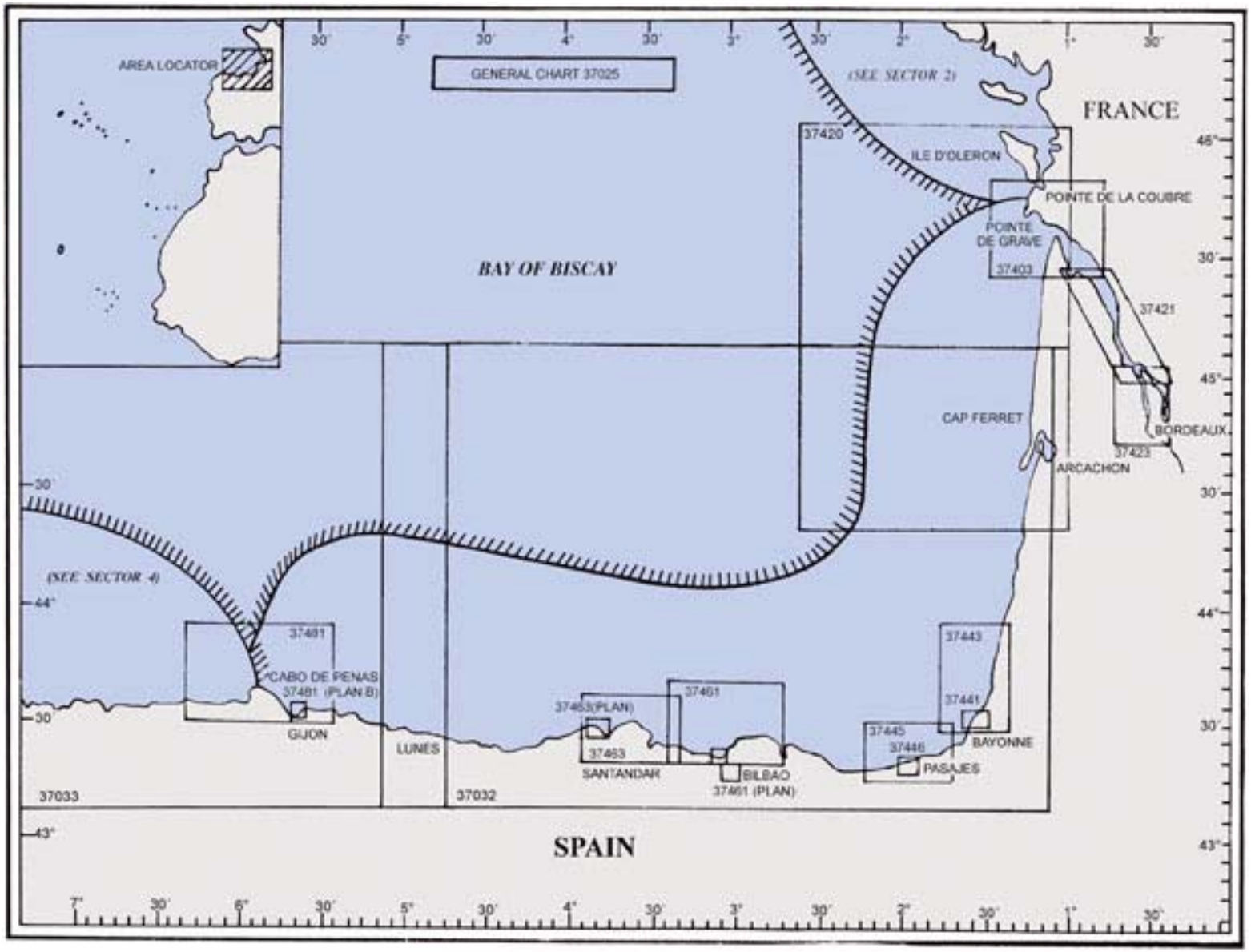
La Seudre (45°48'N., 1°09'W.), a river encumbered by extensive tidal flats, flows into the S part of Coureau d'Oleron. It is navigable by small craft as far as the lock at Riberou, 12.5 miles above the entrance. There are also several small marinas along the banks. A bridge and a power cable, with minimum vertical clearances of 18m, span the river channel. The fairway is marked by buoys and beacons and has a least depth of 0.5m over the entrance bar. Vessels should not attempt to enter the river without local knowledge. Anchorage can be obtained in depths of 5 to 8m, mud, in mid-stream from abreast Pointe Mus de Loup, at the S side of the river entrance, to Canal de la Tremblade, 1 mile SE. Canal de Marennes is entered on the N side of the river, 0.7 mile ESE of Pointe Mus de Loup. It dries 2.1m and leads 2 miles to a lock, 8m wide, and a small basin at Marennes which are used by boats and small craft.

Pointe de la Coubre Light

2.36 Pointe de la Coubre (45°42'N., 1°14'W.), low and sandy, is located 6 miles S of the entrance to Pertuis de Maumusson. The coast between is backed by the forest of La Coubre. From seaward, the high and conspicuous spire of the church at Marennes, 6 miles ENE of Pointe d'Arvert, may be seen behind the trees. In addition, a prominent television mast, 104m high, stands at Dunes de la Brisquette, which form two distinct peaks, 2 miles NE of Pointe de la Coubre.

A spit extends SSE for about 2 miles from Pointe de la Coubre. A light is shown from a conspicuous tower, 65m high, standing on the point. A prominent signal station, 42m high, stands 0.3 mile ENE of the light tower; a disused signal station stands close S of it. Two stranded wrecks, marked by a buoy, are reported to lie on the edge of the coastal bank, 2.5 miles W of the point.

Caution.—Several wrecks, some dangerous, lie up to 6 miles offshore between the entrance to Pertuis de Maumusson and Pointe de la Coubre; they may best be seen on the chart.



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

SECTOR **3** — CHART INFORMATION

SECTOR 3

FRANCE AND SPAIN—LA GIRONDE TO CABO PENAS

Plan.—This sector describes the W coast of France from the entrance of La Gironde to the Spanish border. It then describes the N coast of Spain as far as Cabo Penas. The port of Bordeaux and other river facilities are included.

General Remarks

3.1 See General Remarks in paragraph 1.1 for information concerning the Bay of Biscay and the W coast of France.

Winds—Weather.—On the N coast of Spain, the prevalent summer winds are onshore. In the cooler months, the onshore and offshore winds are more equally divided. Gales may blow from any direction, but in all seasons, are most likely to blow from the W. Depressions traveling SE across the Bay of Biscay towards the Mediterranean Sea can form N to NE gales. These often consist of very stormy and thick weather which raises high seas along the N coast of Spain.

In winter, gales reach their highest frequency and from November to February, the wind can be expected to reach force 8 or more 7 to 9 days per month. In summer, gale frequency decreases considerably and gales of force 8 or more are only expected 1 to 3 days per month.

A Galerna is a particularly severe NW gale which occurs along the N coast of Spain. It may be preceded by a thundery squall and is most common during the months of July, August, and September. A Galerna may occur after a day of excessive heat and is usually preceded by a S or NE wind and a slight fall of the barometer. Frequently, lightning is seen and the wind veers to the NW and forms a severe squall. The wind then blows with great force for 3 to 4 hours while much rain falls. The wind then subsides and the weather clears.

A Galerna sometimes forms with the strength of a hurricane and with no prior warning. The usual time of occurrence is soon after the greatest heat of the day, but it has also been known to occur at night and in the morning.

Recent investigations show that the Galerna is often associated with a secondary depression in the Bay of Biscay. Such a secondary depression often appears when a deep and extensive depression approaches from the Atlantic towards the N of Ireland, and causes winds to blow from a SW direction for a period of several days. This type of secondary depression is reported to form very rapidly, especially in summer.

Severe squalls may also occur E of Bilbao in the hot season after a period of NE winds. Dense cloud development is usually followed by a very strong W wind and heavy rain. Then suddenly, the wind shifts to the NW and a gale forms which persists for 2 to 3 days.

Caution.—Marine exploitation, including drilling, is being carried out offshore within the waters described in this sector.

Numerous fishing vessels may be encountered off the coasts described by this sector.

Submarines frequently exercise within the waters described in this sector.

La Gironde Estuary

3.2 The estuary of **La Gironde** (45°35'N., 1°10'W.) lies between Pointe de la Coubre, previously described in paragraph 2.36, and Pointe de la Negade, located 14 miles SSE. It is obstructed by extensive banks and shoals through which two passages lead to the river entrance.

Cordouan, the center of a large shoal bank known as Plateau de Cordouan, lies in the middle of the estuary, 7 miles SSE of Pointe de la Coubre. It dries up to 2.5m and is the highest part of the shoal. A light is shown from a conspicuous tower, 68m high, standing on Cordouan.

There is an area with varying depths, obstructed by uncovering sand banks which are continuously changing, in a depth of about 1.4m in the NE part of the Plateau de Cordouan. At the periphery of this area, a permanently-uncovered sand bank, 2 to 3m in height, extends between bearings 010° and 045° from the Cordouan Light at a distance of 0.8 to 1.4 miles.

Cordouan Light

Battures de Cordouan, with depths of 2.4 to 5m, lies on the NW edge of the shoal bank and breaks heavily in bad weather. Banc du Chevrier and Banc du Gros Terrier extend S and SE, respectively, from Cordouan.

An extensive shoal area, which includes Banc de la Mauvaise, Banc de Montrevel, Banc de la Coubre, and Banc du

Cordoan Light (aerial view)

Matelier, lies W, SW, and S of Pointe de la Coubre and may best be seen on the chart.

Lighted Buoy BXA (45°38'N., 1°29'W.), equipped with a racon, is moored about 13 miles WSW of Pointe de la Coubre and marks the outer approach to the estuary.

Passe Sud, the S entrance channel, is entered 4.5 miles WNW of Pointe de la Negade. It leads NE and passes on the S side of Plateau de Cordouan. The fairway is marked by buoys and indicated by lighted ranges which are shown on the chart. It is reported to have a least depth of 4.2m and is used mostly by yachts, fishing vessels, and small craft. Vessels navigating this channel, especially at night, are advised to have local knowledge, as the banks shift and unmarked shoals, with depths of 2 to 5m, lie close to the range.

Grande Passe de l'Ouest, the N and main entrance channel, is entered 7 miles WSW of Pointe de la Coubre and 5 miles E of Lighted Buoy BXA. It leads over the bar of Banc du Matelier and passes on the N side of Plateau de Cordouan. The fairway is marked by lighted buoys and indicated by a lighted range which is shown on the chart. In 1995, there was a least charted depth on the range line over the bar of 12.2m.

Anchorage.—Vessels waiting to enter Grande Passe de l'Ouest generally anchor, in depths of 32 to 34m, about 2 miles SE of Lighted Buoy BXA. However, during the winter months, there may be a heavy swell and this area may be untenable.

Directions.—Because of the low land and the high elevations of the navigation lights in the estuary, it is generally easier to approach La Gironde at night than in daylight. This is especially true during periods of haze or low visibility, when the landmarks are even more difficult to identify.

Vessels from the N or NW generally approach the estuary after making a landfall at Ile d'Yeu (46°43'N., 2°21'W.). Vessels from the WNW or W generally pass well S of the shoal area of Rochebonne (46°10'N., 2°27'W.), but should use caution when in the vicinity of this shoal, especially during periods of low visibility.

Caution.—The dredging of the main entrance channel over the bar frequently entails the displacement of the lighted buoys from their charted positions. The charted fairway may therefore differ from the range alignment.

Several wrecks, some dangerous, lie in the approaches to the estuary and may best be seen on the chart.

Dumping ground areas, the limits of which are shown on the chart, lie about 2 miles N and S of the entrance to the main channel.

La Gironde

3.3 La Gironde is entered between Pointe de Grave, located 7.2 miles NE of Pointe da la Negade, and Pointe de Suzac, 3 miles E. Platin de Grave, a detached shoal, lies 1 mile NNW of Pointe de Grave. It has a least depth of 4.2m and is marked by a buoy.

La Gironde is formed by the union of the rivers of La Garonne and La Dordogne at Bec d'Ambes, 38 miles above the mouth. La Garonne is navigable by ocean-going vessels as far as Bordeaux, 13 miles above Bec d'Ambes and some 67 miles from the open sea. La Dordogne leads SE for 24 miles to the town of Libourne and is navigable by small craft.

Winds—Weather.—In general, weather conditions at the entrance of La Gironde are marginal about one half of the time. Although good weather may be expected on the average of 160 days per year, poor conditions in the form of fog, rain, storm, and sleet may be expected in varying forms for the rest of the time. The fog is sometimes very thick, but often the tops of the lights are visible when the land and sea are obscured. Fog in the river is generally local in character and seldom disturbs navigation. Winds from seaward may raise the height of the tides as much as 1m and advance the times of HW by up to 15 minutes. Strong E winds may also retard HW by up to 15 minutes and reduce the tide by 0.3m.

Floods in La Garonne have little effect except at Bordeaux and Le Marquis, a little above Bec d'Ambes. The time of LW is not affected at any place, but the time of HW may be advanced as much as 54 minutes at Bordeaux.

Tides—Currents.—Tides at the river entrance rise about 5.3m at springs and 4.3m at neaps.

The tidal currents at the bar are strong and have an appreciable cross-channel set. Inside the bar, the tidal currents conform mostly to the channel. The flood current at the bar begins about 5 hours before HW at Pointe de Grave, and 2 hours later attains a maximum rate of 2.5 knots. The ebb current begins 20 minutes before HW, and 3 hours and 20 minutes later attains a maximum rate of 4.5 knots.

Depths—Limitations.—Navigation on La Gironde and La Garonne depends on the state of the tide. In general, vessels can ascend the river on one tide by leaving Le Verdon as soon as there is enough water to clear the channel between Pointe de Richard and Pauillac. Vessels bound for Bordeaux at a speed of 12 knots will

usually be overtaken by the tidal wave in time to clear the bar lying S of Pauillac and then dock on the last of the flood.

Vessels descending the river at HW will usually be unable to clear the bar lying S of Pointe de Richard on one tide if their draft exceeds 8.5m. Various waiting roadsteads along the river can be utilized by such vessels.

Generally, in favorable conditions, vessels with drafts up to 15m can proceed to Le Verdon while vessels with drafts up to 11m can proceed to Bordeaux (Bassens). Depths can decrease due to the addition of mud brought down by the river between each dredging operation. Therefore, vessels are advised to contact the local authorities for information concerning the latest drafts allowed in the river.

Aspect.—Pointe de Grave, the S entrance point of the river, is a low and flat point backed by high trees. A light is shown from a tower, 25m high, standing on the point. A war memorial and a prominent signal station, with a radio mast, also stand on the point. Several large prominent tanks are situated just E of the tree line, about 2 miles SW of the point.

In addition to the range lights on the S side of the estuary, three radio masts and a water tower standing in the vicinity of Soulac Sur Mer, 4.5 miles SW of Pointe de Grave, are conspicuous from seaward.

In addition to the range lights on the N side of the estuary, several water towers and a church steeple stand in the vicinity of St. Palais, 5 miles NW of Pointe de Suzac, and are prominent from seaward.

A small harbor, protected by breakwaters, fronts the resort town of Royan, 3 miles NE of Pointe de Suzac. The steeple of a church, standing in the town, is conspicuous from seaward. The harbor has depths of 1 to 2.5m and is used by small ferries, yachts, and fishing vessels.

Pilotage.—Pilotage is compulsory for vessels over 70m in length and all vessels not equipped with VHF navigating within the estuary W of Pointe de Grave.

Pilotage is compulsory for vessels over 50m in length navigating within the river E of Pointe de Grave.

Pilotage is compulsory within the estuary and the river for all vessels carrying hydrocarbons or dangerous cargo.

Vessels should send their ETA at Lighted Buoy BXA through their agent at least 12 hours in advance, 18 hours if possible, to Le Verdon-Gironde Pilotage Station. Amendments to the ETA of more than 3 hours should be reported at least 6 hours in advance. The ETA message should also include the name of the vessel, position, speed, destination, draft, request for pilot, and agreement to possible pilot transfer by helicopter.

Vessels should then contact the pilot station on VHF channel 14 or 16, 3 hours before arriving at Lighted Buoy BXA. Arrangements for embarking the pilot by helicopter will be made at this time.

Pilots board about 1 mile E of Lighted Buoy BXA, between 1 hour before and 5 hours after LW at Corduan. In bad weather, pilots may board in the channel, SSE of Pointe de la Coubre. Pilots are generally provided by helicopter and winching is the normal method of transfer; a fast launch is used when a pilot cannot be received by helicopter. River pilots generally board off Pointe de Grave.

Regulations.—The approach channel from Lighted Buoy BXA through Grande Passe de l'Ouest is to be considered a Mandatory Access Channel. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel and maintain a listening watch on VHF channel 16.

Such vessels obliged to use this access channel should, in addition to contacting Le Verdon Traffic Station, also report by VHF to La Coubre Coastguard Station.

The lights and shape required for vessels constrained by their size or draft are to be displayed by the following:

1. Vessels of 80,000 dwt or more between Lighted Buoy BXA and Le Verdon, 3 miles SE of Pointe de Grave.
2. Vessels with a draft of 7m or more between Lighted Buoy No. 15, moored 4 miles SE Pointe de Grave, and Bordeaux.

Vessel Traffic Service.—A Vessel Traffic Service System (VTS) has been established in the estuary and river as far as Bordeaux. It is mandatory for all vessels and ensures surveillance and regulation of marine traffic within the area.

Inbound vessels should send an ETA message through their agent to the Bordeaux Traffic Control Center, via Bordeau-Arcachon (FFC), 48 hours before arrival at Lighted Buoy BXA. This message should include the name of the vessel, call sign, position and time, last port of call, destination, details of cargo, and details of any damage. Vessels carrying hydrocarbons or dangerous cargo should also state any disability of propulsion, mooring, berthing, control, or radar equipment.

Confirmation messages should be sent 24 hours and 12 hours before arrival; any amendments of more than 3 hours should be reported at least 6 hours in advance.

Vessels should then report to the Radar Verdon Traffic Station on VHF channel 12, 3 hours before arrival and request permission to enter the approach channel. Vessels unable to contact Radar Verdon Traffic or Le Verdon-Gironde Pilot Stations may not enter the channel.

Radar assistance in the estuary entrance may be provided by a pilot situated at Le Verdon Radar Station (La Palmyre). Such assistance is not available to laden or non-degassed tankers which must await pilotage.

Le Verdon container quay

Anchorage.—Vessels, with drafts of less than 10m, waiting for the tide generally anchor, in depths of 10 to 12m, sand and mud, off Le Verdon, SE of Pointe de Grave.

Vessels, with drafts of 10m and over or anchoring for a long period, generally anchor, in depths of 15 to 20m, on the E side of the river, ENE of Le Verdon.

Caution.—Several ferries cross the river at various points which may best be seen on the chart.

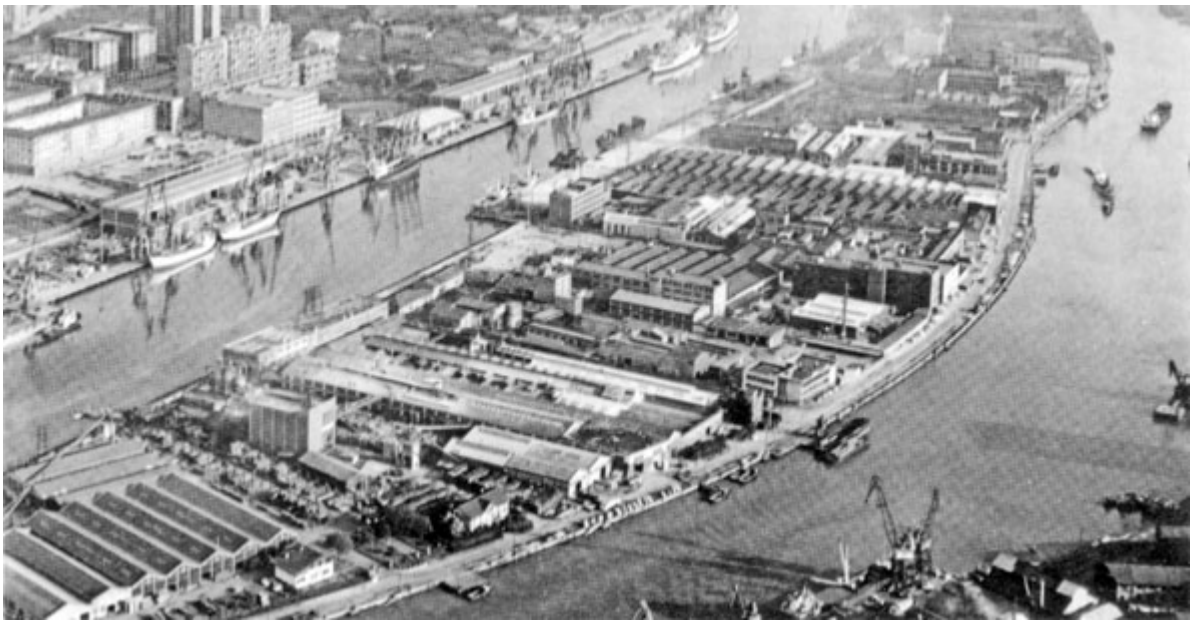
Several wrecks, some dangerous, lie in the river channels and may best be seen on the chart.

Several submarine cables and pipelines cross the river and may best be seen on the chart.

Dredging is continuously in progress between Le Verdon and Bordeaux in order to maintain the projected channel depths.

There is virtually no slack water at Bordeaux at LWS; the flood tidal current starts as soon as the ebb current has ceased to run. Due to this abrupt change, vessels in this vicinity should maintain a watch on their moorings.

Occasionally, when submarines are exercising, part of the entrance fairway may be reserved for such vessels and their escorts.



Le Verdon

Ports on La Gironde and La Garonne

3.4 Le Verdon (45°33'N., 1°02'W.) (World Port Index No. 37120), a tanker and container terminal, is situated on the W side of the entrance to the river, 2 miles SSE of Pointe de Grave. Conspicuous gantry cranes stand along the container quay.

An oil terminal pier has two inner berths, with a depth of 7m alongside, for coastal tankers and one outer berth, with a depth of 17m alongside, for large tankers. Generally, tankers up to 83,000 dwt, 240m in length, and 15m draft can be accommodated under ideal weather and tidal conditions. It was reported (1990) that this oil terminal was not in commercial use. Construction is in progress (2003) in La Chambrette Cove.

A container and ro-ro terminal quay, 600m long, is situated close S of the oil pier and has a depth of 12.5m alongside. Vessels with drafts up to 12m can be handled at any state of the tide and vessels with drafts up to 14m can be handled at HW.

Several small harbors are situated along the river between Le Verdon and Pauillac and are used by fishing craft, pleasure craft, and yachts. These include Goulee, Saint Christoly, and Saint Estephe, on the W bank, and Montagne-Sur-Gironde, Meschers-Sur-Gironde, Talmont-Sur-Gironde, Port Maubert, Vitrezay, Callonges, Portes-Neuves, and Freneau, on the E bank.

Pauillac (45°13'N., 0°45'W.) (World Port Index No. 37150), a small port, lies on the W side of La Gironde, 26 miles above Pointe de Grave and includes the facilities at Trompeloup, 1.5 miles N. The oil berth, with mooring dolphins, is situated at the latter directly E of the refinery, but the entire area is generally referred to as Pauillac.

Vessels approaching the port must clear the bar lying SE of Pointe de Richard, 10 miles above Pointe de Grave. It has a depth of 11.4m at HWS.

The oil berth, under ideal conditions, can handle tankers up to 245m in length, with drafts up to 10.3m at HWS and 9.8m at HWN. A riverside wharf, 290m long, is situated close S of the oil berth and can handle vessels up to 280m in length and 9.7m draft. It is used mainly by large vessels unable to complete their passage on one tide or by cruise liners.

A small marina, protected by breakwaters, is situated 1.2 miles S of the oil berth. It is used by yachts and pleasure craft up to 20m in length.

Pauillac

A conspicuous nuclear power station stands on the E bank of the river, 4 miles NE of the marina.

3.5 **Blaye** (45°07'N., 0°40'W.) (World Port Index No. 37160) is situated on the E bank of the river, 6 miles above Pauillac. The facilities include three berths which have 390m of total quayage and depths of 7.5m alongside. Grain and bulk vessels up to 200m in length and 9m draft can be handled at HW. The port monitors VHF channel 12.

Blaye is generally approached through a secondary channel, marked by buoys, which is entered from the main channel, 3 miles SSE of the berths.

Bec d'Ambes (45°02'N., 0°36'W.) (World Port Index No. 37171), an oil terminal administered by the port of Bordeaux, is situated at the river junction of La Garonne and La Dordogne. It is the site of two oil refineries and the main thermal power station for Bordeaux and the surrounding area.

Two oil berths are situated on the W bank of La Dordogne, close above the junction. The S berth is reported (1990) to be in poor condition and unsafe. The N berth is formed by a T-shaped pier and can handle tankers up to 215m in length and 10m draft.

An oil berth, serving the power station, is situated on the E bank of the La Garonne, 3 miles above the junction. It is formed by a T-shaped pier with dolphins and can handle tankers up to 215m in length and 10m draft.

An LPG berth, formed by a T-shaped pier, is situated 1 mile NW of the power station oil berth and can handle vessels up to 140m in length and 7.7m draft.

Several other berths are situated at the terminal and handle coastal vessels.

Izon (44°57'N., 0°22'W.) is situated 12 miles above Bec d'Ambes on La Dordogne. There is a private wharf which can handle vessels up to 3,000 dwt, 110m in length, and 4.5m fresh water draft. Due to bridges and cables spanning the river, vessels are also restricted to an air draft of 24m.

Libourne, a small port, is situated 23 miles above Bec d'Ambes on La Dordogne and is reported to be closed to commercial traffic.

Prominent marks along the shore include several dish antennas, 55m high, standing at Le Contau air base, 16 miles S of Pointe de la Negade; and a water tower and a large house standing in the village of Lacanau, 13 miles S of Le Contau air base.

Bordeaux (44°51'N., 0°34'W.)

World Port Index No. 37190

3.6 The port of Bordeaux, a major port, is situated along both banks of La Garonne, about 67 miles above the entrance to La Gironde. Ocean-going vessels have access up to Pont de Pierre, a stone bridge with numerous arches, which divides the

harbor into two sections. A river port extends above Pont de Pierre and the main facilities for commercial vessels extend to Bassens, 4 miles below the bridge.

Port of Bordeaux Home Page

http://www.bordeaux-port.fr

Tides—Currents.—Tides at Bordeaux rise about 5.3m at springs and 4.2m at neaps.

Generally, the tidal currents run in the direction of the channel and attain rates at springs up to 2.8 knots on the flood and 3.8 knots on the ebb.

Depths—Limitations.—A suspension bridge, with a vertical clearance of 51m, spans the river 2.5 miles below Pont de Pierre. A cable, with a vertical clearance of 48m, spans the river 2.3 miles below the suspension bridge.

The least depth in the approach to the port is 5.8m in La Gironde. La Garonne has general depths of 5.9 to 7m, but the tidal rise is slightly less than in La Gironde.

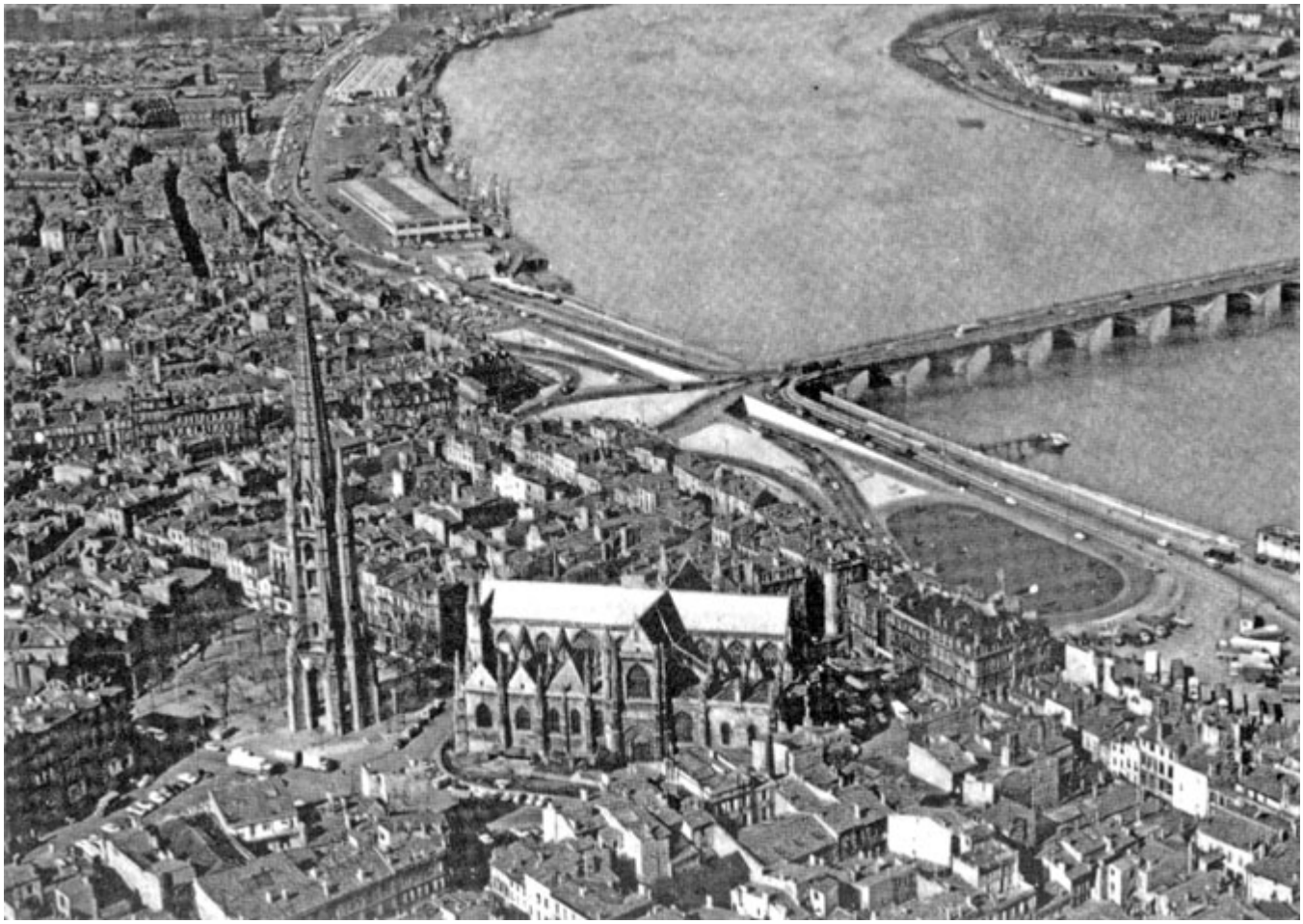
Both sides of the river below Pont de Pierre are quayed with wharves which have depths of 6.5 to 9m alongside. The berths on the W bank are used only by passenger and military vessels.

Two wet basins, connected by a passage 25m wide, are situated on the W side of the river, but are no longer used by commercial vessels. These basins, which were a former German submarine base, are maintained at a depth of 5m and are entered through a lock, 152m long and 22m wide. The inner basin is reported to be used by yachts, pleasure craft, and fishing vessels. The outer basin is reported to be only used for repairs and outfitting.

At Bassens, there is 3,000m of total quayage, with alongside depths of 9.5 to 12m. Partly-laden vessels up to 80,000 dwt and 250m in length can be handled, with drafts of 9.5 to 11m, depending on the tidal conditions.

There are facilities for general cargo, ro-ro, container, bulk, reefer, and passenger vessels. In addition, there are extensive repair facilities, with three dry docks. The largest is 247m long, 37m wide, and can handle vessels up to 55,000 dwt.

It was reported (1993) that a channel deepening project is being carried out which will allow vessels up to 120,000 dwt, partly laden, and 270m in length to be handled at the port.



Bordeaux

La Gironde to L'Adour (Bayonne)

3.7 Pointe de la Negade (45°28'N., 1°10'W.), marked by a beacon, is the S entrance point of the La Gironde estuary. It is located at the N end of a long and unbroken coast of sand dunes covered with fir trees. In bad weather, this section of coast breaks heavily and affords no shelter.

A light is shown from a prominent light, 24m high, standing at Hourtin, 4.5 miles S of Le Contau. A disused tower, 29m high, and a framework mast, 58m high, stand close S of it. It has been reported that only the top of the light is visible above the fir trees.

Tides—Currents.—Off the coast S of the La Gironde estuary, a current sets N at a distance of about 5 to 6 miles offshore. It may attain a rate up to 0.5 knot, particularly with S winds, but is halted by N winds which also usually form a short and choppy sea. Occasionally, within 1 mile of the coast, a countercurrent may be felt setting S at a rate up to 0.5 knot.

After W gales in winter, especially of some duration, strong currents may set along the coast from the head of the Bay of Biscay. They may sometimes attain rates up to 4 knots or more and vessels should use caution in these conditions.

Cap Ferret (44°37'N., 1°15'W.) is located at the S end of a low-lying tongue of land, 56 miles S of Pointe de la Negade. A light is shown from a prominent tower, 52m high, standing on the cape. A conspicuous green water tower, 50m high, stands 0.3 mile N of the light and a signal station, consisting of a grey house surmounted by a tower, stands 1 mile S of it. The cape forms the N side of the entrance to Bassin d'Arcachon.

Caution.—Several wrecks, some dangerous, lie off the coast between Pointe de la Negade and Cap Ferret and can best be seen on the chart.

Centre d'Essais des Landes, a firing danger area used by military experimental establishments to test guided missiles and other weapons, extends up to 45 miles seaward between Pointe de la Negade and Capbreton (43°39'N., 1°27'W.). Navigation may be occasionally prohibited within 12 miles of the coast in some parts of this area. For additional details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Experimental projects are carried out within the danger area and require several temporary targets, markers, and buoys. Vessels should not enter the danger area without up to date information on these activities. Numerous structures connected with the danger area stand along the shore and are conspicuous but are easy to confuse. These include a watch tower, with a water tower 1 mile N, standing at Biscarrosse-Plage, 6.5 miles S of Pointe d'Arcachon; a radio tower standing 10 miles S of Pointe d'Arcachon; Biscarrosse Beacon, consisting of a black circular mark on a white stand, situated near the shore, 12 miles S of Pointe d'Arcachon; and a framework pylon, 100m high, standing 16 miles S of Pointe d'Arcachon.

3.8 Bassin d'Arcachon (44°42'N., 1°09'W.), an extensive landlocked basin, is mostly encumbered by muddy sand banks which are intersected by several narrow channels. A main channel, entered 3 miles S of Cap Ferret, leads through an inlet into the basin. Arcachon, an important center for deep sea and coastal fishing vessels, lies on the S shore of the basin. The area is a popular resort and there are extensive facilities for yachts and oyster boats. Constantly shifting sand banks obstruct the entrance and, especially after bad weather, occasionally form substantial drying islands.

Biscarrosse Beacon

Lighted Buoy ATT-ARC, moored 4.3 miles SW of Cap Ferret, marks the seaward approach to the main entrance channel, which has a least depth of 4m over the bar. Buoys marking this channel are moved regularly to conform with the shifting banks and local knowledge is required. The tidal currents at the bar attain rates up to 2 knots on the flood and up to 3.5 knots on the ebb. It is reported that the tidal currents in the inner part of the entrance channel sometimes attain rates up to 6 knots. The bar is sometimes impassable during onshore winds and impracticable during a considerable number of days in winter. In rough weather, the buoys are often difficult to identify, but the channel can usually be distinguished by the breakers on either side.

It is advised not to use this channel less than 3 hours after HW.

A submarine water pipeline extends from Cap Ferret across the entrance of the inlet.

Pointe d'Arcachon, located 6 miles S of Cap Ferret, is the low S entrance point of the inlet. A prominent building, with three domes, stands on this point and forms a good mark when close in. An aeronautical radiobeacon is situated 6 miles E of the point. The great dune of Pyla, the white slopes of which contrast strongly with the neighboring pine woods, stands 4.5 miles SSE of Cap Ferret and can be seen in good weather from a considerable distance.

3.9 Arcachon (44°40'N., 1°10'W.), a small harbor protected by breakwaters, is situated on the S side of the basin. It is dredged to a depth of 2m and has extensive facilities for fishing vessels and yachts. Tides here rise about 4.2m at springs and 3.2m at neaps. The harbor may be contacted by VHF; local fisherman are available as unofficial pilots. Vessels can anchor, in depths of 9 to 20m, muddy sand, good holding ground, nearly anywhere in the roadstead which fronts the town.

Capbreton (43°39'N., 1°27'W.) is located 52 miles SSW of Pointe d'Arcachon. The coast between offers no good shelter and several obstructions and wrecks lie offshore.

A submarine outfall pipeline extends 3.5 miles WSW from a point on the coast, 1.5 miles S of Pointe d'Arcachon; a fish haven lies at the seaward end and it is marked by a lighted buoy moored 2 miles offshore.

3.10 Contis Light (44°06'N., 1°19'W.) is shown from a conspicuous tower, 42m high with a dwelling, standing isolated on the shore, 27.5 miles S of Pointe d'Arcachon. The coast in this vicinity consists of a line of sand dunes backed by low hills covered by fir trees.

Capbreton (43°39'N., 1°27'W.), a small harbor, lies at the mouth of the River Boudigua and is protected by breakwaters. It nearly dries at LW and is used by fishing vessels, yachts, and pleasure craft up to 20m in length, 5m beam, and 2m draft. Tides here rise about 4m at springs and 3.4m at neaps. A channel, dredged to a depth of 1.5m, leads between drying banks to the harbor, but local knowledge is required. The harbor, which can be contacted by VHF, is easily identified by a line of conspicuous buildings standing along the seafront at the S side of the entrance.

Caution.—An area, within which anchoring is prohibited, is situated off the entrance to the harbor and may best be seen on the chart.

Fosse de Capbreton (Gouf de Capbreton) is a large submarine canyon which extends seaward from off the entrance to the harbor. The depths decrease rapidly as a vessel passes over this phenomenon. Depths of 100m and 50m lie 1 mile and 0.3 mile WNW, respectively, of the harbor entrance.

During heavy weather, the sea follows the general direction of the canyon, and because the depths are great, does not break; however, at the edge of the canyon, the sea is confused and sometimes dangerous.

L'Adour (Bayonne)

3.11 L'Adour (43°32'N., 1°31'W.), a river, is entered 8.5 miles SSW of Capbreton. It is navigable by ocean-going vessels as far as Bayonne, 3.5 miles within the entrance, and then by river craft as far as Pouy, 37 miles above the port. The river has several tributaries which are navigable for short distances; La Nive, the most important one, joins close above Bayonne. The industrial town of Le Boucau stands on the N bank of the river, about 1 mile from the entrance.

Tides—Currents.—Tides inside the river entrance rise about 4.3m at springs and 3.3m at neaps.

At the river entrance, the flood tidal current runs E and SE at a rate of 2 to 4 knots at springs. The ebb current runs W at a rate of 3 to 5 knots at springs. During heavy floods in the upper river, the ebb current may attain rates of 6 to 7 knots at the entrance.

Depths—Limitations.—Depths in the approaches to the river are deep and to the N, except for Fosse de Capbreton, are fairly uniform.

Plateau de Saint Jean de Luz, with a least charted depth of 10m, consists of a chain of rocky shoals which lies from 1 to 4 miles offshore between the entrance to L'Adour and Cabo Higuer. Vessels should give this chain, which is unmarked, a wide berth as the sea breaks over the shallower parts in heavy weather.

The river is fronted by a bar of sand and gravel which continuously changes in position and width. Depths over the bar vary with the season but during the summer there is generally a least depth of 9.5m; in winter, less water may be available after W gales and a least depth of 6m has been reported.

Aspect.—As the N coast of Spain is bordered by high mountains, vessels can, in good weather, estimate their positions by bearings of the summits. The most prominent mountains are La Rhune (43°18'N., 1°38'W.) and Penas de Aya (43°17'N., 1°47'W.), which stand 14 miles and 18.5 miles SW, respectively, of the river entrance. Several buildings and a radio mast are situated on the conical summit of La Rhune. From the N, Penas de Aya appears like a crown as it has several peaks on the summit but it loses this appearance and shows three irregular peaks when seen from the NNE through E.

On closer approach, the chimneys of Forges de l'Adour, standing 1 mile ENE of the river entrance, are conspicuous because of their size and smoke. At night, the reddish glare from this smoke can be seen for a considerable distance in good weather.

The river entrance is protected by breakwaters, the principal one extends 0.5 mile W from the N shore. A prominent signal station, consisting of a circular tower, 14m high, stands on the S side of the river entrance and a conspicuous silo stands on the N bank, 1 mile E of the it.

Lighted Buoy BA, moored 1 mile NW of the outer breakwater head, marks the seaward approach. The entrance and river fairways are marked by beacons and buoys and indicated by lighted ranges which may best be seen on the chart. These ranges are moved as required to meet changes in the channel and are only lit when navigation is practical.

Pilotage.—Pilotage is compulsory for vessels 60m or more in length within 3 miles of the coast between latitude 43°50'N and the Spanish-French territorial water boundary (43°24'N., 1°41'W.).

Vessels should send an ETA at least 12 hours in advance, before 1800 LT for vessels arriving the next morning, through Bordeaux-Arcachon (FFC). Pilots can be contacted on VHF channel 12 and board between 0.5 and 1 mile NW of Lighted Buoy BA. By day, pilots generally board between 4 hours before to 1 hour before HW. At night, pilots board at the time of HW, although sometimes pilotage operations may occur outside the times stated above. Entry into and exit from the port may be suspended during winds of force 5 and above.

Regulations.—A Mandatory Access Channel, the limits of which are shown on the chart, leads from 7 miles seaward between the W and NW to the river entrance. All vessels over 1,600 grt and carrying hydrocarbons or dangerous cargo must report their entry into this channel and maintain a listening watch on VHF channel 16.

Such vessels obliged to use this access channel should, in addition to contacting the L'Adour Signal Station, also report by VHF to Socoa Coastguard Station (43°24'N., 1°41'W.). Other vessels intending to use this channel should maintain a listening watch on VHF channel 16 before entering the channel.

Anchorage.—Large vessels may anchor, in depths of 35 to 39m, sand and gravel, about 2 miles NW of the outer breakwater head. Vessels are advised not to anchor within the river.

Caution.—In autumn and winter, the landmarks at the mouth of the river are occasionally obscured by fog.

A dumping ground area, indicated on the chart, lies about 1 mile WSW of the river entrance.

A restricted area, the limits of which are shown on the chart, lies centered, with a radius of 1 mile, on Lighted Buoy BA. Another restricted area, the limits of which are shown on the chart, extends up to 0.5 mile offshore and 2.5 miles SW of the river entrance. Anchoring and fishing are prohibited within both of these areas.

During winter months, the river entrance may be closed due to the very heavy swell.

Several wrecks, some dangerous, lie in the approaches to the river entrance and may best be seen on the chart.

Bayonne (43°30'N., 1°29'W.)

World Port Index No. 37230

3.12 The industrial port of Bayonne lines both sides of L'Adour between its mouth and the junction of La Nive, 4 miles upstream. The bar at the entrance to the river is the controlling depth for entry to the port.

Port of Bayonne Home Page
http://www.bayonne.port.fr

Depths—Limitations.—An extensive marina is situated on the S side of the river, 0.7 mile within the entrance, and can handle yachts up to 3m draft.

The S bank of the port has 760m of total quayage, with depths up to 8m. The N bank has 1,525m of total quayage, with depths up to 10m.

There are facilities for tanker, chemical, general cargo, and bulk vessels. In summer, vessels up to 180m in length and 8.5m draft can be handled within the port. In winter, vessels up to 150m in length and 8m draft can be handled. During winter, normal drafts may be reduced under certain conditions and vessels should contact the port authorities for information.

Bayonne Berth Information		
Name	**Length**	**Depth**
Deep Water Quay (Quai Socaddour)	360m	10.0m
Ouai European	185m	10.0m
Quai M. Forgues	160m	10.0m
Quai L. Tramut	167m	10.0m
Quai J. Letellier	100m	6.9m
Quai Carnot	100m	6.0m
Quai Maisica	185m	7.0m
Quai Saint Bernard	120m	7.0m
Quai E. Castel	195m	8.0m
Quai A. Gommes	150m	7.0m
Quai E. Foy	300m	5.5m
Raffineries du Midi Oil Berth	120m	4.0m
St. Gobain Oil Berth	180m	7.0-8.0m

Caution.—During stormy weather, there is a considerable scend at the berths within the lower section of the port. If conditions are very bad, particularly at LW, it is sometimes necessary for vessels at these berths to move upstream. Heavy moorings are available from the port authorities.

L'Adour to Puerto de Pasajes

3.13 Pointe St. Martin (43°30'N., 1°33'W.) is located 2.5 miles SSW of the L'Adour and a line of uniform sand dunes stands between them. To the SW of this point, the character of the coast changes to rocky cliffs which are bordered by a narrow sandy beach and backed by mountainous inland terrain.

Pointe St. Martin Light, formerly known as Biarritz Light, is shown from a conspicuous tower, 47m high, standing on the point. An aeronautical light is situated 1.5 miles SE of the light. It is occasionally shown and is only visible within a small sector due to heavy vegetation.

Pointe de Biarritz, fronted by rocks and shoals, is located 1 mile SW of Pointe St. Martin. Port des Pecheurs, a small drying harbor, is situated on the N side of this point and is used by fishing boats. It consists of two tidal basins and a small wet dock. The entrance is protected by a breakwater and indicated by a lighted range.

Anchorage.—During the summer, temporary anchorage is available off Biarritz. Ocean-going vessels may anchor, in depths of 12 to 13m, 0.6 mile W of Pointe de St. Martin. This anchorage should be vacated at the first sign of any strength in the wind from seaward.

Caution.—Loutrou, the N head of Plateau de St. Jean de Luz, lies about 1.5 miles N of Pointe St. Martin. It has a least depth of 11m and breaks in heavy W gales. Occasionally, wave recorder buoys are moored in the vicinity of Plateau de St. Jean de Luz.

Basse des Esclaves, a rocky shoal, lies about 2.8 miles WSW of Pointe St. Martin and is the shallowest part of the N section of Plateau de St. Jean de Luz. It has a least depth of 10m and sometimes breaks in heavy weather.

3.14 Baie de St. Jean de Luz (43°24'N., 1°41'W.) is entered between Pointe Sainte Barbe, 6.4 miles SW of Pointe St. Martin, and Fort du Socoa, 1 mile WSW. It is protected by three breakwaters, the middle one of which is detached. The passage at the E side of the detached breakwater is only used by local craft. The passage at the W side is the main entrance channel. It has a least depth of 12m and is indicated by a lighted range.

Although the approaches to the bay are deep, the outer banks break during W gales and should be avoided. Mabessin, with a least depth of 9.8m, lies about 0.8 mile WNW of Pointe Sainte Barbe and breaks in a heavy swell; vessels are advised not to pass close to this rock during bad weather. Les Esquilletac, with a depth of 4.8m, lies about 0.5 mile N of Pointe Sainte Barbe and, along with the shoals inshore, breaks with great strength in heavy gales. A chain of foul ground and dangers extends up to 1.3 miles NE of Les Esquilletac and terminates in a group of rocks which have a least depth of 2m.

Fort du Socoa consists of a large round tower and is conspicuous. A prominent light, 12m high with a dwelling, and a prominent coast guard signal station stand close W of the fort. Tour Bordagain stands in the hills SW of the signal station and is conspicuous.

The Riviere La Nivelle flows into the bay and separates the towns of St. Jean de Luz, on the E shore, from Ciboure, on the S shore. There are several small yacht marinas situated along the shores of the bay.

Entrance to Baie de St. Jean de Luz from W

St. Jean de Luz (43°23'N., 1°40'W.), a small tidal harbor, is entered through a dredged channel which has a depth of 3m and passes between two training walls. It has depths of 3 to 5m and is mainly used by fishing vessels and pleasure craft with drafts up to 2.5m. Tides here rise about 4.2m at springs and 3.2m at neaps. Pilotage is provided from L'Adour and pilots will board close outside the entrance to the bay.

It was reported (1991) that vessels could only enter with drafts up to 1.6m due to silting and shoaling at the harbor entrance.

Anchorage.—Vessels may anchor, in a depth of 37m, shingle and good holding ground, just outside the entrance to the bay. Anchorage inside the bay is available under the direction of a pilot, in depths of 7 to 9m, sand and gravel, SE of the detached breakwater.

Caution.—Numerous pleasure craft may be encountered within the bay.

Areas within the bay are reserved for yacht moorings and square dipping fishing nets.

3.15 Rada de Higuer (Baie de Fontarabie), lies 5 miles WSW of Baie de St. Jean de Luz. It is entered between Cabo Higuer and Pointe Sainte Anne, 1.6 miles ESE.

The boundary between France and Spain passes through the bay; in its SW part, a neutral area has been established for the use of vessels of both nations. The limits of this anchorage area are indicated by the alignment of several white beacons which stand on the shore.

Pointe Sainte Anne (43°23'N., 1°45'W.) is located 4.5 miles WSW of Baie de St. Jean de Luz. A conspicuous observation tower stands on the summit of this point. Les Briquets, a reef which dries 0.4m, extends up to 0.8 mile N of the point and is generally steep-to on its N side.

Cabo Higuer (43°24'N., 1°47'W.), a bare and rugged cape, forms the W entrance point of the bay. A light is shown from a prominent tower, 21m high, standing on this cape. A partly ruined but prominent castle stands at the top of an escarpment, close SE of the light.

Isla Amuitz, a rocky conical islet, is located close N of the cape and connected to it by a drying reef. This islet, which is fronted by foul ground, appears, except from the E or W, as part of the mainland.

Banc Chicarvel, with a least depth of 13.3m, lies in the entrance to the bay, 1 mile E of Cabo Higuer. Bajo Iruarri, with a least depth of 7.9m, lies 0.6 mile SW of Banc Chicarvel. During rough weather or a heavy swell, vessels entering the bay should pass WNW of these two rocky banks.

A small harbor of refuge protected by breakwaters is situated at Gurutzeandi, on the SE side of Cabo Higuer. There are depths of 5 to 6m within the harbor and the entrance is 30m wide. It is mainly used by fishing vessels and small craft.

The Ria de Fuenterrabia is entered between two breakwaters at the head of the bay, but is encumbered by shifting sand banks. The buildings of Hendaye, a town standing on the E bank of the river, and Fuenterrabiand, a town standing on the W bank, are conspicuous. A number of small harbors within the river are used by pleasure craft and fishing vessels.

Anchorage.—Temporary anchorage may be obtained, in depths of 10 to 13m, sand and mud, W of Bajo Iruarri; there is good shelter here from W and S winds, but those from NE raise a heavy sea and render this roadstead unsafe.

3.16 **Monte Jaizquivel** (43°21'N., 1°51'W.) is a broad and uncultivated mountainous mass which lies between Cabo Higuer and the entrance to Puerto Pasajes, 7 miles WSW. Five stone towers, each 9m high, are situated along its length, but only four of them are visible from seaward. The summit of this mass, 548m high, is somewhat rounded and is surmounted by the ruins of a fort that are not easily identified from a distance.

In addition to Monte Jaizquivel, La Rhune and Penas de Aya, both previously described in paragraph 3.11, form excellent marks in this area.

Monte Urdaburn (43°14'N., 1°54'W.), with three flat summits, stands 10.5 miles SW of Cabo Higuer. It rises to a maximum elevation of 610m and can be seen from a considerable distance to seaward.

Tides—Currents.—In this area the currents generally follow the direction of the coast. During winter, when W winds predominate, the currents set E towards the head of the Bay of Biscay and may sometimes attain rates of 4 to 5 knots. In summer, with prevailing NE breezes, the currents are weak and set W or WNW, attaining rates of 1 to 2 knots.

Puerto de Pasajes (43°19'N., 1°55'W.)

World Port Index No. 37290

3.17 The port of Pasajes is formed by an extensive natural basin which has been improved by dredging and wharf construction. It is a commercial harbor, a fishing center, and a port of refuge for vessels seeking shelter between Brest and Bilbao. The port lies 5 miles W of the French-Spanish border and 3 miles E of the city of San Sebastian.

Puerto de Pasajes Home Page

http://www.puertopasajes.net

Winds—Weather.—Because of the narrow entrance and the surrounding high land, the harbor is always calm regardless of the sea conditions outside and the violent winter gales within the Bay of Biscay.

During spring and autumn, thick fog may occur.

Tides—Currents.—Tides rise about 4.1m at springs and 3.1m at neaps.

Under normal conditions, the tidal currents within the harbor are weak.

Depth—Limitations.—The fairway of the entrance channel is dredged to a depth of 10m over a width of 70 to 100m. There are 3,000m of total commercial quayage and 250m of private quayage within the harbor. The port has facilities for ro-ro, general cargo, container, tanker, and bulk vessels. In addition, there are extensive facilities for fishing vessels.

The narrowness of the fairway imposes restrictions on the size of vessels which are allowed to enter the port. Generally, vessels up to 185m in length and 9m draft can enter. It was reported (1993) that a vessel of 174m in length and 10.6m draft had been handled.

Puerto de Pasajes Berth Information		
Name	**Length**	**Depth**
Buenavista Quay	761m	10-12m
Molianao Quay	310m	10m
Capuchinos Quay	298m	10m
Lezo 1 Quay	298m	10m
Lezo 2 Quay	150m	10m
Lezo 3 Quay	150m	8m
Avanzado Norte Quay	63m	6m
Avanzado Oeste Quay	120m	6m
Herrera Quay	400m	5m
Reloj Quay	240m	5m
Iberduero Quay	250m	10m

Aspect.—The harbor is entered via a narrow pass, 0.7 mile long, cut through the mountains. It has a sheltered interior and resembles a fjord. The seaward entrance of the pass is reported to be only visible from the N or NNW.

In the outer approaches, La Rhune and Penas de Aya, previously described in paragraph 3.11, are visible.

The entrance channel leads between Punta del Arando Chico and Punta del Arando Grande, 220m E. The land on both sides is rugged and rises steeply to Monte Grandes Arrocas, at the E side, and Monte de las Cruces, at the W side.

Punta del Arando Chico, the extremity of which is a narrow ridge, rises to a remarkable rocky mound, 148m high, known as Fronton La Plata. Cabo La Plata Light is shown from a lantern on a building, 13m high, standing on the summit of this mound.

Punta del Arando Grande, marked by a light, is formed by several rocks which have been joined together and give the appearance of a breakwater. The outer extremity of these rocks is marked by a light. El Fraile, a steep bluff, rises close E of the inner end of these rocks and is marked by a conspicuous rock which has the shape of a monk's hooded cloak. A signal station stands on Atalaya de Pasajes, the summit of El Fraile, and is equipped with a racon.

A lighted range and a directional sector light indicate the approach to the entrance channel and may best be seen on the chart.

Bancha del W, a detached reef marked on its E extremity by a light, lies about 200m N of Punta del Arando Chico. It has a least depth of 4m and acts as a breakwater, sheltering the approach. A rock, with a depth of 6.9m, lies close E of this reef and close W of the entrance channel. Bancha del E, another detached reef, is marked on its W extremity by a light and lies about 200m NE of Punta del Arando Grande. It has a least depth of 1.4m and also acts as a breakwater.

La Redonda, 3.2m high, is located 80m offshore, about 300m WNW of Punta del Arando Chico. This rock is quite steep and makes a good mark, but is usually covered at HW.

Pilotage.—Pilotage is compulsory for all vessels of 500 gross tons and over. Vessels should send an ETA at least 24 hours in advance and contact the pilot on VHF channel 14 at least 1 hour before arrival. In good weather, the pilot generally boards in the vicinity of the Fairway Lighted Buoy. During poor sea conditions, the pilot launch will remain inside the entrance channel and vessels will be instructed by radio.

Regulations.—Vessels of over 140m in length may only enter by day.

Due to the narrowness of the entrance channel, the passage of ocean-going vessels is only allowed in one direction at a time and is controlled by the port authorities.

Anchorage.—Vessels are advised to anchor outside only in good weather and they should contact the pilot station for instructions before doing so. Generally, vessels can anchor, in depths of 35 to 60m, sand and mud, E of the approach range alignment.

Caution.—Numerous fishing vessels may be encountered in the approaches to the port.

The port may close due to thick fog which occurs occasionally at dawn during spring and autumn days.

Puerto de Pasajes to Bilbao

3.18 Punta Atalayero (43°20'N., 1°58'W.), a high and sheer point, is located 1.4 miles W of the entrance to Puerto de Pasajes and is fronted by rocks. Bajo Pekchilla, an isolated reef, lies 0.3 mile WNW of this point. It has a least depth of 0.2m and breaks in a heavy swell.

Monte Ulia backs Punta Atalayero and falls steeply to the sea. It rises to a height of 233m; a prominent radio mast, 90m high, stands on the summit.

Punta Mompas, 40m high, is located 0.5 mile WSW of Punta Atalayero. It is composed of rocky faults fronted by a reef. The ruined tower of an old signal station stands 0.3 mile ESE of this point, and a prominent red house stands on the slopes of Monte Ulia, close E of it.

Ensenada de la Zurriola is entered between Punta Mompas and the N end of Monte Urgull, 1 mile WSW. The head of the bay, into which flows the Rio Urumea, is formed by a long sandy beach. This beach dries up to 200m offshore and breaks

heavily in NW gales. Its W part is protected by a seawall which extends to the river mouth.

The Rio Urumea is fronted by a bar which nearly dries. At HW in good weather, boats can cross it and reach the town of Astigarraga, 3 miles above the entrance. Barrio de Gros, a suburb of San Sebastian situated on the E bank of this river close within the entrance, is connected to the city by several bridges.

Monte Urgull, a conspicuous hill, 137m high, stands on the E side of the entrance to La Concha de San Sebastian and is connected to the mainland by a low sandy isthmus, on which the city of San Sebastian is situated. Castillo de la Mota, surmounted by a large statue of Christ, stands on the summit and is conspicuous. A disused signal station, consisting of a square tower, stands on the NW slope of the hill and is visible from a considerable distance seaward.

A rocky patch, with a least depth of 8.8m, lies 0.2 mile NW of the NW side of Monte Urgull and should be passed to the N.

Monte Urdaburu (43°14'N., 1°54'W.) stands 6.5 miles SE of Monte Urgull. Its summit rises to a height of 608m and is formed by two flat peaks.

Punta Arabicobaja (43°20'N., 2°01'W.), the W entrance point of La Concha de San Sebastian, is located 0.8 mile WSW of Monte Urgull. It is backed by Monte Igueldo, which attains a height of 182m. San Sebastian Light, also known as Igueldo, is shown from prominent tower with a dwelling, 13m high, standing on the N slope of this hill. A disused light, 18m high, and a large hotel stand on the summit of the hill and are conspicuous.

San Sebastian Light

Monte Mendizorrotz, 390m high, stands 3 miles WSW of Monte Igueldo. Its summit, formed by a sharp peak, is an excellent mark from seaward.

Isla de Santa Clara (43°19'N., 2°00'W.), 45m high, lies in the entrance to La Concha de San Sebastian and is nearly connected by a drying reef to the E extremity of Monte Igueldo. A light is shown from a lantern on a dwelling, 10m high, standing on the summit of the island. La Bancha, a detached rocky shoal, lies about 300m NNW of the island. It has a least depth of 5.5m and breaks in any swell. Large vessels should only pass E of this shoal.

3.19 San Sebastian (43°19'N., 2°00'W.), a major resort, stands on the shores La Concha de San Sebastian, a bay formed as its name implies like a sea shell. It is sheltered by Monte Urgull and Monte Igueldo. The entrance channel, which is indicated by a lighted range, leads E of Isla de Santa Clara. A small drying harbor with two tidal basins is situated at the NE

Isla de Santa Clara Light

corner of the bay; mooring buoys are situated close SE of the island. Tides in the bay rise about 4.2m at springs and 3m at neaps. The harbor is used by fishing vessels, yachts, and pleasure craft up to 60m in length, 9m beam, and 3.3m draft. Local knowledge is required.

In favorable weather, vessels may anchor, in depths of 35 to 40m, NNW of Isla de Santa Clara.

3.20 The **Rio de Orio** (43°17'N., 2°07'W.), fronted by a bar, flows into the sea 5.5 miles WSW of Monte Igueldo. The river is entered between Punta Talaycoeguia, at the W end of the Igueldo Range, and an unnamed point, 0.3 mile W. Both sides of the entrance are high and rocky with the river mouth forming a distinctive break in the coastal range. Cruz de la Barra, a conspicuous white cross, stands on the W side of the entrance. The E side of the river is retained by a training wall which extends 1.2 miles upstream to the town of Orio. There are depths of 0.5m on the bar and 0.1m in the channel which is marked by beacons. A cantilever bridge, with a vertical clearance of 17.5m, spans the river 0.5 mile above the entrance. Small coasters and fishing vessels with local knowledge can enter the river at HW and reach Orio, but caution is necessary as the bar fronting the entrance and the channel frequently shifts.

Isla Mallaarria (43°18'N., 2°09'W.), 12m high, is the outermost of several islets which extend up to 0.2 mile offshore, 0.7 mile WNW of the Rio de Orio.

An ore-loading appliance situated on this islet is connected by a transporter cableway to the mines, 3.5 miles S. Four mooring buoys used by vessels loading ore lie close off the N and E sides of the islet; the berth can only be used in calm weather.

A lighted buoy marking the seaward end of an outfall pipeline is reported to be moored 0.3 mile N of the islet.

Monte Amesti, 192m high, rises 0.5 mile SE of Isla Mallaarria and is prominent. The town of Zarauz stands in a low and sandy bight, 1.2 miles W of this hill. Playa de Zarauz, the white beaches of which form a popular resort, fronts the town and is easily identified from offshore.

3.21 Isla de San Anton (43°19'N., 2°12'W.), 112m high, is located 3 miles WNW of the Rio de Orio. This island has steep cliffs on its NW side and is connected to the mainland by

a narrow strip of reclaimed land. A dangerous shoal, with a depth of 4.6m, lies close N of the N end of the island and breaks in bad weather.

There are two peaks on the island; the prominent ruins of a castle stand on the S one. A light is shown from a conspicuous tower, with a dwelling, 14m high, standing on the lower N peak.

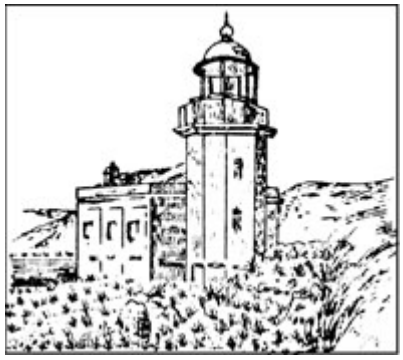
Puerto de Guetaria

Puerto de Guetaria (43°18'N., 2°12'W.), a small harbor, is situated at the S end of Isla de San Anton and at the E side of the reclaimed land which connects the island to the mainland. It is protected by two breakwaters and has an outer entrance, 50m wide. The harbor consists of two tidal basins with depths of 1.5 to 6m and is used by fishing vessels, yachts, and pleasure craft.

The town of Guetaria is situated on the E slope of a hillock at the S end of the reclaimed land. It is the birthplace of Juan Sebastian de Elcano, the first person to circumnavigate the world.

Monte Izarraitz, with its flat summit rising to a height of 1,027m, stands 7 miles SSW of the harbor and is conspicuous from seaward. Monte Garate, 278m high, stands 1 mile S of the town and is also a good mark.

Vessels can anchor, in a depth of 13m, sand, good holding ground, about 200m E of the head of the N breakwater.



Guetaria Light

3.22 Zumaya (43°18'N., 2°15'W.), a small harbor, lies 0.5 mile within the Ria de Zumaya which is entered 2 miles W of Isla de San Anton. It is used by small coasters, fishing vessels, and pleasure craft. A light is shown from a tower, with a dwelling, 12m high, standing on a flat-topped islet at the W side of the river mouth.

The river is fronted by a bar, with a depth of 0.3m; the entrance channel, which is formed by a breakwater and a training wall, dries in several places. A commercial wharf at the harbor, which was dredged (1968) to a depth of 2.4m alongside, is equipped to handle cement. The river could generally be entered by vessels with local knowledge up to 3m draft at HW, but silting at the bar has been reported.

Ensenada de Deva (43°18'N., 2°21'W.), a small bay, lies 4.5 miles W of the Ria Zumaya. It is entered between Punta Aitzandi, on the E side, and Punta Arrilaban, 0.5 mile W. The former, 131m high, consists of a sheer rock cliff, and being white in color, constitutes a good mark from offshore. Monte Anduz, 612m high, stands 2.5 miles SE of the bay and is prominent. Monte de Santa Catalina, 197m high, rises close S of Punta Aitzandi. A conspicuous white chapel stands on its summit.

The Rio de Deva flows into the SW corner of the bay and a small harbor is situated 0.4 mile above the mouth. This harbor is little frequented as the river is fronted by a drying and shifting bar. Small craft with local knowledge can enter the channel, which is 46m wide. It dries for most of its length and has depths of 3.8m at springs and 2.5m at neaps.

3.23 Puerto de Motrico (43°19'N., 2°23'W.), a small harbor, lies at the head of an inlet, 1.3 miles WNW of Ensenada de Deva. The town backing the harbor stands on the steep slope of a hill and has numerous prominent white houses which are visible from seaward. The harbor is protected by two moles which form an entrance, 23m wide. It has a depth of 4m in the main basin and is mostly used by fishing vessels. The entrance channel is indicated by a lighted range, but local knowledge is required as the shores of the inlet are fringed with rocks. Heavy seas off the entrance are prevalent in winter and render the harbor unsafe; it should only be used during the summer months.

Puerto de Ondarroa (43°19'N., 2°25'W.), a small harbor, lies in the W part of a shallow bay, 1.8 miles WNW of Motrico. The bay is entered between Punta Saturraran, at the SE side, and Punta Barracomuturra, 0.3 mile WNW. The harbor, which is extensively used by fishing vessels, is protected by an outer breakwater extending from Punta Barracomuturra. The entrance channel has a least depth of 3m over the bar and the main part of the harbor has dredged depths of 2 to 5m. Local knowledge is required for entering and unofficial pilots are available.

A racon has been installed at the light structure on the head of the outer breakwater.

3.24 Isla de San Nicolas (43°22'N., 2°29'W.), 51m high, lies close off the coast, 4 miles NW of Puerto de Ondarroa. The ruins of a battery stand on its summit. This islet is prominent from the E, but not easy to identify from the W.

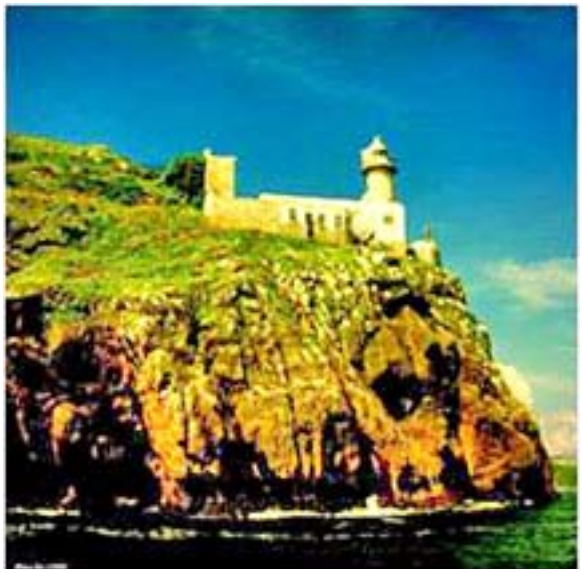
Puerto de Lequeitio (43°22'N., 2°30'W.), a small harbor, lies in the SW corner of a shallow basin which is entered by a narrow channel W of Isla de San Nicolas. An outer harbor is

formed between a breakwater and a training wall which connects the S end of Isla de San Nicolas to the mainland. An inner harbor is formed by two moles and has an entrance 35m wide. There are depths of 4m in the entrance channel and in the harbor. Fishing boats and small coasters can enter, but local knowledge is required. Unofficial pilots are available.

Monte Calvario, 119m high, stands with a prominent conical peak at the head of the harbor.

During S winds, medium-sized vessels can obtain temporary anchorage, in depths of 12 to 14m, sand and stone, about 300m E of the N extremity of Isla de San Nicolas; this anchorage is unsafe in N winds.

3.25 Cabo de Santa Catalina (43°23'N., 2°31'W.), 43m high, is located 1 mile NW of Lequeitio. It is a cliffy point and rises steeply from the sea. A light is shown from a tower, with a dwelling, 13m high, standing on the point.



Cabo de Santa Catalina Light

Monte Negro, 389m high, stands 1 mile WSW of the point and is conspicuous because of the steep cliffs on its seaward side.

Ensenada de Oguella indents the coast between Cabo de Santa Catalina and Punta Apical, 2.5 miles WNW. The shores of this bay are steep, rocky, and bordered by reefs and shoal water. A heavy sea sets into this bay during N gales and vessels are advised to avoid it.

Punta Apical (Punta de Ea), rocky and fringed by a reef, is located 2.2 miles WNW of Cabo de Santa Catalina. This point is inconspicuous, but may be identified by a prominent house, surrounded by trees, standing on its summit. The sea breaks heavily to seaward of this point; which should be given a wide berth.

Islote Cayarri, a steep and rocky islet, lies close offshore 0.4 mile W of Punta Apical. The shore extending to the W of this islet is rocky and indented by several coves.

Punta Ermicho, rocky and steep, is located 1.7 miles W of Punta Apical and is backed by somewhat lower land. The town of Nachitua stands on the heights and forms a prominent mark from seaward.

Cabo Ogono, the N extremity of a reddish-colored promontory, rises nearly perpendicular from the sea, 2 miles NW of Punta Ermicho. Monte Ogono, 304m high, stands 0.5 mile S of the cape. It is the summit of the promontory and is surmounted by a prominent watch tower.

Puerto de Elanchove (43°24'N., 2°38'W.), a small and shallow harbor, is situated at the SE side of the promontory of which Cabo Ogono is the N extremity. It is protected by breakwaters which form an entrance, 12m wide, and is used by fishing boats and small craft.

Isla de Izaro (43°26'N., 2°41'W.), 43m high, is located 1.8 miles WNW of Cabo Ogono. This island is rounded, shaped like a hillock, and surrounded by reefs. The ruins of a convent stand on its SE end and may be seen amongst the vegetation. The depths NW of this island are irregular and vessels should keep at least 1 mile N of it.

The Ria de Mundaca flows into the sea, 0.5 mile W of Isla de Izaro. The estuary of the river, although of some size, is presently encumbered with numerous sand banks and only infrequently used by small craft and boats.

Puerto de Bermeo (43°25'N., 2°43'W.), a small harbor, lies 1.5 miles W of Isla de Izaro. It consists of inner and outer basins and is protected by a breakwater. Tides here rise about 4.5m at springs and 3.5m at neaps. The harbor entrance and basins have depths of 5.5m and are used extensively by fishing vessels. The harbor can be contacted on VHF channel 9 or 16 and pilotage is compulsory for vessels of more than 500 gross tons. The town stands on low ground behind the harbor. Blocks of flats stand in the N part of the town and are conspicuous from seaward. A directional sector of Rosape Light, shown from a white building with a red roof, leads SW to the harbor entrance.

A light is shown from a prominent tower, with a dwelling, 20m high, standing on the slope of the point. An old disused light stands close N of the new light and at a lower elevation. A prominent watch tower stands 0.4 mile S of the new light at a higher elevation. Vessels should use caution not to confuse these towers when close in. Three above-water rocks lie close to the foot of the cape and a reef, on which a heavy sea often runs, extends seaward from it. Vessels are advised not to approach within 1 mile of the cape.

3.26 Cabo Machichaco (43°27'N., 2°45'W.), extending NNE from high land, is located 2.3 miles NW of Bermeo. It terminates in a narrow point which is cliffy on the W side and gradually sloping on the E side. This point is not easy to identify, except from the E and W.

Caution.—Gaviota Oil Production Platform (43°30'N., 2°41'W.) stands 3.5 miles NE of Cabo Machichaco. Submarine pipelines extend SW from the platform to a point on the coast close SE of the cape.

Isla Aqueche (43°27'N., 2°46'W.) is located 0.2 mile from the coast, 1 mile WSW of Cabo Machichaco. It is a high, steep, and barren islet. Isla de San Juan Gaztelugache, located 0.4 mile WSW of Isla Aqueche, is rugged and flat-topped. A building standing on the top of this islet is connected to the mainland by a bridge with two spans.

The coast to the W of Cabo Machichaco is cliffy and exposed to the N and NW. During strong winds from these directions, the

Cabo Machichaco Light

offshore sea becomes very steep and rough and vessels should give this part of the coast a berth of at least 3 miles.

In the interior, the land is generally mountainous and broken with the high and rugged crests of the Cantabrica Range which are visible during clear weather.

Monte Gorbea, 1,535m high, and Monte Amboto, 1,361m high, both stand about 23 miles SSE of Cabo Machichaco and form excellent marks from offshore. Monte Solluve, a broad peak 683m high, stands 5 miles S of Cabo Machichaco and is easily identified.

Monte Jata, also known as Alto de Plencia, stands 2 miles inland, 5 miles SW of Cabo Machichaco. It rises to a rugged peak, 591m high, and forms a good mark, especially from the N when the summit appears as a cone.

3.27 **Cabo Villano** (43°26'N., 2°57'W.), a high and precipitous headland, is located 8.5 miles W of Cabo Machichaco. It projects NW from the coast and is fronted by foul ground. Gorliz Light is shown from a tower, 21m high, standing near the extremity of the cape.

Islote Villano, a low and rugged islet, stands on a rocky shelf, 0.5 mile NE of the cape. It should be given a wide berth of at least 1 mile.

Arminza, a small harbor, lies in the SE corner of a small bay, 1.8 miles E of Cabo Villano. It is protected by a breakwater and used by fishing boats.

The Ria de Plencia flows into the sea, 1 mile SW of Cabo Villano. It is entered between Punta de Ustrikotsek, high and sheer, and Chicharropunti, a low rocky point, 0.5 mile SW. The visible ruins of a castle stand on Punta Ustrikotsek. A bar, which dries, fronts the mouth and a bridge, with nine arches, spans the river 0.5 mile above it. A channel, with depths of 0.2 to 1.8m, leads up to the bridge; the river is frequented by local fishing boats and yachts.

The coast extends SW for 4 miles from the Ria de Plencia to Punta Galea, the E entrance point of Bilbao. Shoal water lies up to 0.5 mile seaward along this stretch of shore and reefs fringe most of the small points.

Puerto de Bilbao (43°20'N., 3°01'W.)

World Port Index No. 37400

3.28 The port of Bilbao, lying at the head of Abra de Bilbao, a large bay, is considered to be the principal commercial port of nothern Spain. The Ria de Bilbao, known in its upper reaches as the Rio Nervion, enters the harbor at its SE extremity and is lined with riverside quays and industrial installations up to 7 miles above its mouth.

Puerto de Bilbao Home Page

http://www.bilbaoport.es

Winds—Weather

Fog may attain a high incidence between May and October, averaging at times up to 11 days per month. Morning fog is more likely during the summer, but winter fog may last for 2 or 3 days.

At Bilbao, the SE winds predominate in winter and the NW winds in summer. Strong NW winds (Galerna), which are more likely to occur in summer, affect the port considerably and Abra de Bilbao may not be safe at such times. Gales occur on the average of 4 days per month between November and March, but become much less frequent in summer.

The climate is quite temperate and temperatures rarely fall below freezing in winter. The summer months are quite warm with average daily highs up to 33°C in August.

Tides—Currents

Tides rise about 4.6m at springs and 3m at neaps.

At the entrance to the Ria de Bilbao, the ebb tidal currents attain rates up to 3 knots at springs and 1.5 knots at neaps. The flood currents are somewhat weaker. Gales from the NW strengthen the flood currents and may raise the water level by 0.5m; gales from the NE to S generally lower the water level by the same amount.

Depths—Limitations

Abra de Bilbao is entered between the two outer breakwater heads which form an entrance, 500m wide.

The outer harbor of Bilbao is situated at the head of Abra de Bilbao and is entered between two inner breakwaters. Dique de Santurce, the W inner breakwater, extends 0.7 mile NE and Contradique de Algorta, the E inner breakwater, extends 0.5 mile W. They form an entrance 570m wide, but the fairway is narrowed to a width of 370m by Pier No. 1, which extends E into the outer harbor from the inner side of Dique de Santurce.

The entrance to the river lies between two moles at the SE side of the outer harbor. A rocky ledge, which dries, lies on the NE side of the river entrance and is marked by a lighted buoy.

A transporter bridge, with a vertical clearance of 45m, spans the river close within the entrance. A road bridge, with a vertical clearance of 48m, spans the river, 2.7 miles above the transporter bridge.

The fairway in the Ria de Bilbao is dredged to a depth of 6.5m as far as the mouth of the Rio Galindo, 1.8 miles above the entrance; a dredged depth of 6m is then maintained as far as the mouth of the Rio Cadagua, 2.8 miles above the entrance. The remainder of the commercial part of the river and Canal de Deusto, which leads parallel to it, are dredged to depths of 4 to 5m.

The port has facilities for tanker, bulk, ro-ro, general cargo, LPG, container, and fishing vessels. In addition, extensive shipbuilding and repair services are available.

There are depths of 14m in the outer harbor at Santurce; generally, vessels up to 250m in length and 13.7m draft can be handled alongside the quays.

An oil and LPG terminal is situated within Abra de Bilboa at the inner side of the W breakwater. It has six berths, with depths of 10 to 31m alongside, and can handle crude oil tankers up to 500,000 dwt. It was reported (1990) that the largest vessel accommodated alongside at this terminal was 423,600 dwt and 378m in length, with a draft of 26.1m.

Bilbao Berth Information		
Name	**Length**	**Depth**
Santurce		
Princesa de Espana	500m	14.0m
Adosado	293m	14.0m
Principe de Asturias North	645m	14.0m
Principe de Asturias South	964m	12.0-14.0m
De Enlace	150m	7.0m
Reina Victoria Eugenia	634m	10.5m
Espigon No. 2	100m	7.0m
Espigon No. 1	240m	12.0m
Espigon No. 3N	678m	14.0m
Estacion Maritima	145m	9.0m
Nemar 1	175m	10.5m
Nemar 2	250m	14.5m
Atraque Ro-Ro	170m	6.9m
Ria Nervion		
Zorroza	823m	6.0-7.0m
Helguera	169m	5.5m
Abando	512m	5.0m
Churruca	435m	5.0m
Uribitrte	491m	5.5m
Aduana	162m	4.5m
AHV Sestao	1,200m	5.0m
AHV La Mudela	160m	5.0m
Sefanitro	230m	5.5m
Agruminsa	256m	7.0m
Canal de Deusto		
Margen Derecha	1,505m	8.0m
Margen Izquierda	1,074m	8.0m
Darsena de Udondo-Darsena de Aspe-Ria del Caddagua		
Dow	80m	4.0m

Bilbao Berth Information		
Name	**Length**	**Depth**
Metalquimica	150m	5.0m
Union Espanola de Explosivos	298m	3.5m
Iberdrola	167m	3.0m

Aspect

Abra de Bilbao, the large bay, lies between Punta Galea and Punta Lucero, 3.8 miles WSW.

Punta Galea, 75m high, is a flat-topped promontory with white cliffs. A light is shown from a tower, with a dwelling, 8m high, standing on the point. A disused light, with a dwelling, 7m high, stands close NNW of the new one. Between Punta Galea and Punta de San Ignacio, 1.5 miles SSE, the E shore of the bay is formed by steep and conspicuous white cliffs.

Punta Galea Light

Punta Lucero, the W entrance point of the bay, is high and barren. It is closely backed by Monte Lucero, 304m high. The W shore of the bay is formed by a steep range of hills extending 2 miles SE from Monte Lucero to Monte Serantes, 450m high. From the NW, the two summits of these hills, in line, appear as a single cone and form a conspicuous mark from offshore. Two aeronautical obstruction lights are shown from the summit of Monte Serantes.

Abra de Bilbao is protected by two breakwaters. The W breakwater extends about 1.5 miles NE from Punta Lucero. The E breakwater extends about 2 miles WNW from Punta Galea; several wave-recorder lighted buoys are generally moored off its outer side. Lights are shown from the breakwater heads; a racon is situated at the light structure on the head of the W breakwater.

The glow of the steel smelting plants, situated along the river banks, is reported to be an excellent mark and visible on clear nights up to 60 miles seaward. Other conspicuous marks include the framework towers, 65m high, of the transporter bridge; two chimneys, 200m and 230m high, standing at the power station on the W side of the bay; and several fuel tanks, floodlit at night, standing NNW of the power station.

Pilotage

Pilotage is compulsory for all vessels over 500 gross tons.

Bilbao—Punta Lucero Breakwater from W

Bilbao—Punta Lucero Breakwater from SSW

Bilbao—Punta Lucera Breakwater from SE

Bilbao—Outer Harbor and Abra de Bilbao from NW

Bilbao from SE

Bilbao—Outer Harbor

Vessels should send their ETA 72 hours, 48 hours, and 6 hours in advance through their agent. Vessels should contact Bilbao Traffic 1 hour prior to arrival on VHF channel 12 and then maintain a listening watch on VHF channel 6.

Vessels should contact the pilot station again when within 7 miles of the port entrance.

Pilots board 2 miles off the breakwater. In stormy weather, vessels may be instructed to follow the pilot launch within the breakwaters where pilots can board in calmer waters. Harbor pilots board within 0.5 mile of the inner breakwaters.

Anchorage

Large vessels may anchor outside of Abra de Bilbao, in depths of 40 to 50m, sand, N of the W outer breakwater. Anchor berths, with depths up to 27m, lie within Abra de Bilbao and are allocated by the pilot station. Generally, vessels anchor in the SW part of this bay where the bottom is sand with fair holding ground.

Caution

A disused submarine cable lies in the entrance to Abra de Bilbao and may best be seen on the chart.

A restricted area, the limits of which are shown on the chart, extends NW from the coast in the vicinity of the Punta Galea. Due to the existence of submarine cables, anchoring and trawling are prohibited within this area.

Bilbao—Canal de Deusto from S

West side of Bilbao from E

Hydrographic buoys may be frequently moored up to 15 miles N of the port entrance.

Reclamation works are in progress (2003) in the area of the Ciervana dike, as shown on the chart.

Bilbao to Santander

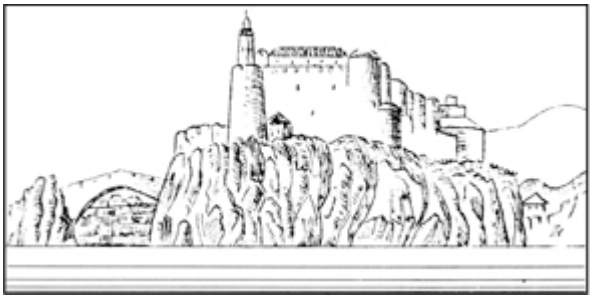
3.29 Ensenada de San Julian de Musques (43°21'N., 3°07'W.) is entered between Punta Lucero and Punta de Musques, 1 mile SW. The sands at the head of this bay contrast sharply with the cliffs on either side and form a conspicuous mark from offshore. The Ria de Somorrostro, fronted by a bar, flows into the SW corner of the bay. It has depths of 2.1 to 2.5m at HWS and is used by light-draft barges.

Monte Camposquerra, 395m high, stands 3.8 miles WSW of Punta Lucero. It is an excellent landmark from seaward; when viewed from the N, the peak appears conical with an outcrop on its W side.

Tides—Currents.—During the winter, the coastal current in this vicinity generally runs E and NE due to the prevailing W winds. It runs with greater strength offshore and in NW gales may attain rates up to 3 knots.

3.30 Puerto de Castro Urdiales (43°23'N., 3°13'W.), a small port, lies on the S side of Punta de la Atalya, 4.5 miles WNW of Ensenada de San Julian de Musques.

Castillo de Castro Urdiales, a conspicuous castle, stands on a rocky hill just within Punta de Santa Ana, a spur projecting close S of Punta de la Atalaya. A light is shown from a tower, 16m high, surmounting the SE corner of the castle.



Castillo de Castro Urdiales Light

The harbor is protected by two breakwaters and has depths up to 11m. A berth at the inner side of the S breakwater is 152m long and has depths up to 7m alongside. It is used by small coasters, fishing vessels, and pleasure craft up to 105m in length and 5m draft. Coasters up to 3,000 dwt and 6m draft may anchor within the harbor.

The port can be contacted by VHF. Pilotage is compulsory.

3.31 Punta del Rabanal (43°24'N., 3°13'W.), low and rocky, is located 0.8 mile NW of Punta de la Atalya. A large cemetery is situated on the E slope of this point and is conspicuous from offshore. During bad weather, vessels should give this point a good berth as the inshore depths are irregular and form a steep and dangerous sea.

Castillo de Castro Urdiales Light

Bajo Castro Verde (43°33'N., 3°13'W.), with a least depth of 53m, lies about 9 miles N of Punta del Rabanal. During bad weather, heavy seas are experienced over this bank and breakers form in S gales. Vessels are advised to pass well clear of it.

Monte Cerredo, 645m high, stands 2.5 miles W of Punta de Rabanal. It is the highest peak in this vicinity and forms an excellent mark from seaward because of its rugged character.

Caution.—A measured distance of 2,214m, marked by two pairs of beacons, is situated off the coast 3 miles WNW of Punta del Rabanal.

3.32 Cabo Cebollero (43°25'N., 3°19'W.), also known as Punta Sonabia, is located 4.7 miles WNW of Punta de Rabanal. It is formed by a spit, 23m high, connected to the mainland by a narrow neck which partially covers at HW. From a distance the spit appears as a detached island.

Ensenada de Orinon, a small sheltered bay, is entered close E of Cabo Cebollero. Small vessels, with local knowledge, can anchor in this bay under the lee of the W shore. The head of the bay shoals rapidly and caution is advised.

Monte Candina, which has several peaks, stands 1.3 miles SW of Cabo Cebollero. It rises to a height 485m and is conspicuous from seaward as several white patches, lying in the middle of dark wooded land, are situated on the N face.

Canto de Laredo, 52m high, is located 4 miles W of Cabo Cebollero. The coast between is steep and rocky with numerous submerged dangers fronting the shore. This promontory stands at the E end of Playa de Laredo, a long curved beach, and forms a demarcation mark between the high and low land.

Laredo (43°25'N., 3°25'W.), a small drying harbor, lies on the W side of the promontory. It is protected by breakwaters and used by fishing boats and small craft. Numerous prominent hotels and buildings at a tourist resort line the beach to the NW of the harbor.

3.33 Monte de Santona (43°27'N., 3°26'W.), a mountainous peninsula, is located 6 miles WNW of Cabo Cebollero. It is connected to the mainland at the W side by a narrow sandy isthmus known as Playa de Berria. From offshore, the peninsu-

la appears as an island with two summits. Atalaya de Santona, a conspicuous watch tower, stands on the N summit. Monte Ganzo, 373m high, is the S and highest summit and can easily be identified from the NE or E.

Vessels approaching from the N have mistaken Monte Candina, previously described in paragraph 3.32, for Monte de Santona; caution is recommended.

Punta del Pescador, located 3 miles NNW of Canto de Loredo, is the NE extremity of Monte de Santona. A light is shown from a prominent tower, 13m high, standing on the point.

Punta del Caballo, the E extremity of Monte de Santona, is located 1 mile SSE of Punta del Pescador. It is backed by high cliffs on which stand the ruins of an old battery.

Punta del Fraile, located 0.5 mile S of Punta del Caballo, is the SE extremity of Monte de Santona. It terminates in a prominent vertical rock, 40m high, partly detached from the coast. La Merana, a drying rock, lies close NE of the point and is usually marked by breakers.

Puerto de Santona (43°26'N., 3°28'W.), a small harbor, lies on the SW extremity of Monte de Santona and is mostly used by small coasters and fishing vessels.

Tides rise about 4m at springs and 3m at neaps. The ebb tidal current is always much stronger than the flood current and usually attains a rate of 3 knots. During heavy rains, the ebb current may run at a much higher rate and caution is advised.

The Ria de Santona leading to the harbor is entered between Punta de San Carlos, the S extremity of Monte de Santona, and El Puntal, a low tongue of sand dunes, located 0.3 mile S. Banco del Pitorro, with depths of 0.7 to 1.9m, lies across the entrance. A channel, with a dredged depth of 4m, leads over the bar and is indicated by a lighted range.

Caution.—Breakers have been reported (1994) at certain states of the tide and in certain weather conditions, indicating shoaling. Extreme caution should be exercised when crossing the bar.

3.34 Monte Ano, 185m high, stands 1.8 miles WSW of Santona and forms a nearly perfect cone when viewed through the entrance from E. It is an excellent mark when proceeding over the bar. A prominent fort stands on Punta de San Carlos.

The harbor consists of two basins and an L-shaped pier. A quay within the S basin is 146m long and has depths of 3 to 4m alongside. The channel to Colindres, 2.5 miles S of Santona, has depths of less than 1m and is only used by small craft. The harbor can be contacted by VHF. Pilotage is compulsory for vessels over 50 grt. Local knowledge is required as the fairway within the entrance is unmarked and the depths over the bar frequently change.

Vessels which have proceeded over the bar can anchor, in depths of 9 to 12m, sand, good holding ground, in a comparatively deep area lying S of the town; local knowledge is required. Larger vessels can anchor outside the bar, in a depth of 12m, sand, about 0.3 mile offshore SSE of Punta del Fraile. This roadstead is known as Fondeadero del Fraile and is well-sheltered from NW through SW, but is open and dangerous with NE winds.

3.35 Punta del Aguila (43°28'N., 3°27'W.), located 0.5 mile WNW of Punta del Pescador, falls to the sea in vertical cliffs and rises close inland to La Corona, a peak about 200m high. The village of Dueso and the buildings of a prison stand on the NW slope of Monte de Santona, 0.7 mile SW of Punta del Aguila, and are conspicuous from seaward.

Punta del Brusco is located 1.2 miles W of Punta del Aguila. Playa de Berria, a low and sandy isthmus extends between these two points; several prominent buildings stand on it. Monte del Brusco, 191m high, stands 0.5 mile SW of Punta del Brusco. Los Hermanos, a group of three rocks awash, lie 0.7 mile NNW of Punta del Brusco at the outer edge of the dangers fringing the shore.

Ensenada de Noja is entered between Punta del Brusco and Punta de la Mesa, 2 miles NW. The shores of this bay are low, rugged, and fronted by numerous rocks and shoals which break in bad weather. Vessels without extensive local knowledge are advised to avoid approaching this bay, even during good weather. El Doble, with a least depth of 13m, lies about 2.3 miles NNE of Punta del Brusco. This detached shoal is dangerous in heavy seas and generally breaks in NW gales. Vessels should pass well N of this shoal during bad weather.

Punta Garfanta (43°30'N., 3°31'W.), located 0.4 mile NW of Punta de la Mesa, is fairly steep and fringed by a reef. Rocks and foul ground lie up to about 0.5 mile seaward of this point. A conspicuous church stands in the village of Noja, close SW of the point, and can be identified from up to 4 miles offshore.

Cabo Quejo (43°30'N., 3°33'W.), 80m high, is located 1.5 miles NW of Punta Garfanta. It is steep, rocky, and reddish in color. A prominent framework television mast, 70m high, stands near the summit of Monte Casilla, 0.4 mile S of this cape.

Cabo Ajo (43°31'N., 3°35'W.) is located 2 miles W of Cabo Quejo and is bordered by steep cliffs along its N side which appear from E or W as steps. A light is shown from a tower with an aluminum cupola, 8m high, standing on the cape.

Cabo Quintres is located 2.5 miles SW of Cabo Ajo. The coast between is rugged and bold. This cape rises close within to a height of 133m; the ruins of a watch building stand on its summit. Its N and NW sides are very steep and from the W and NE appear vertical. A rocky patch, with a depth of 20m, lies 0.8 mile NW of the cape.

Punta Concabrea is located 1.8 miles SW of Cabo Quintres. The coast between is formed of low cliffs but rises to Monte Galizano, 216m high, standing 2 miles SE of the point. Punta Concabrera is steep and bordered by sunken rocks. Cabezo de Galizano, a reef, extends 1.3 miles NW of this point. It has depths of 11 to 18m and breaks in bad weather.

Cabo Galizano, located 2.5 miles SW of Cabo Quintres, is formed by cliffs and may be identified by a sharp-pointed peak standing close SW of it. Ensenada de Galizano, a small bay, lies close E of this cape. It has depths of 5 to 6m and provides shelter to fishing vessels in strong SW and W winds.

Isla de Santa Marina (43°28'N., 3°44'W.), low and covered with undergrowth, lies close off the coast, 1.5 miles W of Cabo Galizano; it is marked by a beacon. The E and S shores are fringed by rocky ledges. A narrow passage lying between the E side of the island and the mainland leads into the Ria de Santander, but can only be used by small boats with local knowledge.

Puerto de Santander (43°27'N., 3°49'W.)

World Port Index No. 37470

3.36 Santander is considered to be one of the best commercial ports on the N coast of Spain. The city and harbor facilities are situated on the N side of the mouth of the Ria de Santander. The port is also a shipbuilding and fishing center.

Puerto de Santander Home Page

http://www.puertosantander.com

Winds—Weather

Weather conditions at Santander are similar to those at Bilbao, except that there is less fog on the average and temperatures are somewhat cooler in summer.

Tides—Currents

Tides rise about 5.4m at springs and 3m at neaps. Gales from the NW may raise the water level by up to 0.5m and those from SE may lower it about the same amount.

The tidal currents are generally strong. The ebb current may attain rates up to 3 knots at springs off the harbor facilities and up to 5 knots in the river entrance.

Depths—Limitations

Bajo Santonuca, a rocky bank, lies in the approaches with its shallowest part about 0.7 mile NNW of Isla de Santa Marina. It has a least depth of 16.7m and breaks in heavy weather. Vessels should pass W or SE of this bank.

Isla de Mouro divides the approach to the river into Eastern Channel and Bar Channel.

Eastern Channel, the main approach, leads between Isla de Mouro and Isla de Santa Marina, and has depths of 15 to 18m over most of its width.

Bar Channel, generally used by small vessels with local knowledge, leads W of Isla de Mouro and has a least depth of 7m. Bajo La Garma, with a depth of 5m, lies in the S part of this channel and must be avoided. This rock usually breaks in bad weather. In strong N winds, seas may break across the entire width of the channel.

Canal de El Carrejo leads from the intersection of the approach channels into the river. This channel is constricted between Islote Horadada and Punta Rabiosa, 0.4 mile SSW, by a sand bank at the S side and a reef at the N side. The fairway within the river is dredged to depths of 9 to 11.5m.

There are no restrictions for the length or beam of vessels entering the port. Vessels up to 210,000 dwt and 10.5m draft have been accommodated. It was reported (1993) that vessels up to 12.5m draft could be handled at HW.

The port has riverside quays and tidal basins which provide services for container, general cargo, tanker, ro-ro, passenger, ferry, cruise, and bulk vessels. There are also extensive facilities for fishing vessels and yachts.

Several dry docks are situated in the port. The largest is at Astillero, 2.5 miles S of the main commercial port. It is 231m long, 32m wide, and has a depth over the sill of 11.5m at HW. A modern installation for dismantling and scrapping vessels operates upriver, on the way to Astillero.

Santander Berth Information		
Name	**Length**	**Depth**
Albareda-Almirante Quay	385m	7.2-9.5m
Caleron Quay	198m	3.9m
Quays Nos. 10 and 11	242m	10.5m
Stretch Maliano Quay	710m	8.0m
Margen Norte Quay	538m	9.5m
Nueva Montana Quijano Quay	218m	5.0m
Rafael Martinez Quay	300m	13.0m
Gabriel Huidobro Quay	208m	13.0m
Jesus Gonzalez Quay	170m	10.0m
Quay No. 3	570m	13.0m
Quay No. 4	270m	13.0m
Terquisa Quay	200m	6.0m
REPSOL Offshore Oil Berth	244m	6.0m

Aspect

The estuary of the Ria de Santander lies between Isla de Santa Marina, previously described in paragraph 3.35, and Cabo Mayor, 2.5 miles WNW. The entrance to the river is encumbered with sand banks and spits through which several channels intersect.

Santander—Margen Norte Quay (Maliano 1-7)

Cabo Mayor (43°30'N., 3°47'W.) is steep; its N side is formed by large slate slabs. A light is shown from a conspicuous tower, with a dwelling, 30m high, standing close WSW of

Santander—REPSOL Liquid Bulk Wharf

Santander—Raos 4 (Felix Ducasse)

the cape. A former signal station and some radio masts standing 0.5 mile W of the light are also easy to identify. Paseo del Alta, a ridge, is situated 0.5 mile S of the cape and extends E and W for about 1 mile. Several buildings stand on this ridge and are conspicuous from seaward.

Isla Mouro, a steep and rocky island, is located 1.7 miles SE of Cabo Mayor. A light is shown from a conspicuous tower, with a dwelling, 18m high, standing on it. La Corbera, a steep and flat-topped islet, lies on a reef close NE of the NE extremity of the island. Bajo El Calo, with depths of less than 4m, extends up to about 300m W of the W side of the island.

Punta del Puerto, located 0.5 mile SW of Isla de Mouro, is the SE extremity of the Peninsula de la Magdalena. A light (La

Santander—Raos 4 (S of Darsena de Maliano)

Cerda) is shown from a tower with a dwelling, 9m high, standing on the point. Palacio Real, the former royal palace, stands on the heights of the peninsula and is very conspicuous.

Cabo Menor, terminating in a low flat point, is located 0.5 mile SE of Cabo Mayor. Ensenada de Sardinero, a large sandy bay, lies between this cape and the Peninsular de la Magdalena. It is a resort area and is lined with numerous prominent buildings and hotels.

Islote Horadada, located 0.3 mile SW of Punta del Puerto, is a small broken islet. A light is shown from a prominent tower, 5m high, standing on it.

Ranges and leading lines indicating the approaches to the port may best be seen on the chart. The entrance channel is indicated by a lighted range and the fairway within the river is marked by lighted buoys.

An airport is situated on reclaimed land in the S part of the port and is prominent.

Pilotage

Pilotage is compulsory for vessels of 500 gross tons and over. The compulsory pilotage area encompasses the areas bound by a line joining Cabo Mayor with the N tip of Isla de Santa Maria, the Pontejos bridge situated at the inner end of the Ria de Astillero, and the Somo or Pedrena bridge over the Rio Cubas. Vessels should send an ETA at least 24 hours and 12 hours in advance. Pilots can be contacted on VHF channel 14 or 16 and will board in position 43°28.9'N, 3°44.9W. During bad weather, the pilot boards near Isla Horadada.

Vessel Traffic Service

A Vessel Traffic Service (VTS) is established in the Santander area. The VTS and port marine services function

together and control pilot activity. Contact Santander Port Control using call sign: Santander Port Control at least 2 hours prior to arrival.

An arrival point (AP) is established in position 43°28.6'N, 3°44.6'W. All vessels inbound to Santander should proceed to this position. Vessels should call Port Control when 6 miles or 30 minutes from the arrival point and maintain a continuous listening watch on VHF channels 16 and 11. Port Control will advise traffic movements in the approaches and will provide anchoring or berthing instructions.

Anchorage

Ensenada del Sardinero, lying SE of Cabo Menor, is open to the NE and provides an excellent roadstead during good weather for vessels waiting to enter the port. Large vessels can anchor, in depths of 17 to 20m, sand, about 0.4 mile SE of Cabo Menor with Cabo Mayor in line with this cape. The S part of this bay is rocky and should be avoided.

The outer anchorage is divided into two areas. Area B, the N area, is used all year by vessels carrying dangerous cargo and from July through September for vessels carrying non-dangerous cargo. Area A, the S area, is used from the beginning of October until the end of June by vessels carrying non-dangerous cargo.

Temporary anchorage can be obtained in Fondeadero del Puerto, in depths of 11 to 14m, sand and gravel, about 0.3 mile S of the light on La Cerda.

Fondeadero de Promontorio also provides good anchorage for medium-sized vessels. This anchorage, in depths of 6 to 8m, sand and mud, lies about 300m offshore, 0.4 mile WSW of Islote Horadada.

Caution

Depths and banks in the entrance channel are liable to change because of silting. The port authorities should be contacted for the latest information.

Local ferry vessels cross the fairway within the harbor.

Santander to Gijon

3.37 Cabo de Lata (43°30'N., 3°49'W.), formed by low cliffs, is located 1.2 miles WNW of Cabo Mayor and bordered by rocks and a reef. It is the N point of land between the Ria de Santander and Cabo Lastres, 65 miles W. Islote Ansion, along with other drying rocks, lies close off the NW side of this cape.

The coast from Cabo de Lata trends irregularly WSW and is closely bordered by several islets and rocks. Islote Virgen del Mar, connected to the mainland by a bridge, lies 3 miles WSW of Cabo de Lata and has a hermitage standing on it.

Punta de Somocueva (43°28'N., 3°57'W.), located 6 miles WSW of Cabo de Lata, is low and rugged. Its seaward extremity is formed by a small peninsula which is connected to the shore by a narrow isthmus. Two large rocks lie close off the point, but are not easily seen from offshore. A small cove lies on the W side of the isthmus.

Alturas de Liencres, a prominent group of dark hills, rises along this part of the coast. It includes Monte Picota, 235m high and double peaked, standing 1.8 miles S of Punta de Somocueva and Pico de Mogro, 167m high and isolated, standing 1.7 miles SW of the same point. This group forms an excellent mark for identifying the coast when approaching Santander from the W, as the hills are the only high land near the coast between the Ria de Suances and Santander.

Caution.—Bajo Cabezo de Tierra, with a least depth of 17m, and Bajo Cabezo de la Virgen del Mar, with a least depth of 18m, lie about 2 miles NW and 2.3 miles WNW, respectively, of Cabo de Lata. Bajo La Lengueta, with a least depth of 25m, and El Balamo, with a least depth of 19m, lie about 1 mile NW and 0.5 mile NNW, respectively, of Bajo Cabezo de Tierra. All of these banks break in bad weather and, during such periods, vessels are advised to pass at least 4 miles NNW of Cabo de Lata.

Cabezos de la Vaca, with a least depth of 11m, lies about 0.5 mile WNW of Cabo de Lata and extends up to 1 mile offshore. It breaks in most bad weather and usually in any heavy swell.

3.38 The **Ria de Suances** (43°27'N., 4°02'W.) is located 4 miles WSW of Punta de Somocueva. The estuary lies between Punta del Cuerno and Punta del Dichoso, a small peninsula, 1 mile WSW. An entrance channel leads W of Punta de Afuera, located 0.7 mile SW of Punta del Cuerno, and is from 50 to 100m wide with a least depth of 1m. Tides here rise 3.9m at springs and 3m at neaps. Small coasters can proceed up the river at HW to Requejada and Hinojedo, 3.5 miles above the entrance.

Bajo del Castro, with a least depth of 39m, and Bajo Juan de Ambojo, with a least depth of 34m, lie about 3.5 miles NNE and 2.8 miles N, respectively, of Punta de Somocueva. Although these banks have not been observed to break, the sea over them, in bad weather, becomes high and steep and vessels are advised to pass well to the N during such conditions.

Torco de Afuera Light is shown from a prominent tower with a dwelling, 9m high, standing on the E extremity of Punta del Dichoso. Punta del Cuerno can be identified by the Islas de Suances, five islands which lie close off it. The estuary is open to the N and strong winds from this direction cause a heavy sea. The peninsula, of which Punta del Dichoso is the N extremity, protects the estuary from W and NW winds. It appears from a distance as an island because the isthmus joining the mainland is very low. The entrance channel is indicated by a lighted range and leads between training walls which are marked by beacons and cover at HWS. Local knowledge is required. Pilotage is compulsory, except for small craft, and is reported to be available.

3.39 Punta Ballota (43°26'N., 4°05'W.), located 1.5 miles WSW of Punta del Dichoso, is a prominent steep black point. La Percebera, a steep-to drying rock, lies close N of this point. Ensenada de Cabrera is entered close E of the point. Anchorage can be obtained, in depths of 10 to 14m, sand, within this bay under the lee of Punta Ballota. The berth is sheltered from NW and SW gales, but the shores of the bay are foul.

Bajo Canto, with depths of 26 to 37m, lies 2 miles NNE of Punta Ballota. This bank may break in NW gales and vessels should give it a wide berth in bad weather.

The coast SW of Punta Ballota is moderately high and generally bare. Monte Huervo, 270m high, stands 2.3 miles SSW of Punta Ballota and is fairly conspicuous from offshore.

Punta Calderon, located 3 miles SW of Punta Ballota, is a high promontory fronted by several islets. Ensenada de Calderon, which provides good shelter for small craft, lies 0.7 mile E of the point and has depths of 5 to 16m, sand and rock.

Ensenada de Luana, lying 3 miles W of Punta Calderon, can be identified by the town of Trasierra which stands on the high land close SW of the entrance. This bay provides shelter to fishing boats in NW and SW winds.

Puerto de Comillas (43°23'N., 4°17'W.), a small dying harbor, is situated 2.8 miles W of Ensenada de Calderon. It is entered close E of Punta de la Gerra, a small reef-strewn point. The harbor is formed by two moles and has an entrance, 10m wide. It is used by fishing boats and pleasure craft with local knowledge. The approach channel is indicated by a lighted range, but is narrow and has reefs on either side. The harbor can be identified by a red seminary building with two red towers standing on the heights SW of the entrance and by the chimneys of a smelting works situated 0.7 mile E of the town.

Bajo Torriente, with a least depth of 22m, and Bajo Luana, with a least depth of 26m, lie about 5 miles NE and 3.8 miles NNE, respectively, of Puerto de Comillas. Both of these banks break heavily in strong NW winds and should be given a wide berth in bad weather.

Ensenada de la Rabia is located 2 miles W of Puerto de Comillas. Although the shores of this bay consist of sandy beaches, numerous rocks encumber the approaches and only small craft with local knowledge should attempt to seek shelter here.

3.40 Cabo Oriambre (43°24'N., 4°20'W.), located 2 miles WNW of Puerto de Comillas, is bordered on its N side by whitish cliffs which rise to a hill, 90m high. Monte Oriambre, 100m high, stands 1 mile S of the cape and is conspicuous. La Molar, a rocky patch, lies about 0.5 mile NE of the cape. It has a least depth of 6.4m and often breaks in any swell. Vessels are advised to pass at least 2 miles seaward of Cabo Oriambre and to give it a wider berth in bad weather.

The **Ria de San Vicente de la Barquera** (43°23'N., 4°23'W.) is entered 2 miles WSW of Cabo Oriambre. The shore between is fringed by an extensive white beach. The estuary is fronted by a bar, with a depth of 1.8m, and entered through a channel with depths of 1 to 2m. The approach can be identified by Monte Boria, 158m high, standing on the W side of the river mouth and by Punta de la Silla, on which stands the prominent light of San Vicente. Bajo de Pedro Gil, with a least depth of 0.7m, lies close offshore, 0.7 mile NW of the light. When the sea breaks on this shoal, it is usually also breaking over the bar at the entrance.

Pico Jurgon, 398m high, stands 3.5 miles S of the light and is also a good mark from offshore. The entrance channel changes constantly and leads between extensive tidal flats. The river mouth is protected by a breakwater which has been constructed over the rocky islets of Pena Mayor and Pena Menor, both lying close off the entrance. A training wall, extending on the S side of the channel, contains the sand banks. Bajo la Plancha, a rocky patch with a least depth of 1.3m, lies close N of the breakwater head and must be avoided by vessels approaching from NW.

The town, a small resort, stands at the SW end of the harbor on a rocky peninsula which separates the two arms of the estuary. Two bridges with numerous arches connect the town to the shores of the estuary. The harbor is mostly used by fishing vessels and pleasure craft with local knowledge. Small coasters up to 4m draft are reported to enter the estuary at HWS.

Punta de Pechon (43°24'N., 4°29'W.), a steep point, is located 4.2 miles W of the Ria de San Vicente de la Barquera. A prominent framework television mast, 60m high, stands 0.7 mile SSW of the point.

The Ria de Tina Menor and the Ria de Tina Mayor are located 1 mile E and 1 mile W, respectively, of Punta de Pechon. Both of these estuaries have steep cliffy sides and appear as sharp breaks in the coastal plateau. Both of the rivers can be navigated by small craft, but the depths in the entrances are shallow and subject to change. Local knowledge is recommended.

Punta de San Emeterio (43°24'N., 4°32'W.), located 1 mile W of the entrance to the Ria de Tina Mayor, is cliffy and backed by high land. It lies close E of a large coastal ravine which extends back to the town of Pimiango, 1 mile S. A light is shown from a tower, with a dwelling, 9m high, standing on the point.

The Ria de Santiuste flows into the sea 2 miles WSW of Punta de San Emeterio. This river is conspicuous because of the break in the coast formed by its estuary which is known as Ensenada de Mendia. The river mouth and most of the estuary are filled with sand banks and foul ground and can only be approached by small craft with local knowledge. Islote Castron de Santiuste, rocky and steep, lies at the W side of Ensenada de Mendia. This islet is prominent and a conspicuous white beach on the mainland shore is visible to the S of it.

Picos de Europa

Monte Jana, 610m high, rises to a conspicuous peak 4 miles SSW of Punta de San Emeterio.

Picos de Europa, a range of mountains up to 2,642m high, stands about 20 miles SW of Punta de San Emeterio. It forms an excellent landmark in clear weather, as the highest peaks are snow-capped throughout the greater part of the year. Depending on atmospheric conditions, these peaks may be visible from as far E as Santander or as far W as Cabo Penas.

3.41 Puerto de Llanes (43°25'N., 4°45'W.), a small harbor, is entered at the mouth of the Rio Carrocedo, 9.5 miles W of Punta de San Emeterio. It is shallow and only used by fish-

ing vessels with drafts up to 1.8m. The entrance channel is narrow and intricate and local knowledge is required.

Punta de San Anton is located on the E side of the river entrance. A light is shown from a tower with a dwelling, 8m high, standing on this point. A radiobeacon is situated at the light and prominent framework radio masts stand close E and W of it.

Torre de Cerredo, the highest of Picos de Europa, rises 13 miles S of Llanes and, as previously noted, is snow-capped throughout the greater part of the year. Monte Turbina, 1,315m high, stands 4 miles S of Llanes. It has a remarkable conical peak and, in line with Torre de Cerredo, leads to the coast near the entrance to Puerto de Llanes.

The coast W of Llanes becomes much indented and is fronted by numerous rocks and islets which lie up to 0.5 mile offshore. Foul ground lies between these islets and the shore and vessels are advised to give the area between Llanes and Cabo Prieto a wide berth.

Cabo Prieto (43°27'N., 4°50'W.) is located 4 miles WNW of Llanes. It slopes gradually to the sea and terminates in low vertical cliffs. Monte Castillo, 106m high, lies SW of the cape; a television antenna and a conspicuous building stand on the summit. Baja La Vaca, two rocks awash, lie about 0.2 mile ENE of the cape and break in nearly any swell. Islote Peyes, a small islet, lies 0.2 mile E of the cape with foul ground between. Numerous other rocks and foul ground areas front this islet and the mainland shore to the SE.

The Rio Bedon enters the sea 1.5 miles W of Cabo Prieto. A conspicuous white sand and shingle beach, visible for a considerable distance offshore, lies on the E side of the river mouth.

Several small coves are located E and W of the Rio Bedon and can be used by fishing vessels with local knowledge when seeking shelter.

3.42 Cabo de Mar (43°28'N., 4°55'W.), located 4 miles WNW of Cabo Prieto, is a low headland which terminates abruptly in a vertical cliff. It can be easily identified when closer inshore, but blends with the coastal cliffs when seen from farther seaward. Ermita San Antonio del Mar, a chapel, stands on Cabo de Mar and can usually be sighted at a greater distance than the cape itself.

In bad weather, a heavy sea may develop off Cabo de Mar; vessels are advised to pass at a safe distance.

The coast extending W of Cabo de Mar is formed by low cliffs and indented with numerous small coves. The Rio Aguamia, with a sandy mouth, enters the sea 2.3 miles W of the cape, and can be identified from offshore by the prominent ravine through which it flows.

3.43 Puerto de Ribadesella (43°28'N., 5°04'W.) (World Port Index No. 37530), a small harbor, lies at the mouth of the Rio Sella, 6.2 miles W of Cabo de Mar. It is used by small coasters, fishing vessels, and yachts. The river is entered between Punta del Caballo, the W extremity of a small peninsula, and Punta de Somos, 0.4 mile WNW. Monte Corbero, 99m high and dark in color, stands in the middle of the narrow peninsula. A small television relay station is situated on its summit. A conspicuous white chapel stands on Punta del Caballo.

Monte Somos backs Punta de Somos and terminates in a steep slope. A light is shown from a tower, with a dwelling, 8m high, standing on the NW part of this mountain, 0.4 mile WNW of the point.

The bar which fronts the river has a depth of 2m, but is liable to shift and silt. In good weather, small coasters up to 67m in length and 3.5m draft can enter the river at HW. Local knowledge is required. Drying quays are situated along the riverside close above the entrance. The bottom is soft mud and sand and vessels can lie safely aground at LW. Small vessels can also anchor, in depths of 4 to 6m, in the channel, just within the bar; however, caution is necessary as the currents are strong when the river is in flood.

Bajo Serropio, with a least depth of 11m, extends up to 1 mile NNE of Punta del Caballo and breaks in bad weather. The bottom is uneven in the vicinity of this rocky shoal and, even in good weather, a heavy swell may build up on it. A wreck, with a depth of 13m, is reported to lie about 1.5 miles NE of the river entrance.

Pico Pienzo

Monte Mofrecho, 897m high, stands 4 miles SSE of the entrance to Ribadesella and forms a good mark from NE. Pico Pienzo, 1,159m high, stands 8 miles WSW of Ribadesella. Its summit consists of a series of conical peaks and forms an excellent mark from seaward. From N and NE, this mountain may be more easily identified than most of the other peaks in this vicinity, as it is dark in color and has such a distinctive form.

3.44 Punta de la Sierra (43°29'N., 5°08'W.) is located 2.3 miles W of Ribadesella. It is formed by steep cliffs, on its N side, and rises close inland to a gentle hill known as Los Carreros.

Bajo Los Carreros, which partly dries, extends up to 0.5 mile N of the point. This rocky reef has depths of 1 to 4.8m and the sea breaks on it in the slightest swell. Vessels are advised to give this point a berth of at least 2.5 miles.

The coast trends W and NW for 7 miles from Punta de la Sierra to Ensenada de Lastres, and forms a long bight with numerous rocks fronting the shore.

Ensenada de Lastres (43°31'N., 5°16'W.) is entered between Punta del Penote and Punta Misiera, a high point, 1.2 miles NNW. A hermitage and a television tower, 60m high, stand on the top of Punta Misiera. A small harbor, formed by an L-shaped breakwater, lies at the foot of Punta Misiera. It has depths of 4 to 7m and is mostly used by local fishing vessels.

Vessels may obtain anchorage, in depths of 11 to 13m, mud

and sand and good holding ground, 0.5 mile SE of the breakwater head. This roadstead is mostly used by vessels sheltering from NW winds.

Bajo de la Plancha, with a least depth of 5.7m, lies 0.3 mile NE of Punta Misiera. A shallow detached pinnacle rock lies midway between the point and this rocky shoal. The sea breaks on the shoal in bad weather and vessels should give it a wide berth.

Cabo Lastres (43°32'N., 5°18'W.), 112m high, is located 1.8 miles NW of Ensenada de Lastres and has steep, reddish cliffs on its N side. El Vaquin, a group of sunken rocks, extends about 200m N from the cape; the sea breaks up to more than 1 mile seaward of them during NW gales. A light is shown from a tower standing on the cape.

Cabo Lastres Light

To the W of Cabo Lastres, the coast is high and slopes steeply to the sea. The shores are fringed by reefs and numerous rocks lie up to 0.2 miles seaward.

3.45 The **Ria de Villaviciosa** (43°32'N., 5°23'W.) flows into the sea 3.5 miles W of Cabo Lastres. The estuary is entered between Punta Rodiles and Punta de la Mesnada, 0.5 mile W. It can be easily identified by Monte Rodiles, 124m high, rising close S of Punta Rodiles and a large yellowish scar on the high cliffs of Punta de la Mesnada. The head of the estuary is low and sandy with trees lining the beach. Shallow rocks extend up to 0.2 mile from the entrance points.

The entrance channel is entered close SSE of Punta de la Mesnada and the bar has depths of 1 to 1.5m at LWS and 4.4 to 5m at HWS. Entry should not be attempted without local knowledge and never during bad weather. A quay, 125m long, is situated near the head of the estuary, 2 miles upstream, and can be used by fishing vessels and small coasters with drafts up to 3m.

Caution.—Submarine cables extend N from the vicinity of the river entrance.

Ensenada de Tazones (43°33'N., 5°24'W.) is located at the W side of the entrance to the Ria de Villaviciosa. It is entered between Punta de la Mesnada and Punta de Tazores, 0.7 mile NNW. This small bay has a rocky shore and is backed by high land which slopes steeply to the sea. Tazones, a village, stands at the head of the bay, and a mole, which extends SE from the shore, forms a basin with depths of 3m. It is used by fishing boats and small craft.

3.46 Punta de Tazones (43°33'N., 5°24'W.), 128m high, is formed by steep cliffs falling to the sea and bordered by rocks. A light is shown from a prominent tower, with a dwelling, 11m high, standing on the point.

Punta de Tazones Light

Vessels can obtain anchorage, in depths of 10 to 12m, sand, 0.3 mile ESE of the light. The berth is sheltered from W winds and the holding ground is good, but vessels should leave with any sign of increasing winds from the N or E.

Punta del Olivo (43°33'N., 5°25'W.), 103m high, is located 0.7 mile WNW of Punta de Tazones Light. It slopes gradually to the sea from the higher land within and is difficult to identify from seaward. The point is bordered by a reef and rocks lie up to 0.3 mile offshore.

Punta Pena Rubia, located 4.5 miles W of Punta del Olivo, terminates in cliffs and is bordered by drying rocks. Several villas and groves are situated on its round summit, which is 140m high.

Monte Curiella, 534m high, and Monte Penas Blancas, 348m high, rise 6 miles SW and 7 miles WSW, respectively, of Punta del Olivo. Both these mountains have prominent peaks and are good marks from seaward.

Cabo de San Lorenzo (43°34'N., 5°37'W.) is located 9 miles W of Punta del Olivo. The coast between consists of generally low rocky shores, which are cliffy in places, backed by a level plateau, 120m high. The cape rises close inland and terminates in a small dark knob which is conspicuous from the E and W. A prominent white chapel is situated on the summit of the cape and two beacons, marking a measured distance, stand close N of it.

Islote de San Lorenzo, connected to the mainland by a reef, is located close N of the cape. Piedras de Estano, three small above-water rocks, lie 0.4 mile ESE of this islet. Restinga de San Lorenzo, a rocky patch, lies 0.6 mile W of the islet. It has a least depth of 5m and breaks in bad weather.

Punta del Cervigon, located 1 mile WSW of Cabo de San

Lorenzo, is low and flat. Several houses stand on this point and reefs border the shore between it and the cape.

3.47 Concha de Gijon (43°33'N., 5°40'W.), a large bay, lies between Cabo de San Lorenzo and Cabo de Torres, 3.7 miles WNW. The SE part of this bay can easily be identified by Cerro de Santa Catalina, which fronts the city of Gijon, 2.1 miles WSW of Cabo de San Lorenzo. This promontory, 44m high, has a grass covered flat summit and is steep on its N and E sides.

Cerro de Santa Catalina

Playa de San Lorenzo, a long sandy beach, extends E from the SE side of Cerro de Santa Catalina and borders the NE side of the city; however, it is not generally visible from the NW.

Cabo de Torres (43°34'N., 5°42'W.), 124m high, is steep and reddish with rugged pinnacles at its extremity. A light is shown from a prominent tower with a dwelling, 12m high, standing on this cape. Several spherical gasholder tanks standing 0.5 mile SSW of the light are also prominent from seaward.

Caution.—Banco Las Amosucas, a rocky bank, lies about 1.6 miles ENE of Cabo de Torres and is marked by lighted buoys. It has a least depth of 14.2m and breaks in heavy weather. During NW gales, the sea close SE of this bank may also break; vessels are advised to keep to the N and W at such times.

Islote Orrio de Torres, an islet 20m high, lies close off the N extremity of the cape.

Restinga de Riastaches, a rock ledge, extends up to about 0.5 mile NNE of Cabo de Torres and has depths of 10 to 20m. A rock, with a depth of 9.2m, lies near the N edge of this ledge. Piedra de la Concha, with a least depth of 15.8m, lies about 0.7 mile ENE of Cabo de Torres. All of these dangers break in bad weather.

Roca Martin, with a least depth of 14.8m, and Roca Punta de Amandi, with a least depth of 13m, lie about 1 mile NNE and 0.9 mile NNW, respectively, of Cerro de Santa Catalina. Roca La Moral, with a least depth of 13.3m, lies 0.4 mile E of Roca Punta de Amandi and Piedra del Rio, with a least depth of 17.3m, lies 0.7 mile ESE of Roca Martin. All of these dangers generally break in heavy weather.

Puerto de Gijon (43°34'N., 5°42'W.)

World Port Index No. 37560

3.48 The port of Gijon occupies the whole of Concha de Gijon between Cabo de Torres and Cerro de Santa Catalina. It has a large commercial harbor situated at the W side, and extensive shipyards situated at the S side.

Puerto Gijon Home Page

http://www.puertogijon.com

Winds—Weather.—Generally, the winds blow from the SW and W in winter and NE in summer. During the month of March, NW gales are fairly common but the Galerna is not as severe here as at Bilbao. Calms are fairly frequent throughout the year and average 15 per cent during most months.

The climate is temperate and the temperature rarely reaches freezing. The lowest temperatures occur in January when readings of 1° to 2°C may be reached at night. The highest temperatures occur in July, August, and September when readings of 26° to 27°C are common.

Fog is fairly frequent throughout the winter months, when it averages 5 days per month from October to January. The least fog occurs in April, but a moderate amount may be expected during the summer.

Strong winds from SW to NW can raise the water level by 0.5m. Strong winds from NE to SE can lower the water level by 0.5m.

Tides—Currents.—Tides rise about 4.6m at springs and 3m at neaps.

The tidal currents in the entrance to the harbor are very weak and variable.

Depths—Limitations.—The approaches to the port are generally deep, with depths of 21 to 25m W and SE of Banco Las Amosucas. The entrance to the commercial harbor has a depth of 18.5m.

Access to the port is limited by the E and W anchorage areas shown on the chart, the Las Amosucas Area to be Avoided, and the Cabo Torres Area to be Avoided.

Generally, the following limitations apply to vessels berthing in the harbor:

1. Vessels of 215 to 250m in length are limited to a draft of 13.7m and should have an underkeel clearance of 1.5m during entering.
2. Vessels of 250 to 260m in length are limited to a draft of 13.7m and should have an underkeel clearance of 1.8m during entering.
3. Vessels of 260 to 275m in length are limited to a draft of 13.7m and should have an underkeel clearance of 2.1m during entering.
4. Vessels of 275 to 290m in length are limited to a draft of 13.7m and should have an underkeel clearance of 2.4m during entering.
5. Vessels of 290 to 305m in length are limited to a draft of 12.5m and should have an underkeel clearance of 2.7m during entering.
6. Vessels over 305m in length intending to enter the har-

Puerto de Gijon

bor should contact the local authorities for information concerning additional limitations.

7. Vessels with a maximum length of 275m and a maximum draft of 14m discharging at Muelle Moliner may proceed directly to the berth.

8. Vessels with a maximum draft of 16.5m discharging at Muelle de Minerales may proceed directly to the berth.

The harbor can accommodate general cargo, bulk, container, ro-ro, tanker, and LPG vessels. In addition, there are facilities for fishing vessels and supply vessels associated with offshore oil installations.

Vessels up to 231,000 dwt, with a maximum length of 333m and a maximum draft of 20.5m, have been accommodated.

Gijon Berth Information		
Name	**Length**	**Depth**
Muelle de Minerales	652m	19.0-21.0m
Muelle Los Porticos	700m	14.0m
Muelle de Ribera	495m	7.0-8.0m
Espigon I	580m	8.0-11.5m
Espigon II	750m	7.0-12.0m
Alineacion 4 and 5	257m	6.0-7.0m
Muelle Norte	415m	8.5-11.0m

Gijon Berth Information		
Name	**Length**	**Depth**
Espigon de Liquidos	360m	8.5m
Muelle de la Osa	1,071m	8.0-12.0m
Muelle Rendiello	789m	5.0-7.0m
Muelle Ingeniero Moliner	313m	14.0m

Aspect.—The port consists of three different sections. El Musel, a large commercial harbor, is situated in the W part of the bay. Puerto Local, the old harbor, is situated in the SE part of the bay and used as a marina. The section situated in the SW part of the bay between the other two is occupied by several repair and shipbuilding yards.

The commercial harbor is protected by two main breakwaters. Dique Principe de Asturias, the main N breakwater, extends just over 1 mile E from the E side of Cabo de Torres. Dique de al Osa, the main S breakwater, extends 0.8 mile NE from the SE corner of the bay. Inner breakwaters divide the harbor into tidal basins and form an entrance 600m wide.

In addition to the landmarks previously described in paragraph 3.47 with Concha de Gijon, the high buildings in the city can be seen from a considerable distance to seaward.

Pilotage.—Pilotage is compulsory for vessels over 150 grt. Vessels should send an ETA at least 24 hours in advance. Pilots can be contacted on VHF channel 14 and board about 1 mile

Gijon—Dique Norte and NE side of Darsena del Musel

Gijon—Espigon I (N pier in Darsena del Musel)

Gijon—Muelle de la Osa

Gijon—Liquid Bulk Terminal

outside of Dique Principe de Asturias, the outer breakwater. During bad weather, pilots may board in the lee of the breakwater.

Vessels intending to anchor outside the port should first contact the pilot station on VHF channel 14 or 16 when within 3 miles of the Dique Principe de Asturias.

Anchorage.—In good weather, large vessels can anchor, in depths of 21 to 24m, sand, within the roadstead ENE of the outer breakwater head. Anchorage areas are shown on the chart. Small vessels with local knowledge can anchor closer in, but caution is necessary to avoid the areas with rocky bottom. Pilotage is compulsory for vessels anchoring within the port limits, SE or S of the outer breakwater head.

Gijon—EBHI Terminal (S side of Dique Principe de Asturias)

In heavy weather, anchorage within the roadstead is unsafe and large vessels are advised to remain at sea until conditions moderate.

Puerto de Gijon to Cabo Penas

3.49 The **Rio Abono** (43°34'N., 5°34'W.) flows into the sea 0.7 mile SW of Cabo de Torres and, in good weather, is accessible to boats and barges. A prominent bridge crosses the river near its entrance. Above the mouth, the sides of the river have been filled in and only a narrow canal remains. Extensive storage buildings and railway facilities are situated in this vicinity and may be seen from seaward.

Ensenada de Candas (43°35'N., 5°46'W.) is located 3 miles WNW of Cabo de Torres and affords shelter to small vessels with local knowledge. This bay lies between Punta Socampo and Punta del Cuerno, 0.8 mile NW; its entrance is encumbered with several shoals which break in strong winds. Winds from the NW raise a heavy sea outside of this bay, and those from the NE may cause considerable turbulence within it.

Punta del Cuerno is high, steep, and bordered by shoal water. A light is shown from a tower, with a dwelling, 12m high, standing on a terrace situated on the slope of the point.

A small drying harbor protected by a breakwater fronts the town of Candas in the W part of the bay and is mostly used by fishing boats. An entrance channel which leads through the shoals is indicated by a lighted range. Small vessels can anchor, in depths of 5 to 8m, sand, E of the head of the breakwater, but local knowledge is recommended.

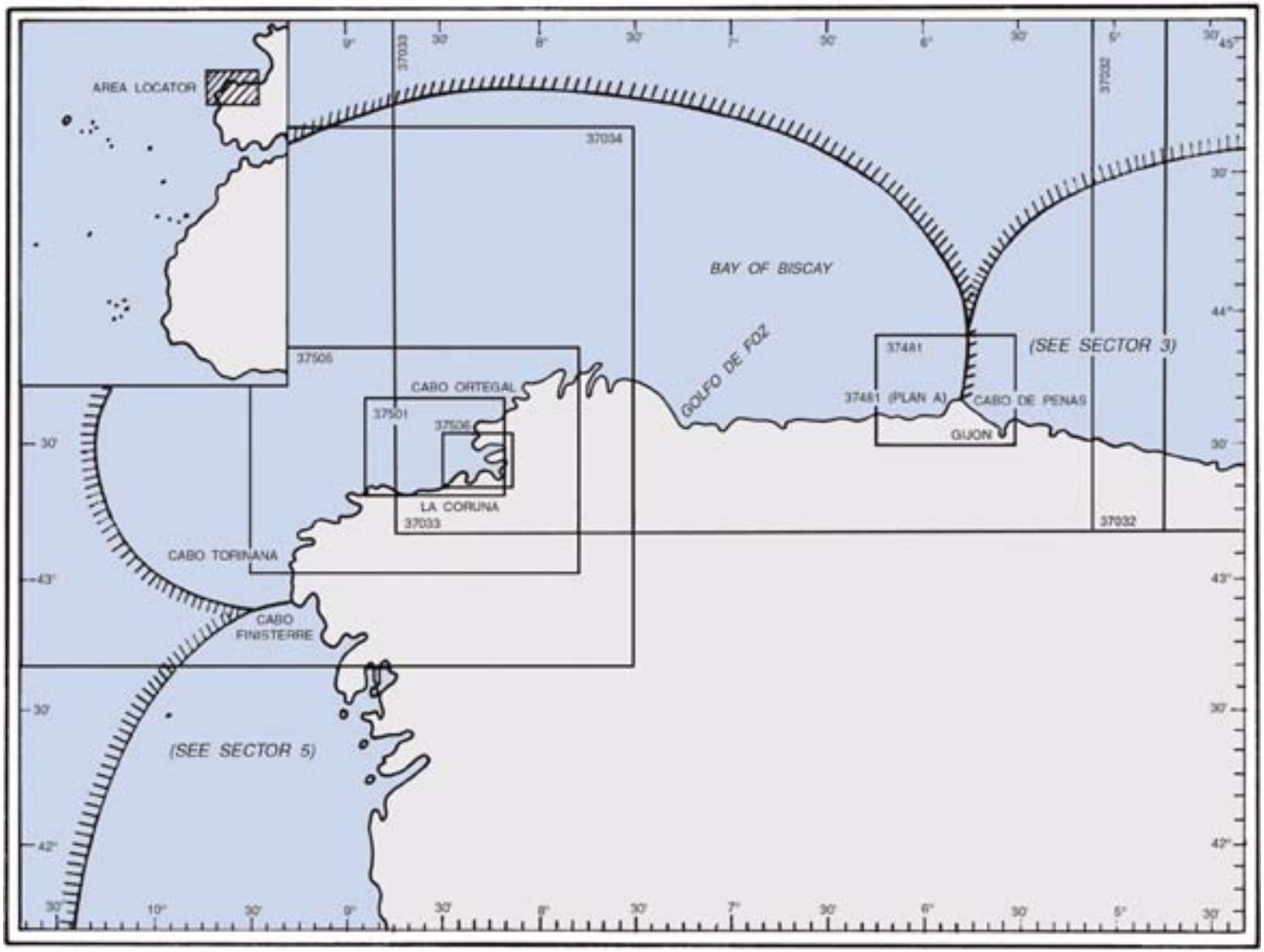
Punta del Cabrito (43°36'N., 5°46'W.), low and fringed by rocks, lies 0.3 mile NNW of Punta Sombrado. The coast between is fronted by numerous drying reefs.

Ensenada de Luanco (43°37'N., 5°47'W.) is entered between Punta del Carmen, located 0.5 mile WNW of Punta del Cabrito, and Punta del Gallo, 0.7 mile NNW. It is formed by low reef-fringed shores and protected from NW winds by Sierra de Perono, a hill, standing 0.5 mile N of the entrance. An islet surmounted by a prominent chapel fronts Punta del Carmen. A breakwater extends E from Punta del Gallo; a small drying harbor used by fishing boats lies on its S side. The entrance to the bay is encumbered by numerous reefs and shoals. A channel, indicated by a lighted range, leads through these dangers and has a depth of 4.5m.

The entrance is dangerous in heavy seas; during bad weather, all the outer dangers break. Local knowledge is required.

Punta de la Vaca (43°38'N., 5°47'W.), 44m high, is located 0.5 mile N of the NW entrance point of Ensenada de Luanco. It is the cliffy and flat termination of a bold promontory. Bajo El Xato, a pinnacle drying rock, lies close NNE of this point.

Cabo Penas (43°39'N., 5°51'W.) is located 3 miles NW of Punta de la Vaca. The coast between consists of several craggy points and small bays which are fronted by numerous reefs, rocks, and shoals. It should not be approached without local knowledge. Cabo Penas is fully described in paragraph 4.2.



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

SECTOR **4** — CHART INFORMATION

SECTOR 4

SPAIN—CABO PENAS TO CABO FINISTERRE

Plan.—This sector describes the N and NW coasts of Spain between Cabo Penas and Cabo Finisterre. The descriptive sequence is from E to W, and then SW.

General Remarks

4.1 The coast between Cabo Penas and Cabo Finisterre, which extends W and SW for about 180 miles, consists of high, rugged terrain with numerous prominent peaks rising only a short distance inland. Between Cabo Penas and Golfo de Foz, about 60 miles W, the coast is fairly straight with only a few projecting points; however, from there to Cabo Finisterre, it becomes very irregular and is indented by numerous bays and inlets.

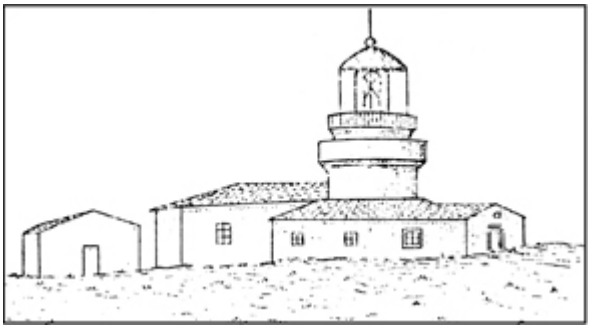
The shoal depths and dangers, which fringe this section of coast, can, in most cases, be considered to lie within 5 miles seaward of the salient points.

Some of the ports and harbors, which are found within the bays and inlets, are commercially important to ocean-going vessels, but most are frequented only by fishing vessels. Puerto de La Coruna and El Ferrol del Caudillo, the two largest commercial ports, are located about 50 miles NE of Cabo Finisterre and are capable of handling all classes of vessels.

Regulations.—The WETREP (West European Tanker Reporting System) is a VTS system, under SOLAS regulation, which operates in the W approaches to Spain, Portugal, France, Belgium, the United Kingdom (including the Shetland Islands), and Ireland. This system is mandatory for all oil tankers over 600 dwt carrying heavy crude oil, heavy fuel oil, or bitumen and tar and their emulsions. It does not apply to warships, naval auxiliaries, or other vessels owned or operated by a contracting government and used, for the time being, only on government non-commercial service. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Caution.—This coast should be given a wide berth at night or in thick weather. When the position of a vessel is not absolutely known, continuous soundings should be taken and the coast not be approached in depths of less than 120m. Many of the navigation lights are placed so high that they are frequently obscured by fog or mist and cannot be relied upon under such conditions.

Cabo Penas Light



Cabo Penas Light

Cabo Penas to Cabo Vidio

4.2 **Cabo Penas** (43°39'N., 5°51'W.), which consists of three rugged and precipitous points, is one of the most salient projections along this coast and is easily identified from any direction. Its cliffs, which attain a height of about 100m, have a whitish appearance and some trees and dwellings stand on the flat top. A light is shown from a prominent tower with a dwelling, 18m high, standing on the cape.

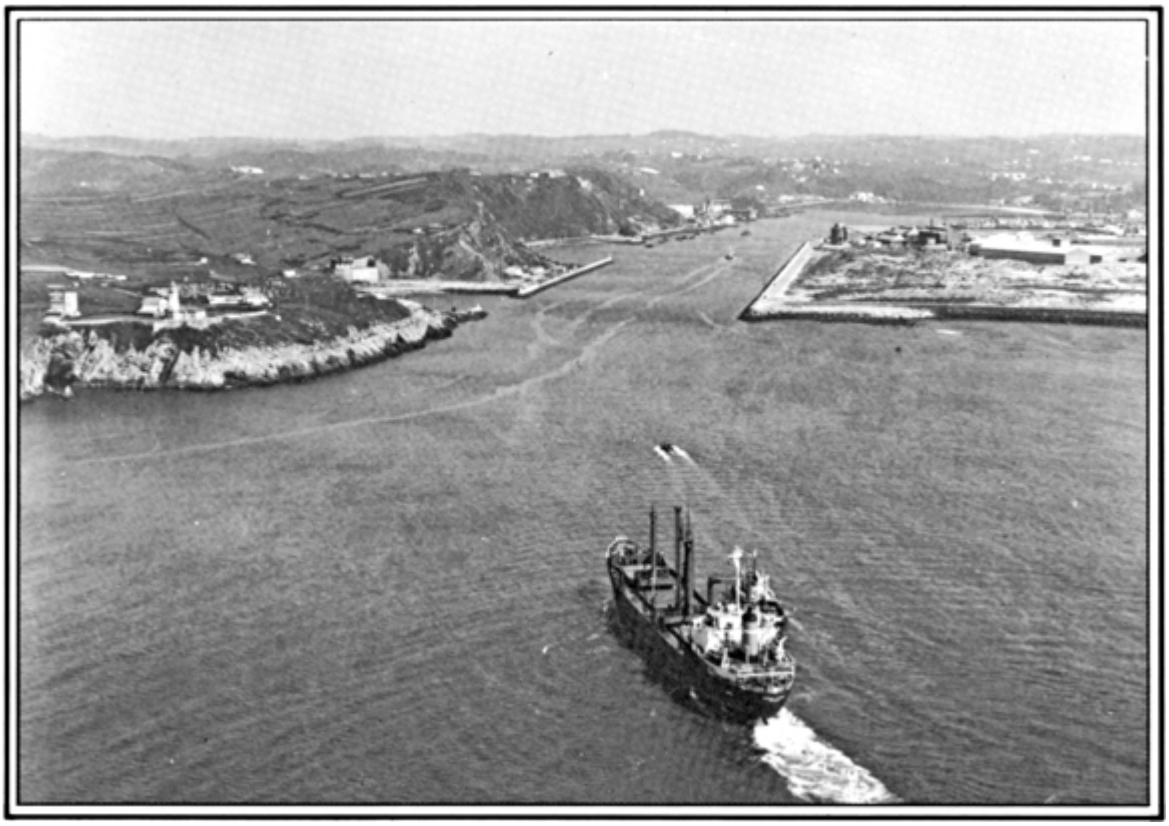
La Gaviera, a high and steep islet, lies close N of the NE extremity of the cape, and a chain of rocks extends up to about 0.5 mile NNE of it. La Romanella, a drying pinnacle rock, lies at the seaward end of this chain and is the outermost danger. It is marked by breakers when a swell is running. Isla Erbosa, a rocky island, lies 0.5 mile NW of the NW extremity of the cape. Los Conos, a group of pinnacle rocks, lies up to 0.6 mile N of this island. The outermost rock of the group breaks during foul weather and is marked by ripples at other times.

Somos Llungo, a detached and steep-to shoal, lies about 3 miles NE of Cabo Penas. It has a least depth of 34m and breaks heavily during bad weather. La Espadana, a similar shoal with a least depth of 37, lies about 0.3 mile SW of it.

Caution.—Vessels approaching Cabo Penas from the W, in fine weather or with SW winds, may pass between Somos Llungo and the cape. However, in bad weather, the cape should be given a berth of 5 to 6 miles. This is not only to avoid the breakers on Somos Llungo, but also to avoid the heavy seas raised by the uneven bottom which extends a considerable dis-

tance offshore. Vessels should give the artificial reef charted NE of the cape a wide berth.

Contrary winds are frequent in the vicinity of the cape. Vessels may sometimes approach the cape with a strong NE or E wind and then encounter a W or SW wind near the land. The reverse may occur with W or SW winds.



Entrance to the Ria de Aviles

Strong S winds in the vicinity of the cape may be dangerous and strong NW winds cause heavy seas which may close the ports.

Off Cabo Penas, the general direction of the current is E, particularly in winter. During the summer months, the current sometimes sets W, especially during the prevalence of NE winds. The flood currents set SE and the ebb currents set SW. Generally, they are stronger to the E of the cape than to the W.

Cabo Negro (43°37'N., 5°55'W.), 61 m high, is located 3.5 miles SW of Cabo Penas. It is precipitous and fronted by a rocky ledge. A funicular cable railway is situated on the top of the cape and is conspicuous from seaward.

Punta de la Forcada, marked by a light, is located 2 miles SW of Cabo Negro. It is the NW extremity of Peninsula de San Juan, which forms the N side of the approach to the Ria de Aviles. Ensenada de Chago, bordered by an extensive beach, lies between the S side of Cabo Negro and Punta de la Forcada. A dangerous wreck lies about 1 mile NE of the latter point.

Aviles (43°35'N., 5°55'W.)

World Port Index No. 37600

4.3 Aviles, a well-sheltered harbor, lies within the Ria de Aviles. It is one of the principal export ports for iron and steel and is also a fishing center.

Puerto Aviles Home Page

http://www.puertoaviles.com

Winds—Weather.—The prevailing winds are either from the NW or NE. Severe NW gales make entry into the harbor extremely difficult. Winds from the SW to NW may increase the height of the tide and advance the time of HW. Winds from the NE may cause the opposite effect.

Tides—Currents.—Tides rise about 4m at springs and 3.1m at neaps.

Depths—Limitations.—The entrance channel is 153m wide and has depths of 8 to 10m. The commercial quays have depths of 3.5 to 9m alongside.

An overhead power cable, with a vertical clearance of 50m, spans the fairway in the S part of the harbor.

Generally, vessels up to 130m in length should have an underkeel clearance of 0.6m; vessels between 130 and 150m in length should have an underkeel clearance of 0.9m; and vessels between 150 and 210m in length should have an underkeel clearance of 1.2m.

Vessels entering are usually limited to 210m in length and

10m draft; however, vessels of greater length may enter with special permission. It was reported (1993) that a vessel with a length of 223m and a draft of 10.5m had been accommodated in the port at HW.

The port can handle tanker, general cargo, and bulk vessels. There are also extensive facilities for fishing vessels.

Aviles Berth Information		
Name	**Length**	**Depth**
Raices	1,080m	8.0m
Raices extension	250m	12.0m
San Juan East	160m	6.0m
San Juan South	300m	6.0m
San Juan West	278m	3.5m
San Juan Southwest	90m	2.0m
Aceralia East	165m	9.0m
Aceralia East and South	715m	7.0m
Aceralia South	107m	5.0m
Inespal	133m	7.0m

Aspect.—The river entrance is sheltered on the N side by Peninsula de San Juan, which rises to a height of 72m at the summit of Monte Bocon. Punta del Castello, located close SE of Punta de la Forcada, is the N entrance point. A prominent ravine, with high steep sides, indents the coast between these two points and is conspicuous from seaward.

The entrance channel, which passes S of Punta del Castello, extends E between two parallel embankments and then turns S into the harbor. It is marked by lighted beacons.

Aviles Light

Aviles Light is shown from a prominent tower with a dwelling, 14m high, standing on Punta del Castello. A disused signal station stands close N of it. An approach lighted buoy is moored 0.6 mile W of the light.

The town of Salinas is situated 1.4 miles SSW of Punta del Castello. Playa del Espartel, a conspicuous white beach, extends from the S side of the river entrance to the town and is easily identified from a considerable distance offshore. The high buildings at the SW end of the beach are also prominent.

Pilotage.—Pilotage is compulsory for all vessels over 500 grt. Vessels should send an ETA 2 hours in advance and confirm it on VHF when 3 miles from the port. The pilot boards 1.5 miles NNW of the entrance.

Anchorage.—Vessels waiting to enter may anchor, in depths of 15 to 20m, about1 to 1.5 miles from Punta del Castello, with Aviles Light bearing between 060° and 150°.

4.4 Cabo Vidrias (43°35'N., 6°01'W.), located 3 miles WSW of Punta de la Forcada, is a high, steep, and salient point which is fronted by several detached dangers. El Peton, with a least depth of 6.5m, lies 1.2 miles NNE of the cape. It is the outermost danger and breaks during heavy weather.

Isla Deva, 81m high, is a prominent small island lying 0.8 mile WNW of the cape.

Isla Deva (right center)

Puerto de San Esteban (43°34'N., 6°05'W.), a small port, lies at the W side of the Ria de Pravia, 2.9 miles SW of Cabo Vidrias. The entrance to the estuary is protected by breakwaters and training walls. Punta Espiritu Santo, 109m high, is the W entrance point. It has a steep E slope and is surmounted by a prominent hermitage.

Tides here rise 3.9m at springs and 3m at neaps, but may be affected by winds. The bar which obstructs the approach to the river is subject to rapid changes and may be completely obstructed after freshets in the winter. The currents are strong in the vicinity of this bar and may attain rates up to 4 or 5 knots at times.

The entrance channel, which leads between the breakwaters, is about 150m wide and is marked by a lighted range. There is a least depth over the bar of 1.2m and depths of 3.7m in the channel. The harbor, which consists of a basin, lies about 1 mile S of the entrance. It has 950m of total quayage with depths of 3 to 4.9m alongside. Local knowledge is required.

Note.—It was reported (1990) that the port is not open to commercial shipping. Dredging has not been carried out and the channel and berths have silted up.

4.5 Puerto de Cudillero (43°34'N., 6°09'W.), a small

harbor, is situated 3 miles W of the entrance to San Esteban. It is entered close W of Punta Rebollera and protected by breakwaters and a chain of islets. A light is shown from a prominent tower with a dwelling, 10m high, standing on Punta Rebollera. The harbor has depths of 2m and is used by fishing vessels.

Puerto de Cudillero Light

Concha de Artedo, a small bay, is located 1.5 miles W of Punta Rebollera and provides shelter during the summer months. It is entered between Punta Castanal and Punta Austera, 1 mile WNW. Vessels may anchor, in a depth of 14m, sand, at its W shore. During the winter, a heavy swell rolls in from the NW and the wind may suddenly shift to the NE making this anchorage untenable.

Las Osteras, a group of drying rocks, extends up to 0.4 mile N of Punta Castanal. Monte Montares, 405m high, stands 1.3 miles SSW of Punta Castanal. A hermitage stands on its SE side and is prominent.

Islote Rabion de Artedo, a high and rocky islet, lies close NW of Punta Austera and is connected to the coast by a chain of rocks. In bad weather, this islet should be given a berth of at least 1 mile as high seas prevail in its vicinity.

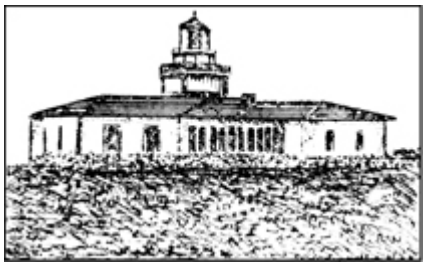
Cabo Vidio (43°35'N., 6°15'W.), 89m high, is located 2.5 miles WNW of Islote Rabion de Artedo. This cape is the N extremity of an extensive cultivated plain and is fronted by foul ground which extends up to 0.3 mile seaward. Islote Chouzano, a high and conical islet, lies close N of the cape and is connected to it by a reef. A light is shown from a prominent tower attached to a dwelling, 9m high, standing on the cape.

Cabo Vidio to the Ria de Ribadeo

4.6 Punta Esquiton (43°36'N., 6°16'W.) is located 1.5 miles SW of Cabo Vidio. Los Negros, so called because of their dark color, are a group of above-water and drying rocks which extend up to 0.5 mile NNW of the point. During the summer, small vessels with local knowledge can anchor off Playa de Cadavedo, 4.5 miles SW of this group.

Cabo Busto (43°34'N., 6°28'W.), 68m high, is located 10 miles W of Cabo Vidio. It is formed by the N face of a plateau, 800m wide. Foul ground and rocks extend up to 0.4 mile seaward from the N and W sides of the cape. A light is shown from a prominent tower attached to a dwelling, 10m high, standing close to the cliff top of the cape.

Cabo Vidio Light



Cabo Busto Light

Cabo Busto Light (landward side)

A ridge of hills extends between Cape Vidio and Cabo Busto and attains heights of more than 610m, about 5 miles from the coast. Monte Palancas, the summit of this ridge, attains a height of 718m, 5 miles ESE of Cabo Busto.

Bajo El Serron (43°38'N., 6°24'W.), a rocky bank, lies about 4.5 miles NE of Cabo Busto. It has a least depth of 39m and is dangerous at all times. In bad weather, heavy seas have been observed breaking over it.

El Peton, a similar bank, lies 2 miles NNW of Cabo Busto. This bank has a least depth of 62m and heavy seas break over it at times.

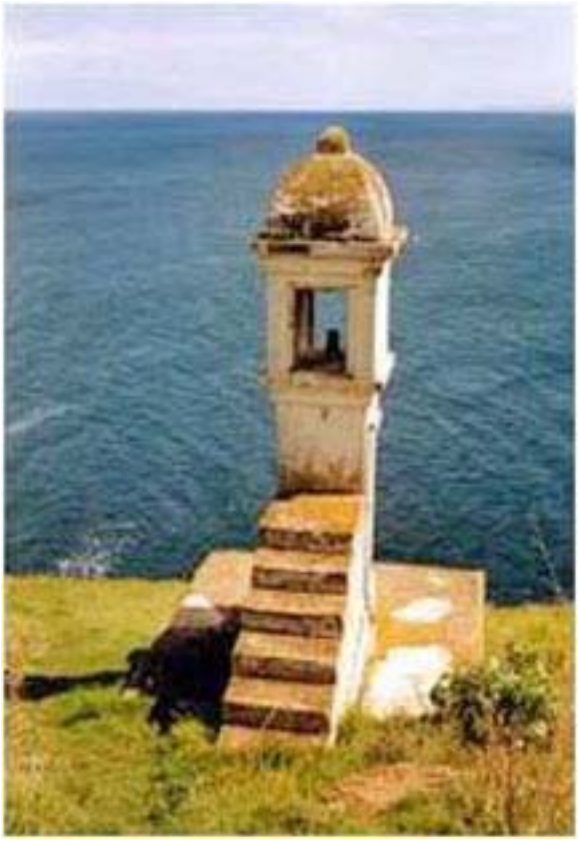
The Rio Canero flows into the sea 1.3 miles SSW of Cabo Busto. The coast between is high, steep, and reddish in color. Small vessels can anchor, in depths of 5 to 10m, off the river mouth and are sheltered from NE winds.

Concha de Luarca (43°33'N., 6°32'W.), a small bay, lies 2.5 miles W of the Rio Canero. It is entered between Punta Inguilo, 65m high, and Punta Mujeres, 37m high, 0.7 mile W. Punta Focicon is located 0.4 mile W of Punta Inguilo. It is the N extremity of Peninsula La Blanca which forms the E side of the bay. Punta Blanca Light is shown from a tower, with a dwelling, 9m high, standing on Punta Focicon; a prominent chapel is situated near it.

Rocks and foul ground lie up to 0.4 mile seaward of the entrance points.

Luarca, a small harbor, is situated at the head of the bay and protected by three breakwaters. It has a depth of 3m and is used by fishing vessels and yachts. A lighted range indicates the entrance channel, but local knowledge is required.

4.7 **Punta del Cuerno** (43°34'N., 6°36'W.), 42m high, is located 3 miles W of Concha de Luarca. The coast between is generally steep and clear of dangers. This point has a prominent reddish horn-shaped rocky projection on its head. La Vaquina, a detached pinnacle shoal, lies close NE of the point and uncovers in rough seas.



Punta del Cuerno disused tower

Cabo San Agustin Light

Punta Romanella, a steep and rocky point, lies 1 mile WNW of Punta del Cuerno. Islotes Romanellas, three rugged islets, lie close N of this point and are prominent from the E and W. Punta Barroca, surmounted by a chapel, is located 1.3 mile WSW of these islets.

Puerto de Vega (43°34'N., 6°39'W.), a small inlet, is entered SW of Punta Lama, located 1 mile WSW of Punta Romanella. It is only available to small craft with local knowledge. The entrance channel is 13m wide and tortuous. The harbor lies at the head of the inlet and is formed by a mole. It dries at LW and can accommodate small craft and fishing boats with drafts of 1.8 to 2.7m at HW.

4.8 The **Ria de Navia** (43°34'N., 6°43'W.) lies 3.5 miles W of Puerto de Vega. The estuary is entered between Punta de La Sierra and Cabo San Agustin, 1 mile W, and leads 1.3 miles S to the river mouth, where it is spanned by a cantilever bridge.

A light is shown from a prominent tower, 20m high, standing on Cabo San Agustin and several large white buildings stand close S of it. Monte Jarrio, 365m high, stands 2.1 miles SSW of the river mouth and is conspicuous.

A submarine oil pipeline extends seaward from the W side of the entrance to the river and is marked by a lighted buoy moored 0.5 mile NE of Cabo San Agustin. Small craft can anchor, in a depth of 5m, off a beach, on the SE side of the cape, being careful to avoid the above pipeline.

A shallow channel leads between training walls to a basin lying on the E bank of the river, close below the bridge. Small craft with local knowledge can pass over the bar and reach this basin.

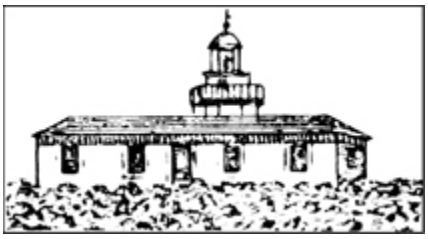
Cabo Blanco (43°34'N., 6°51'W.), 21m high, is located 5.2 miles W of Cabo San Agustin. It is a prominent cliffy point, with white patches on the W side, fronted by drying rocks and foul ground.

4.9 Cabo de San Sebastian (43°34'N., 6°57'W.) is located 9.7 miles W of the Ria de Navia. The coast between is indented by several small bays which offer shelter to small craft with local knowledge.

Isla de Tapia Light and partial mole

The cape is the NE end of a promontory on which stands the town of Tapia. The church in this town has no tower, but is reported to be conspicuous above the other buildings.

Isla de Tapia, 18m high, lies close N of the cape and is fronted by rocks. It consists of an enormous mass of rock and is connected to the cape by a mole. A light is shown from a tower attached to a dwelling, 8m high, standing on the island.



Isla de Tapia Light

Islote Orrio de Tapia, a low conical islet, lies close NW of Isla de Tapia and is connected to it by a reef which almost dries. Foul ground, most of which dries, extends up to 0.3 mile N of the islet.

Puerto de Tapia (43°34'N., 6°57'W.), a small harbor, is situated on the W side of Cabo de San Sebastian and is formed by two breakwaters. It has a depths of 2 to 6m and is used by fishing vessels and small coasters.

El Coitelo, a detached bank, lies 1.3 miles NNE of Isla de Tapia. It has a least depth of 14m and breaks with a light swell. Bajo Mar Bella, a similar bank, lies 1.3 miles NNW of the light. It has a least depth of 28m and breaks with a heavy swell.

4.10 Golfo de Foz (43°37'N., 7°15'W.), also known as the Golfo de La Masma, is the broad expanse of water lying between Cabo de San Sebastian and Cabo Burela, 19 miles WNW. The shores of this gulf are foul up to 0.5 mile seaward in places and the depths are irregular over a rocky bottom. A high sea is raised within the gulf in N gales, and a wide berth should be given to the coast at such times. In the winter, gales from the SW are usually accompanied by heavy squalls, especially in the vicinity of the Ria de Foz and winds from the NE raise a steep sea near the shore.

During the summer, the coastal current sets W and is strongest between June and September, when a rate of 2 knots may be experienced off Islote Orrio de Tapia and Cabo Burela. During the winter, the current sets E or SE off Cabo Burela, and with NW gales, attains a rate of 2 knots. The currents are felt but a short distance off the coast with the ebb setting W and the flood setting E. Caution is advised when navigating this coast during unsettled weather.

Fog is frequent in June and July and usually persists for 3 or 4 days. Fogs are almost always preceded by a fresh NE wind. When **Monte Mondigo** (43°31'N., 7°08'W.) is covered by fog or haze and the coast W of San Ciprian is obscured by fog, this usually indicates the approach of a NE wind, but if these places are clear, a W wind will prevail.

4.11 The **Ria de Ribadeo** (43°33'N., 7°02'W.) is located 4 miles WSW of Cabo de San Sebastian. It is entered between Punta de La Cruz and Isla Pancha, 0.5 mile W, and extends 5.5 miles S to the town of Vegadeo, at the mouth of the Rio Eo. This estuary is encumbered by numerous shifting sand banks which dry at LW. At HW, it is completely covered and the narrow channels, which lead through the banks, are obscured. A main entrance channel, which leads to the facilities on the W bank of the estuary, is indicated by sets of lighted range beacons.

Isla Pancha Light and disused Light

A light is shown from a tower, 13m high, standing on Isla Pancha. A disused light with a dwelling and a factory building are situated close SSW of it and are conspicuous.

Bajo Arredo, a rocky shoal, lies about 0.3 mile NW of Punta de La Cruz. It has a least depth of 8.2m and breaks during NW gales.

Bajo Panchorro, another rocky shoal, lies about 200m N of Isla Pancha. It has a least depth of 3.4m and breaks with any sea.

A cantilever bridge, with a vertical clearance of 30m, spans the estuary 0.8 mile S of the entrance.

4.12 Villa de Ribadeo (43°32'N., 7°02'W.) (World Port Index No. 37670) stands on the W side of the Ria de Ribadeo, 1.2 miles S of the entrance. A tall building with red colored domes that reflect in the sun stands in the town and is conspicuous from seaward. The harbor extends 1 mile S from the cantilever bridge and is encumbered with sand banks. Tides here rise 4m at springs and 3.1m at neaps, but they can be affected by the wind. The tidal currents can attain rates up to 3 knots.

Muelle de Porcillan, 350m long, dries and is used by small craft. Muelle de Mirasol, the main quay, is situated at Figueirua, S of the town. It is 275m long and has a depth of 3.8 to 4.2m alongside. It is extended 200m NE by a jetty and is used by coasters, fishing vessels, and yachts. The entrance channel has depths of 1.4 to 5m; vessels up to 4.5m draft can be handled. Pilotage is compulsory and available for vessels over 50 grt, but all vessels require local knowledge. The harbor can be contacted on VHF channel 12 or 16.

The harbor is reported to be inaccessible in bad weather due to the whole area fronting the estuary being covered by breakers. Vessels can anchor, in depths of 7 to 11m, in the outer part of the estuary but local knowledge is required.

The Ria de Ribadeo to Ensenada de Santa Marta

4.13 Punta Corbeira (43°34'N., 7°07'W.), 9m high, is located 3.3 miles W of the Ria de Ribadeo and fronted by rocks. The small town of Rinlo stands on its E side and is visible from seaward. A creek flows into the sea on the W side of the town and can be used by small craft.

Punta Promontoiro, located 2.8 miles W of Punta Corbeira, is fringed by reefs which extend up to 0.3 mile offshore. Restinga de Remior, a rocky ledge, lies parallel to the coast between this point and Punta Prados, the E entrance point of the Ria de Foz, 2.5 miles W. Co de La Cana, the outermost danger of this part of the coast, lies about 1.5 miles NW of Punta Promontoiro. This rocky shoal has a least depth of 22m and breakers begin to form in its vicinity in bad weather.

The **Ria de Foz** (43°34'N., 7°15'W.) is entered between Punta Prados and Punta de Los Cairos, 14m high, 0.5 mile NW. This inlet extends S for 2.5 miles to the mouth of the Rio Masma. It dries at LW and is only used by small craft and fishing boats with local knowledge. The bar at the entrance dries and is impassable at LW. Weather permitting, small craft with drafts up to 3.3m can enter at HW. The small town of Foz stands on the W side of the estuary.

Punta de Los Cairos, cliffy and steep-to, is fronted by Los Cairos, a group of five rocks standing almost as high. Castro de Foz, 80m high, stands 0.7 mile SW of the point. This hill is prominent from the N and NE and is surmounted by conspicuous pine trees.

Monte Mondigo, 564m high, stands 5.5 miles SE of the entrance to the Ria de Foz. This isolated peak can be seen from a considerable distance offshore and appears as a rounded cone rising out of the sea; however, during the summer, the peak is usually obscured. Pico Penabor, 329m high, stands 2.5 miles S of the entrance to the Ria de Foz. This peak is very steep and prominent from seaward. It can usually be seen when Monte Mondigo is obscured.

Monte Corneria, 436m high, stands 4 miles SSW of the entrance to the Ria de Foz and is a good mark from all directions. Monte Frouseira, 421m high, stands 3 miles WNW of Monte Corneria and is conspicuous when viewed from the E.

The Rio del Oro flows into the sea 2.2 miles NW of the entrance to the Ria de Foz. Its entrance can be identified by three bridges which span the river. Small craft can cross the bar at the mouth and enter the river at HW.

4.14 Cabo Burela (43°40'N., 7°21'W.), 31m high, is located 7.7 miles NW of the entrance to the Ria de Foz and is fronted by a reef and foul ground. The coast between is fronted by several small points with sandy beaches between them. Several large white buildings stand on this cape and are conspicuous from offshore.

Arnelas, a rocky shoal, lies about 1.5 miles E of the cape. It has a least depth of 20m and breaks with a heavy sea. Petano, another rocky shoal, lies about 0.7 mile E of the cape. It has a least depth of 4.8m and breaks with a heavy sea; another depth of 4.8m lies 240m E of Petano. Piedra Burela, a rock, lies 0.6 mile SE of the cape, at the outer edge of the reef. It is 8m high and is marked by a beacon.

Monte Cabaleiro, 502m high, stands 4 miles SW of Cabo Burela. Its peak is conical and prominent from seaward.

4.15 Burela (43°39'N., 7°21'W.), a small harbor, is situated 1 mile S of Cabo Burela and protected by breakwaters.

Port of Galacia Home Page

http://portosdegalicia.com

The harbor has an entrance 90m wide. A quay, with a depth of 1.8m, is situated on the inner side of the N breakwater. It is used by coasters and fishing vessels. Vessels up to 2,800 dwt, with a maximum draft of 7m, can be handled at HW.

Several houses stand on the cliffs backing the harbor; a conspicuous factory chimney stands close N of them. Two prominent silos stand at the N breakwater.

Pilotage is mandatory for vessels of 500 gross tons and over. The pilot boards in position 43°39.5'N, 7°19.0'W.

Vessels should send their ETA as soon as possible and confirm their ETA 24 hours and 6 hours in advance. The port can be contacted on VHF channel 12.

Anchorage can be obtained, in a depth of 6m, sand with good holding ground, about 0.2 mile NE of the head of the N breakwater.

Caution.—A wreck is located at position 43°39.6'N, 7°16.6'W.

4.16 Punta Castro (43°41'N., 7°24'W.), 27m high, is located 2 miles NW of Cabo Burela. It is fronted by a reef and several drying rocks which provide protection to the Rio Junco, entered close SW. Small craft with local knowledge can enter this river and seek shelter from NE seas.

Cacheimo de Tierra, with a least depth of 0.8m, lies 0.3 mile offshore, about 1 mile NW of Cabo Burela. Cacheimo de Fu-

era, with a least depth of 13.7m, lies about 1.2 miles NNW of Cabo Burela. During bad weather, the sea breaks on both of these rocky shoals.

Co da Baixa, with a least depth of 18.9m, lies about 1 mile NNE of Punta Castro. Juan Marino, with a least depth of 15.8m, lies about 1.2 miles N of the same point. Both of these shoals break with a moderate sea.

Vessels are advised to give this part of the coast a berth of at least 2 miles in all weathers.

4.17 Ensenada de San Ciprian (43°42'N., 7°26'W.), a small bay, is located 4 miles WNW of Cabo Burela. It fronts the approach to Puerto de San Ciprian and lies between Punta Atalaya, the N extremity of Cabo San Ciprian, and Cabo Moras, 2 miles NW.

Atalaya Light and nearby disused Light

Atalaya Light is shown from a tower, 14m high, standing on Punta Atalaya. A disused light, with a dwelling, 9m high, stands close W of it. Monte Medela, a 243m high peak, stands 2.2 miles SSW of Cabo San Ciprian and is prominent. Co Tras Atalaya, a rocky bank with a least depth of 3.6m, lies about 0.3 mile NNE of Punta de Atalaya. Cabo Moras, 30m high, is rugged and steep, with a pointed rock at its base.

Restinga de San Clemente, extending up to 0.5 mile E of Cabo Moras, has a least depth of 7.8m.

Bajos Congrejeiros, a group of rocky patches, lies 0.5 mile N of Cabo Moras and has depths of 12 and 15m. Sierra Moras, a similar group, lies between Bajos Congrejeiros and the cape and has a depth of 14m. Co d'Area Mayor, a rocky patch with a least depth of 7m, lies about 0.5 mile SSE of Cabo Moras.

Los Farallones, three rocky islets, lie 0.9 mile N of Cabo San Ciprian and are fronted by foul ground. They are marked by a buoy, moored close NW. El Pie, 36m high, is circular, flat-topped, reddish, and the most prominent of the three. The bay may be entered S or W of these islets.

Puerto de San Ciprian (43°42'N., 7°28'W.), a small and shallow harbor, lies in the SE corner of the bay. It is reported to have depths of 2m and is now only used by fishing boats.

Port of San Ciprian Home Page

http://porto-ferrolsanciprian.com

Puerto de Alumina Espanola (San Ciprian), a small private port, lies in the SW corner of Ensenada de San Ciprian, 1 mile WNW of Cabo San Ciprian. The harbor is formed by breakwaters which have berths on the inner sides. It can be approached through Canal Norte, which passes W of Los Farallones, or through Canal Este which passes S of the islets. The fairways of both channels are indicated by lighted ranges and have depths of 20 to 24m.

The main berth is 280m long with a depth of 14m alongside. The auxiliary berth is 80m long with a depth of 7.5m alongside. Both are equipped with facilities to handle bulk cargoes. The port can accommodate vessels up to 80,000 dwt and 12.9m draft. Pilotage is compulsory for all vessels of more than 150 gross tons. Pilots can be contacted on VHF channel 14 or 16 at least 2 hours prior to arrival at the pilot boarding station. Pilots generally board 1 mile N of Los Farallones.

Anchorage can be obtained, in depths of 16 to 20m, sand, close E of the S breakwater.

4.18 Pico de La Vela (43°43'N., 7°30'W.), 154m high, stands 1 mile W of Ensenada de San Ciprian. It is conical in shape and forms a prominent landmark, being the highest peak near the coast in this vicinity.

Islote Ansaron, 81m high, lies 1 mile W of Cabo Moras. The N side of this rugged and barren islet is very steep, but its S side slopes gradually to the sea. Co del Ansaron, a rocky shoal with a least depth of 8.8m, lies close N of the islet and breakers occur over it in bad weather.

Punta Roncadoira Light

Punta Roncadoira (43°44'N., 7°31'W.), 83m high, is located 3.5 miles WNW of Los Farallones. It is steep and has a small bay on the W side. Los Netos, two small islets, lie N of the W entrance point of this bay. A light is shown from a prominent tower, 14m high, standing on Punta Roncadoira.

The **Ria de Vivero** (43°43'N., 7°36'W.) lies 3 miles W of Punta Roncadoira. The estuary is entered between Punta de Faro and Punta Socastro, 1 mile NW, and extends 2.2 miles S to the town of Villero.

Punta Socastro, 67m high, is steep and fronted by rocks and foul ground. El Co, a detached rocky patch, lies 0.3 mile ENE of the point. It has a least depth of 11m and breaks in bad weather. A light is shown from a tower, 6m high, standing on the point.

Punta de Faro Light

Punta de Faro is the termination of Monte Faro Juances, 193m high, which stands close SE of it. This conical peak is an excellent landmark when viewed from seaward because of its isolated position and regular profile. A light is shown from a tower, 6m high, standing on Punta de Faro. Cos de Esteiro, a group of rocks with depths of 4 to 7m, lie up to 0.8 mile NE of the point. Insua de Area, 19m high, lies 0.7 mile S of Punta de Faro. The channel passing E of this islet is foul.

The shores of both sides of the estuary are generally high and steep, and provide good shelter. When approaching the estuary, the most conspicuous peak is Penedo do Galo, which stands 1.5 miles E of the town. It is 547m high and is surmounted by a prominent white pillar. A conspicuous hermitage, which stands on the slope of this peak, is clearly visible when the top of the mountain is obscured.

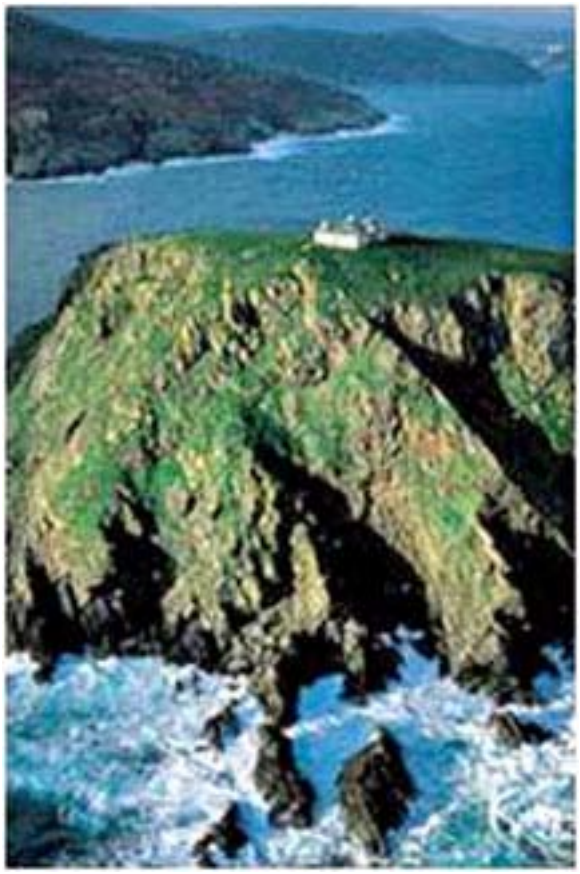
Puerto de Cillero, a small harbor, lies on the E side of the estuary and is protected by breakwaters. There is a quay, 200m long, on the inner side of the breakwater, with depths of 6 to 8m alongside. Another quay, 90m long, has depths of 4 to 6m alongside. The harbor is used by fishing vessels and small coasters. The harbor can be contacted on VHF channel 12. Local knowledge is required for entering.

Villa de Vivero, a small town, stands on the E bank of the entrance to the Rio Landrove, 1 mile S of Cillero. It is formed by a coastal quay and a pier which follows the alignment of the river, which is about 80m wide and encloses an inner harbor dredged to a depth of 3m. The port is used by fishing vessels and small craft.

4.19 Punta Camero (43°46'N., 7°38'W.), 46m high, is located 2.5 miles NNW of the entrance to the Ria de Vivero. The coast between is bold and steep-to. Vigia de Vicedo, a 155m high peak, stands 0.5 mile SW of the point and is prominent.

The **Ria del Barquero** (43°46'N., 7°40'W.), also known as the Rio del Bares, is entered between Punta Camero and Cabo de Bares, 1.5 miles NW, and extends 3 miles SW to El Barquero. The shores of this estuary are high and steep-to, and provide shelter from all except NE winds.

Isla Coelleira is located 0.3 mile NNE of Punta Camero and separated from it by a narrow and deep passage. The island is 82m high, grass covered, and its N and NE sides are steep. The passage S of the island should not be attempted with N or NW gales, as the sea breaks right across it. A light is shown from a tower, with a dwelling, 7m high, standing on the summit of the island.



Isla Coelleira Light

From Punta Camero, the E side of the estuary extends 0.5 mile W to Punta Chileiteria and then 1 mile farther W to Punta Cueva Baja, a high and rocky point. This stretch of shore is steep-to and is dominated by Monte Ventoso, 155m high, standing 0.4 mile ESE of Punta Chileiteria. A prominent lookout hut is situated on its summit.

Puerto de Bares, a small village, stands on the N side of a bay at the W side of the estuary. It is fronted by a breakwater which provides shelter to small craft.

In summer, coasters anchor, in depths of 16 to 20m, within the estuary. However, local intensification of winds between S and SW has been reported in this estuary. Vessels seeking shelter from SW winds of force 9 have reported experiencing winds of force 11 to 12 within the anchorage. Vessels should also use caution to avoid any fishing nets which are sometimes laid across the entrance.

El Barquero, a village, stands in the shape of an amphitheater at the head of the estuary. It is situated on the slopes of the W bank of the Rio Sor and fronted by a small harbor. The entrance channel is narrow and shallow. Small craft and fishing vessels, with drafts up to 3.3m, can reach this harbor at HWS. When NE winds prevail, a swell breaks over the bar and makes the entrance impracticable.

Cabo de Bares, the N entrance point of the estuary, is formed by high mountainous land which terminates in Monte Facho de Maeda. This peak, 337m high, stands 2.5 miles S of the cape and is conspicuous.

4.20 Punta de La Estaca de Bares (43°47'N., 7°41'W.) is located 1.5 miles NW of the W entrance point of the Ria del Barquero and is the N point of Spain. It extends in a gentle slope from Monte Bares and terminates in rugged and pointed rocks. Several small islets lie close NW of the point. Monte Bares, 208m high, is surmounted by a conspicuous disused signal station.

Punta de La Estaca Light

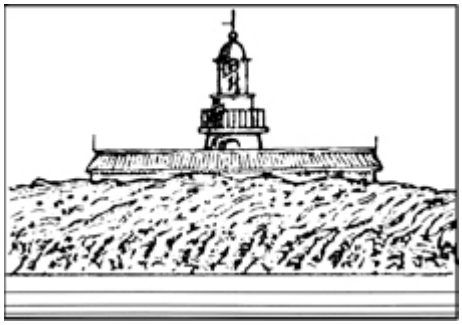
A light is shown from a tower with a dwelling, 10m high, standing on the point.

If the sea is calm, the outer islet off Punta de La Estaca de Bares may be passed at a distance of about 1 mile, but with a heavy sea from the W or NW, it should be given a berth of at least 3 miles.

Tides—Currents.—Off Punta de La Estaca de Bares, the flood tidal currents set NE and E while the ebb currents set SW and W. Both currents attain rates of up to 2 knots and extend a considerable distance offshore.

Farther offshore, the currents set with the prevailing winds and are strong with fresh winds from the W or E. It has been reported that for a day or two before a gale, the current sets towards the direction from which the bad weather is approaching.

Caution.—The coast between Punta de La Estaca de Bares



Punta de La Estaca Light

and Cabo Prior (43°34'N., 8°19'W.), about 30 miles SW, consists almost continuously of steep and inaccessible rocks. During bad weather, it should be given a berth of between 7 and 11 miles.

ENSENADA DE SANTA MARTA

4.21 Cabo Ortegal (43°45'N., 7°53'W.), which forms the W side of Ensenada de Santa Marta, is located 9 miles W of Punta de La Estaca de Bares. The cape consists of a mountainous promontory which terminates in Punta de Los Aguillores, its NE extremity.

Cabo Ortegal Light at Punta de Los Aguillores

Cabo Ortegal Light is shown from a tower, 10m high, standing on Punta de Los Aguillores. Cabo Ortegal is easily identified from both the E and W, but not from the N. The upper reaches of the cape are frequently obscured by clouds, especially with NE winds when they are almost always covered.

Los Aguillones is a chain of steep, sharp-pointed, and bare islets which extends N from Punta de Los Aguillones. Caballo Juan, the outermost islet, is 41m high and lies 0.5 mile seaward of the point. The narrow passages leading between some of

these islets are deep, but they should not be attempted without local knowledge.

Ensenada de Santa Marta, an extensive bay, is entered between Punta de La Estaca de Bares and Punta de Los Aguillones, 8 miles W. The Ria de Santa Marta flows into its head. Ensenada de Carino, a small bay, is located on the W side of Ensenada de Santa Marta, 2 miles S of Punta de Los Aguillones. Monte Gargacido, 353m high, stands 0.5 mile S of Punta de Los Aguillones and Monte Faroleiro, 350m high, stands 0.5 mile S of it. Both of these peaks are well-defined and prominent when viewed from the E.

The Ria de Santa Marta can only be approached with safety during the summer. During the winter, heavy seas raised by winds between the NW and NE are experienced near the entrance.

Punta Bandeja is located 5.5 miles SW of Punta de La Estaca de Bares. The coast between consists of steep, whitish rocks, with a few scattered beaches. This point is the N extremity of Monte Cova Guion, a ridge, which rises to a height of 102m and can be easily identified by several white rocks on its summit. A rocky ridge, with depths of less than 11m, extends up to 0.7 mile NW of the point and terminates in Piedras Meas, two rocks close together, 0.6m high and steep-to. These rocks form the outermost danger from the shore of Ensenada de Santa Marta. Gorgola, a detached 3.7m patch, lies 0.5 mile NNW of the point. In strong winds, the narrow passage between Piedras Meas and the point is covered by breakers.

Punta Espasante, a steep headland, is located 1 mile SW of Punta Bandeja. A prominent watch tower stands on its summit.

Ensenada de Espasante, a small bay, lies between Punta Espasante and Punta do Tallo, 0.7 mile SW, and its shores are fringed by shoal ground. Anchorage can be taken, in depths of 5m or more, about 300m from the shores of the bay, preferably towards its S end where the bottom is sand. A small village stands on the N side of this bay and is fronted by a jetty which is used by fishing boats.

Punta del Castro is located 2 miles S of Punta de Los Aguillones. The coast between is bold, rugged, and steep-to.

Ensenada de Carino, a small bay, lies between Punta del Castro and Punta del Castro da Moura, 1 mile SSE. A small harbor, protected by a breakwater, is situated at the head of the bay. The Commercial Wharf, on the W side of the breakwater, has two berths; one berth is 210m long, with a depth of 9m alongside, while the second berth is 180m long, with a depth of 7m alongside. Other berths have depths of 4 to 6m alongside and are used by local fishing vessels.

Monteron del Oeste, a drying reef, extends 0.2 mile NE from Punta del Castro da Moura. Monteron del Este, a 1m high pinnacle rock, lies 0.2 mile E of the same point.

The **Ria de Santa Marta** (43°43'N., 7°51'W.) is entered between Monte de Mazanteo, 219m high, and Monte Castro de Ladrido, 175m high, 2.5 miles ESE. Both of these conical-shaped hills are prominent. Isla de San Vincente, 56m high, lies in the approach, 1.5 miles ESE of Monte de Mazanteo. Two approach channels, one on either side of this island, lead to the river mouth.

Santa Marta de Ortigueira (43°41'N., 7°51'W.), a small town, stands on the E shore of the river and is fronted by a harbor which dries at LWS. A narrow and tortuous entrance channel leads between tidal flats to the harbor and passes over a bar with a depth of 1.5m. The harbor is used by small coasters and fishing vessels with drafts up to 3.5m at springs and 3m at neaps. Local knowledge is required as the fairway is unmarked and the tidal currents can attain rates up to 6 knots at springs.

Esenada de Santa Marta to the Ria de el Ferrol

4.22 Punta del Limo (43°46'N., 7°54'W.) is located 1.5 miles WSW of Punta de Los Aguillones. The coast between is fringed by drying rocks. Bajo Lee, a rock which always breaks, lies about 0.3 mile N of the point. Punta del Limo, high and precipitous, is the NW extremity of Cabo Ortegal. It rises in gradually higher plateaus to Garita del Limo, 558m high, 1.5 miles S. The point is not easily identified from seaward because of the high land behind it.

Inland, the coast extending up to 6 miles SW is dominated by Sierra de La Capelada, which rises steeply to heights in excess of 400m.

Punta del Cuadro (43°44'N., 7°57'W.), located 2.5 miles SW of Punta del Limo, is the outer extremity of a spur which projects NW from Sierra de La Capelada. The point may be identified by a steep and black cliff at its extremity and by Piedra del Cuadro, a large square-faced rock, standing close off its N side. A large white hermitage stands on the mountain slope, 2.5 miles SW of this point, but is only visible from between NW and SW.

Punta Candelaria Light

The Islas Gabeiras, two large detached rocky islets, lie close to the coast, 1.8 miles SW of Punta del Cuadro.

Caution.—A restricted area, the limits of which are shown on the chart, lies 5 miles NNW of Punta del Cuadro. Anchoring, fishing, and trawling are prohibited within this area.

A shoal, with a depth of 11m (existence doubtful), is reported to lie about 6.5 miles NW of Punta del Cuadro.

4.23 Punta Candelaria (43°43'N., 7°51'W.) is located 4.5 miles WSW of Punta del Cuadro and is fronted by foul ground. This part of the coast is known locally as El Fronton de Candelaria and is a rugged, lofty, and inaccessible section of terrain. A light is shown from a tower with a dwelling, 9m high, standing on the point. Monte Candelaria, 396m high, stands 0.8 mile S of Punta Candelaria and is conspicuous.

A rocky bank, with a depth of 24m, lies 0.5 mile NW of Punta Candelaria and breaks in heavy weather.

Punta Lameda is located 2 miles SW of Punta Candelaria. The coast in the vicinity of the point is high and precipitous. Vigia Eigil, 314m high, stands 0.8 mile ESE of the point and is conspicuous.

Bajo Mascoto, with a depth of 36m, and El Petebellon, with a depth of 29m, lie 3.3 and 2.3 miles W, respectively, of Punta Lameda.

4.24 The **Ria de Cedeira** (43°30'N., 8°04'W.), an inlet, is entered between Punta Fulgoso, located 0.8 mile S of Punta Lameda, and Punta Chirlateira, 0.8 mile W. It is shallow and usually only used by coasters and fishing vessels with drafts less than 4m. As a port of refuge, it is conveniently located for small craft which cannot round Cabo Ortegal in strong NE winds. During such times, the inlet is easily approached and shelter is provided once the entrance is reached. Local knowledge is recommended for entering the inlet.

The entrance to the inlet can be identified by Monte Burneira, 211m high, standing 1 mile S of the W entrance point, and by Vigia Eigil, previously described above in paragraph 4.23. Both of these peaks are surmounted by ruined towers. In addition, a conspicuous chapel stands on a dark slope, 0.3 mile S of Punta Fulgoso.

Punta Chirlateira is bold, rugged, and fringed by rocks. Several dangers lie up to 0.8 mile NW and 0.3 mile N of the point. El Peton, a detached 10m patch, lies at the seaward edge of the dangers extending to the NW.

Cedeira, a small village, stands on the NW side of the mouth of the Rio Cedeira, which flows into the NE corner of the inlet. It is fronted by a small harbor which is protected by breakwaters. The harbor has depths of 2m and is used by fishing vessels. Vessels may anchor, in a depth of 4m, good holding ground, close E of the breakwaters.

Caution.—A marine reserve of interest for fishing is established in the Ria de Cedeira area. Contact local authorities for details.

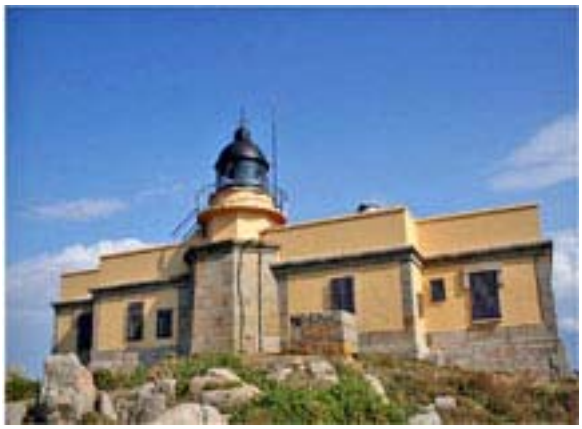
4.25 Punta Frouseira (43°37'N., 8°11'W.), the seaward end of a small peninsula, is marked by a light and lies 4.5 miles SW of Punta Chirlateira. The coast between consists of a number of small inlets and bays which are separated by rocky points. Monte Prados, 183m high, stands midway on this coast. Playa de La Frouseira, a prominent white beach, extends 1.5 miles E from the point.

Piedra Ucha de Fuera, a detached rock, lies about 0.7 mile WNW of Punta Frouseira. It has a depth of 15m and breaks in moderate seas. Piedra Ucha de Tierra, a rock awash, lies about 0.3 mile W of the same point.

Monte Campelo (43°36'N., 8°12'W.) rises steeply from the sea, 2.5 miles SW of Punta Frouseira. It is 242m high and from the NW appears like a large saddle; however, when viewed from NE, it appears conical. The coast between is indented by two small bays. A hermitage stands on the N side of Cala Portonovo, the N bay, and is conspicuous from seaward.

Monte Campelo

Between Monte Campelo and Punta Castelo, about 2.5 miles SW, the coast remains steep and of moderate height. Punta de Santa Comba lies about midway between Punta Castelo and the NE extremity of Cabo Prior, 2.7 miles W. A hermitage stands on the summit of the point.



Cabo Prior Light

Cabo Prior (43°34'N., 8°19'W.) is located 6.7 miles SW of Punta Frouseira and has a steep NW face about 1.2 miles long. It is the W extremity of a high and rocky promontory which extends 2 miles NW from the general line of the coast. A light is shown from a tower with a dwelling, 7m high, standing on the N side of the cape. Numerous dangers lie up to 0.5 mile N and 0.7 mile NE of the light.

The promontory appears as an island when viewed from the NE or SW because of the low land which joins it to the coast. From the NW, it blends in with the high land behind, but can be identified by a look out tower situated on the summit.

Caution.—The currents off the cape are governed by the winds. Caution should be observed when passing the cape in NW gales, as there are strong onshore currents at such times.

These onshore currents are also equally strong within the bight lying between the cape and the Islas Sisargas, 25 miles SW.

Near the coast, the tidal currents set E during the flood and W during the ebb. They generally form eddies in the bays and off the salient points.

4.26 Bajos Delgados (43°37'N., 8°18'W.) extend up to about 3.5 miles NNE of Cabo Prior. This narrow bank has depths of 8 to 43m and during heavy weather, seas break over its entire length.

Banco de Bermeo (43°41'N., 8°15'W.), with a least depth of 18m, lies about 7.5 miles NNE of Cabo Prior. In calm weather, this bank is frequented by numerous fishing vessels. In bad weather, the sea breaks on it and vessels should stay well clear.

Punta Erbosa is located 2.5 miles S of Cabo Prior and Isla Erbosa lies close off it.

A measured distance of 2,013.8m, on a running course of 047°-227°, lies NW of this point and is marked by two pairs of beacons.

Punta Castro, a rocky point, is located 1.2 miles SSW of Punta Erbosa. The Islas Gabeiras, two dark-colored and barren rocks, lie 0.3 mile WNW of this point.

Bajos Terracidos lies centered 1.2 miles W of the Islas Gabeiras. This rocky bank has very irregular depths and the sea breaks on it in heavy weather.

Cabo Priorino Chico (43°28'N., 8°20'W.), located 3 miles S of Punta Castro, is the SE extremity of Cabo Priorino, a peninsula which forms the N side of the entrance to the Ria de El Ferrol. Cabo Priorino is so called because of its resemblance to Cabo Prior to the N. Cabo Priorino Grande, the SW extremity of Cabo Priorino, is located 0.5 mile NW of Cabo Priorino Chico and both of these headlands are dark colored. Bajo del Zorron, a shoal with irregular depths, extends about 0.5 mile SW from Cabo Priorino Chico.

A light is shown from a tower with a dwelling, 5m high, standing on Cabo Priorino Chico. Monte Ventoso, a prominent hill, stands 1.5 miles NE of the light. A prominent lookout tower and a signal station are situated on its summit, which is 239m high.

Monte Ventoso and lookout tower

Bajo Cabaleirolies lies about 1.3 miles NW of Cabo Priorino Grande. This rocky bank has a least depth of 27m and seas break on it in heavy weather. Banco Las Laixinas lies between 2 and 4 miles W of the same cape. This rocky bank has depths of 17 to 37m and seas also break on it in heavy weather.

The Ria de El Ferrol

4.27 The **Ria de El Ferrol** (43°28'N., 8°19'W.), an extensive inlet, is entered between Cabo Priorino Chico and Punta Coitelada, 1.5 miles SE, and extends 8 miles E to a port area. It narrows close within the entrance, but then opens out into a broad expanse of water surrounded by high land which provides excellent shelter from all winds. The moderate depths with good holding ground make this inlet one of the best and safest harbors in Spain.

Punta del Segano is located 0.5 mile NNE of Punta Coitelada, on the S side of the entrance. It rises to a hill, 57m high, which is surmounted by a watch tower. Bajo Muela del Segano, a shoal awash, lies close off the point and is marked by a lighted buoy moored on its N side.

Punta de San Martin, marked by a light, is located 1.2 miles ENE of Punta del Segano, at the narrowest part of the channel. A refuse tip, situated close W of the point, is reported to frequently emit smoke.

Ensenada de Carino lies on the N side of the entrance between Cabo Priorino Chico and Punta de San Carlos, 1.7 miles E. This small bay is clear of dangers and is frequently used by vessels awaiting daylight to enter. A light is shown from the ruins of Batteria de San Cristobal which stands 0.3 mile NW of Punta de San Carlos. Castillo de San Carlos, a ruined fort, stands on Punta de San Carlos.

The shores of the narrows are rocky and barren except for some patches of cultivation near La Leusada, 1 mile NE of Punta de San Carlos, where several buildings stand. The land on both sides is high, with Monte San Cristobal dominating the N side and Monte Faro dominating the S side. Monte Faro, 262m high, rises 0.5 mile S of Punta de San Martin; a television mast, 52m high, stands on its summit.

Castillo de La Palma

Castillo de San Felipe, a large fortification, stands 0.7 mile ENE of Punta de San Carlos and is conspicuous.

Punta Redonda is located 0.5 mile ENE of Punta de San Martin. Castillo de La Palma stands on W side of this point and is conspicuous.

The approach to the narrows is indicated by a lighted range and the fairway through the narrows is marked by lighted buoys. The inner part of the inlet extends 3 miles E from the narrows to the head of navigation. The small inlets and bays, which line both shores, are mostly shallow and may contain shellfish beds.

Depths of 12 to 28m are found in the entrance and in the narrows; depths of 10 to 16m are found E of the narrows.

Castillos de San Felipe and de La Palma

Puerto de El Ferrol del Caudillo (43°29'N., 8°14'W.)

World Port Index No. 37740

4.28 Puerto de El Ferrol del Castillo is a commercial port and has one of the best-protected harbors in Spain. In addition, it is the site of a large Spanish Naval Dockyard which includes drydocks and shipyards.

Port of El Ferrol Home Page

http://porto-ferrolsanciprian.com

Tides—Currents.—Tides rise about 3.7m at springs and 2.9m at neaps. During strong W winds, the tidal rise may sometimes be up to 0.2m higher.

The ebb tidal current begins at HW and sets out over the entire inlet. Outside the E end of the narrows, it attains a maximum rate of 2.5 knots at springs; elsewhere, it attains a maximum rate of 0.5 to 1 knot at springs.

The flood current begins at LW and attains a rate of 1.2 to 2.5 knots at springs outside the E end of the narrows.

In the narrows, the tidal currents generally follow the direction of the channel and attain maximum rates of 3 knots at springs. Tidal rips may be formed off Punta Leiras, at the S side of the inlet.

Depths—Limitations.—Punta Barbiera, the new outer harbor, is protected by a breakwater 920m in length. Boulders lie along each side of the entire breakwater. A quay extends ENE from the root of the breakwater and has 860m of berthing space.

Muelle de Concepcion Arenal and Muelle de Fernandez Ladreda border the E side of Ensenada de Malata. They have 1,180m of total quayage, with depths of 6 to 12.5m alongside.

Muelle Nuevo, 270m long, is situated at the head of an area of reclaimed land within Ensenada de la Malata and connected to the shore by a causeway 350m long. It has a depth of 14m alongside.

Muelle Exterior Espignon, at the SE side of Ensenada de la Malata, is 262m long and has a depth of 9m alongside.

Darsena de Curuxeiras, a basin, has depths of 2 to 6m and is used by fishing vessels, ferries, and small craft.

Muelle Comercial, on the N shore of the inlet, has a depth of 11m alongside.

There are five main drydocks within the port, the largest being 330m long and 51m wide. It can accommodate vessels up to 230,000 dwt. There are also extensive repair and outfitting berths within the inlet.

A tank cleaning and gas-freeing berth, which is 300m long and has been reported (1994) suitable for vessels up to 350,000 dwt, is situated on the S side of the inlet and consists of a T-shaped jetty with a depth of 11.5m alongside.

Generally, vessels up to 350m in length and 14m draft can handled alongside.

Aspect.—Ensenada de la Malata lies on the NW side of the inner part of the inlet. The naval base and the town of La Grana are situated on the W side of this bay. The commercial port and the town of El Ferrol are situated on the E side of this bay and extend at the N shore of the inlet. The major shipbuilding and repair facilities lie at the S shore of the E end of the inlet.

Pilotage.—Pilotage is compulsory for vessels of more than 500 gross tons. Vessels should send an ETA to Coruna Traffic at least 10 hours prior to arrival. Pilots can be contacted on VHF channel 14 and generally board off the entrance to the inlet. During heavy weather, pilots may board close SE of Punta de Priorino Chico.

Regulations.—Vessels are prohibited from navigating within 50m of the naval installations without prior permission.

Anchorage.—Vessels anchor, in depths of 11 to 15m, sand, with good holding ground, in the S part of Ensenada de La Malata. Excellent shelter is provided against all winds. Small craft usually anchor closer to La Grana, on the W side, while vessels working cargo anchor closer to El Ferrol.

Caution.—A prohibited area, the limits of which are shown on the chart, lies in the S part of the harbor.

Several small ferry vessels frequently cross the harbor areas.

The Ria de Ares and the Ria de Betanzos

4.29 The Ria de Ares and the Ria de Betanzos (43°25'N., 8°18'W.) are the NE and SE branches, respectively, of a large gulf which is entered between Punta Coitelada and Punta del Seijo Blanco, 3.3 miles SSW. This gulf extends 6 miles SE from the entrance to the Ria de El Ferrol and is completely exposed to NW winds.

A conspicuous hill, 300m high, stands 6.5 miles ESE of Punta Coitelada and between the two branches. A prominent chapel is situated on its rounded summit.

Since the outer part of the gulf is exposed to NW winds and swells, it is only frequented by vessels capable of entering either of the two branches for shelter. Both of these branches have good holding ground and are free of dangers.

Between Punta Coitelada and Punta Miranda, 3 miles ESE, the N shore of the gulf is steep and rocky with several rocks fringing the shore. A prominent radio mast stands 1.4 miles E of Punta Coitelada. The Islas de Miranda, a group of islets and rocks, lies on a reef which extends 0.3 mile WSW from Punta Miranda. The outermost and largest islet is 12m high and has steep sides and a flat top. Bajo La Miranda, a rocky shoal with

a least depth of 3.7m, lies about 0.3 mile SW of the Islas de Miranda. In heavy weather, the sea breaks over this shoal, but at other times, it is only marked by eddies. A wreck, with a depth of 8.9m, is reported to lie 1.2 miles SSE of Punta Miranda.

The coast between Punta Miranda and Punta Cruz, 0.5 mile E, is steep, rocky, and fringed by reefs.

The S side of the gulf between Punta del Seijo Blanco and Punta Torrella, 2 miles ENE, is steep, rugged, and fronted by several small islets and rocks which lie up to 0.4 mile offshore. Between Punta Torrella and Punta de San Amede, 2 miles SE, the coast is indented by a bight known as Ensenada de Cirno.

4.30 The **Ria de Ares** (43°25'N., 8°13'W.) is entered between Punta Cruz and Punta Carboeira, 2 miles SSE. It extends 2.5 miles E to the entrance of the Rio Eume.

A wreck, with a depth of 4m, lies about 0.5 mile offshore, 1 mile N of Punta Carboeira. It is now reported (1994) to be a fish haven.

On the N side of this branch between Punta Cruz and Punta Castillo de Ares, 0.3 mile ENE, the coast consists of reddish cliffs fringed by rocks. A prominent ruined castle stands on the cliffs above Punta Castillo de Ares.

Ensenada de Ares, entered between Punta Castillo de Ares and Punta Camouco, 1 mile E, provides good shelter to small craft, but strong NW winds send heavy seas into this bay. Islote Mouron, 15m high, lies close off Punta Camouco and has steep sides and a flat top. A wharf used by lighters fronts the village of Ares at the W side of the bay.

Small vessels can anchor, in a depth of 5m, about 0.2 mile off Punta Castillo de Ares. Larger vessels anchor, in depths of 5 to 7m, farther offshore.

Ensenada de Redes is entered between Punta Camouco and Punta Lousada, 0.7 mile SSE. It provides shelter to small craft, but is shallow and encumbered by shellfish beds.

The **Ria de Betanzos** (43°22'N., 8°14'W.) is entered between Punta de San Amede and Punta Carboeira, 2 miles E, and extends 2 miles S to an area of drying flats. The Rio Mandeo is the largest of several rivers which flow into the head of this branch. The E and W shores are both steep, rugged, and fronted by several small islets and rocks. La Freixa, a rock with a depth of 0.7m, lies on a spit which extends 0.3 mile WSW from Punta Carboeira.

Punta Fontan is located 1.5 miles SSE of Punta de San Amede; a prominent ruined castle stands on it. Several fish-canning installations stand at the W shore of the branch.

Sada, a small harbor, lies close S of Punta Fontan and is formed by two moles. It is used by fishing vessels and yachts.

The Rio Mandeo flows into the head of the branch and can be navigated by boats at HW as far as the town of Betanzos, 3.5 miles above its entrance. A conspicuous bridge spans the mouth of the river.

Vessels can anchor, in depths of 5 to 11m, sand, E and NE of Punta Fontan. Good anchorage can also be obtained, in a depth of 9m, mud and sand, ESE of Punta de San Amede.

Caution.—A measured distance of 1,850m is situated in the vicinity of Punta Miranda. It is indicated by pairs of beacons standing on the N shore of the gulf and can best be seen on the chart.

Several shellfish beds and fish havens lie within the gulf and the two branches and may best be seen on the chart.

The Ria de La Coruna

4.31 The **Ria de La Coruna** (43°22'N., 8°22'W.) is entered between Punta del Seijo Blanco and Punta Herminio, 2 miles W. This inlet extends 2 miles S to its head at the mouth of the Rio del Burgo. Puerto de La Coruna and the city of La Coruna are situated at the W side of this inlet, 1.5 miles within the entrance. The city stands on a peninsula which is connected to the mainland by a narrow and short isthmus. The numerous prominent buildings of the city extend over this isthmus and S of the mainland.

Punta del Seijo Blanco (43°21'N., 8°21'W.), high and rugged, may be identified by a winding vein of white stone which extends upwards and appears from a distance like a road.

La Mula, a detached shoal with a least depth of 13.6m, lies 0.8 mile NNW of Punta del Seijo Blanco and breaks in bad weather. Piedra del Seijo, a rocky shoal with a depth of 9.8m, lies 0.3 mile NW of the same point.

Islote Canabal, steep-sided with a flat top, lies close off the E shore of the inlet, 0.4 mile SSW of Punta del Seijo Blanco. It is connected to the mainland by a reef.

Punta Mera, 1 mile S of Punta del Seijo Blanco, is the outer end of a peninsula which rises to Monte Mera close inland. This hill is dark colored and almost bare.

Range lights are shown from two towers standing on Punta Mera. A racon is situated at the front tower.

Ensenada de Mera, at the E side of the inlet, is entered between the S side of Punta Mera and Morro de Canido, 0.5 mile SE. This hill rises from a rocky point and has a prominent rounded top. Shelter is provided against winds between the NE and SE within this small bay.

The coast between Morro de Canido and the mouth of the Rio del Burgo, 2 miles SSW, is irregular, rocky, and foul. Bajo Guisanda, a detached shoal, lies 0.7 mile SW of Morro de Canido. It has a least depth of 5.1m and is marked by a lighted buoy, moored close W. A light, with a racon, is shown from a tower located at Punta Flateira.

Isleta de Santa Cruz, on which a prominent castle stands, lies close to the shore at the head of the inlet, 1.2 miles ENE of the mouth of the Rio del Burgo. Range lights are shown from two towers standing on the S shore of the inlet, close E of the islet. It is reported that these towers stand amongst trees and are very difficult to identify in daylight.

Punta Herminio (43°23'N., 8°24'W.) is the N extremity of the peninsula which forms the W side of the Ria de La Coruna. Monte Alto, the highest part of the peninsula, stands 0.5 mile S of the point and a small lookout building stands on it.

A light is shown from a tower with a dwelling, 49m high and known as Torre de Hercules, standing on the N end of the peninsula, 0.5 mile WSW of Punta Herminio.

Banco Yacentes, an extensive rocky bank with a least depth of 7.5m, lies centered in the approach to the inlet, about 1 mile NE of Punta Herminio. When a heavy sea is running, this whole bank breaks; in gales, turbulent waters extend to Punta del Seijo Blanco.

Torre de Hercules

A wreck, with a depth of 17m, lies on the W side of the entrance, 0.8 mile ESE of Punta Herminio. It is marked by a lighted buoy moored close N.

Puerto de La Coruna (43°22'N., 8°24'W.)

World Port Index No. 37770

4.32 Puerto de La Coruna, a commercial port and fishing center, is situated on the W side of the Ria de la Coruna.

Puerto de la Coruna Home Page

http://www.puertocoruna.com

Tides—Currents.—Tides rise about 3.6m at springs and 2.8m at neaps.

Depths—Limitations.—Canal de Seijo Blanco, indicated by a lighted range, leads from the N between the E side of Banco Yacentes and Punta del Seijo Blanco. In fair weather, vessels with drafts not exceeding 9m, may pass through this channel. Extreme caution should be exercised and this channel should not be attempted in heavy weather.

Canal de Punta Herminio, indicated by a lighted range, leads from the W between Punta Herminio and the SW side of Banco Yacentes. Vessels, with drafts not exceeding 16m, may pass though this channel.

Mendez Nunez Quay and Bateria Quay, in the NW part of the harbor, have 467m of total quayage, with depths of 5.5 to 8m alongside.

Muelle de Transatlanticos, reported operational in 1994, is 484m long, with a depth of 11m alongside.

Muelle de Centenario, extending from the S part of the harbor, has 640m of total quayage with a depth of 16.5m alongside.

San Diego Quay, at the S side of the harbor, has 650m of total quayage, with a depth of 11m alongside.

The petroleum terminal, in the SE part of the harbor, has four berths, 260 to 560m long, with depths of 13 to 17m alongside. Tankers up to 140,000 dwt, 44m beam, and 16.5m draft can be handled.

It was reported (1992) that the largest vessel to enter the harbor was 144,890 dwt, 293m in length, with a draft of 15.3m.

Aspect.—The harbor is protected from the N by Dique de Abrigo Barrie, a breakwater which extends 0.7 mile ESE from the shore.

The city, which backs the port, consists of two parts. The modern part occupies the isthmus of the peninsula and extends S beyond the S part of the harbor. The old part occupies the E section of the peninsula. The city hall, which stands directly N of the harbor area, can be distinguished by its three conspicuous gilt domes. The Instituto de La Coruna, standing 0.5 mile SW of the city hall, can be distinguished from the surrounding buildings by its great size and numerous windows.

Pilotage.—Pilotage is compulsory for vessels of more than 500 grt. Pilots can be contacted on VHF channel 12 and generally board, as follows:

1. Vessels with a draft of 9m and under—about 1.7 miles E of Torre de Hercules.
2. Vessels with a draft greater than 9m and all vessels carrying dangerous cargo regardless of draft and navigating under emergency conditions—about 2.2 miles WNW of Torre de Hercules.

Anchorage.—Vessels awaiting a berth usually anchor in the lee of the breakwater as directed by the pilot. However, a ground swell is sometimes experienced which causes heavy rolling. Temporary anchorage can be obtained, in depths of 13 to 15m, sand, within Ensenada de Mera, but W winds send in a heavy swell.

Caution.—An outfall pipeline extends 0.7 mile NNW from the vicinity of Isleta de Santa Cruz, at the head of the inlet.

Puerto de La Coruna to the Islas Sisargas

4.33 **Boy da Largo** (43°23'N., 8°25'W.), a rocky shoal, lies 0.5 mile WNW of Punta Herminio and is the outermost of several dangers in this vicinity. It has a least depth of 4.6m and breaks when a sea is running.

Ensenada del Orzan (43°23'N., 8°25'W.) is entered between Punta Herminio and Punta Penaboa, 1.2 miles W. This low and rocky bay recedes 1.3 miles SE and has a sandy beach at its head. An isolated rocky shoal, with a depth of 33m, lies 1.5 miles NNW of Punta Penaboa.

Monte San Pedro, 140m high, stands close S of Punta Penaboa and is an excellent landmark when viewed from seaward.

Isla Redonda (43°22'N., 8°28'W.) lies close offshore, 1 mile SW of Punta Penaboa. This islet is low and fronted by a reef. It is reported that an oil refinery stands on the coast, close S of the islet, and is visible from seaward.

The **Islas de San Pedro** (43°23'N., 8°27'W.), an extensive group of islets and rocks, extends along most of the coast between Punta Penboa and Isla Redonda.

El Merlon, a rock with a depth of 4m, and Rompedoiros, a group of rocks awash, lie 0.8 mile WNW and 0.9 mile W, respectively of Punta Penaboa. These form the outermost dangers in this vicinity. Piedra Ferbedoira, a drying rock fringed by foul ground, lies 0.7 mile W of Isla Redonda.

Seno de Baldayo, a large bight containing numerous dangers, lies between the Islas de San Pedro and the Islas Sisargas, 17 miles W. During thick weather, vessels should keep in depths over 110m when passing this area.

Punta Langosteira (43°22'N., 8°30'W.), a steep and rocky promontory, is located 1.5 miles WSW of Isla Redonda. A

Puerto de La Coruna

steep-to rock, with a depth of 12m, lies about 0.5 mile NNE of this point and the sea breaks over it.

Laxes Secas, a group of rocks, lies on the outer extremity of a spit which extends 0.5 mile NW from the W side Punta Langosteira. The group has a least depth of 2.5m; the sea breaks over the spit in heavy weather.

Placer de Pero Dente and Bajo Atalayero, both extensive rocky banks, lie 1.5 miles NNW and 4.5 miles WNW, respectively, of Punta Langosteira. The sea breaks over both of these banks in heavy weather. Bajo Pego, a steep-to rock with a least depth of 4m, lies 2.7 miles WSW of Punta Langosteira.

A conspicuous chimney, 218m high, stands at a power station, 1.8 miles SSW of Punta Langosteira.

Caution.—Depths of 5 to 18m, existence doubtful, have been reported (1993) to lie within 2 miles of Punta Langosteira.

4.34 Punta Atalaya de Cayon (43°19'N., 8°35'W.) is located 5 miles SW of Punta Langosteira. The coast between consists of a series of beaches separated by rocky points. Pico Carboeiro, standing 6 miles S of Punta Langosteira, has an isolated, crested summit and is prominent from seaward. Monte de La Estrella stands 1.7 miles S of Punta Atalaya de Cayon and a prominent white hermitage is situated on its summit.

Cala de Cayon, a small cove, indents the coast 0.5 mile SW of Punta Atalaya de Cayon. A village stands at its head and the entrance is indicated by a lighted range. Small craft, with local knowledge, frequent this cove. Punta Insua de Cayon, located on the W side of the entrance to the cove, can be identified by a windmill which stands on its highest part.

The coast up to 3.5 miles WSW of Cala de Cayon is low, backed by high ground, and fronted by dangers extending up to 0.5 mile offshore. Playa de Baldayo, an extensive beach, lies between 2.7 and 5 miles WSW of Cala de Cayon. Punta de Razo is located at its W end. Cala de Razo, a small cove, lies on the E side of this point and is sheltered from the N by a short

Puerto de La Coruna

reef which dries. A prominent factory building stands on its E entrance point.

Bajos de Baldayo (43°20'N., 8°42'W.), two groups of rocks, lie between 1.5 and 4 miles N of Playa de Baldayo. La Mayor, 4m high, is a rocky head which lies at the N end of Los Forcados, the S group. The remaining heads of both groups are awash or barely visible at LW.

Coba da Pomba, a pinnacle rock with a depth of 11m, lies about 0.7 mile N of the N extremity of Las Tumbadoiras, the N group. Feital do Mar, with a depth of 35m, lies 1.5 miles W of Coba da Pomba and breaks in a heavy sea. Both groups are fringed with foul ground and should be given a wide berth.

Monte Cambre (43°17'N., 8°42'W.), 199m high, is a prominent, isolated, and conical hill standing 0.5 mile inland, 1.7 miles ESE of Punta de Razo. Monte Neme (43°16'N., 8°44'W.), 396m high, stands 1.8 miles SSW of Punta de Razo and is the highest peak near the coast. Its dark colored summit slopes gently to a wide base and is prominent from seaward.

Atalaya de Malpica (43°19'N., 8°49'W.), a small peninsula, is located 4 miles WNW of Punta de Razo. The shore between is very steep and high. The peninsula, 75m high, is joined to the mainland by a narrow isthmus on which stands the village of Malpica. Cala de Malpica, a small cove, lies on the E side of the isthmus and affords shelter. A small basin, protected by a breakwater, is used by small craft and fishing vessels with local knowledge.

Cabo de San Adrian (43°21'N., 8°50'W.) is located 1.5 miles NW of Atalaya de Malpica. It is the N extremity of a peninsula which extends 1.5 miles N from the coast. Monte Bea, 181m high, rises close S of the cape and a large white hermitage stands on its NE slope.

4.35 The **Islas Sisargas** (43°22'N., 8°50'W.), a group of islets, lies on an extensive rocky ledge which extends 2 miles N from Cabo de San Adrian. At LW, they appear as one island, but at HW, they are broken into three by passages through which the sea passes.

Puerto de La Coruna—Tanker Pier

Sisarga Grande, 107m high, is located at the W side of the group. It is the largest islet and has steep sides and an uneven top. A light is shown from a tower, with a dwelling, 11m high, standing on the NW part of this islet.

La Malante, the NE islet, is of similar appearance to Sisarga Grande and has two prominent summits. Sisarga Chica lies close S of La Malante and is separated from Cabo de San Adrian by a passage, 0.5 mile wide.

All of the islets are uncultivated and are extensively covered by ferns. Numerous isolated rocks, over which the sea breaks with great force, lie within 1 mile of the Islas Sisargas. Cabezo del Norte Oeste, with a depth of 8.2m, lies about 1 mile NNW of the W extremity of Sisarga Grande and Las Mayores, a detached patch with a depth of 6.2m, lies about 0.5 mile NNE of La Malante.

The channel, which leads between Sisarga Chico and the coast, is narrowed to a navigable width of about 400m by extending shoals. The currents in this channel are strong and with any swell, heavy breakers form. Vessels without local knowledge should not attempt to use it.

Vessels, with local knowledge, can anchor, in depths of 5 to 10m, close off the SE side of Sisarga Grande. This anchorage is sheltered from winds between the NW and NE and is the only place with a sandy bottom.

Caution.—An explosives dumping area, the limits of which are shown on the chart, is centered 25 miles NNW of the Islas Sisargas. It has been reported that the area is no longer in use (1995).

Firing exercises are frequently carried out in the waters lying between 6 and 24 miles N of the Islas Sisargas.

The Islas Sisargas to Cabo Finisterre

4.36 Punta Nariga (43°19'N., 8°55'W.), marked by a light, is located 3.5 miles WSW of Cabo de San Adrian. The coast between is indented by three coves. The E cove is used by fish-

Faro Sisargas

Punta Nariga Light

Approach to Islas Sisargas

ing vessels seeking shelter and the village of Beo stands at its head. The middle cove is shallow and foul. Puerto de Barizo, the W cove, is protected from N winds by a drying reef which extends NW from its E entrance point. Extensive mussel beds lie within this cove; anchorage is prohibited.

Arrecife de Couce, a reef with a depth of 2.7m, lies about 0.5 mile WNW of Punta Nariga.

A bay, with two coves at its head, lies between Punta Nariga and Punta Eiras, 2.7 miles SW. A small peninsula, which separates the coves, rises close inland to Monte Faro de Corme. This conspicuous peak is 228m high and a prominent hermitage, with a monument, stands on the summit.

Punta del Roncudo (43°17'N., 9°00'W.), a low point fringed by shoals, is located 2 miles SW of Punta Eiras. It rises close inland to Monte Jurita, 170m high. This hill is rugged and has several peaked summits which appear as buildings from a distance. A light is shown from a tower, 11m high, standing on the point.

The **Ria de Corme y Lage** (43°15'N., 8°59'W.) is entered between Punta del Roncudo and Punta de Lage, 2.2 miles SSW. This inlet is open to NW gales and except for Bajo de La Aveira, lying 1.2 miles S of Punta Roncudo, its central part is clear of dangers. The shores are generally steep, with the N side being the highest, and the Rio Allones discharges into the head.

Monte Castelo, 312m high, rises 2.5 miles SE of Punta de Lage and is prominent. Picos de Borneiro, 377m high, stands 1.5 miles ESE of Monte Castelo, but is less prominent. Monte Blanco, 91m high, stands near the head of the inlet on the NE side of the mouth of the Rio Allones. It is conical and sand covered.

Payo Gordo bank, a detached 45m bank, and Cabezo de Lage, a 27m bank, lie 2 miles W and 2.5 miles WSW, respectively, of Punta del Roncudo. Both of these banks break in heavy weather. Bajo de La Aveira, a rocky shoal with a depth of 5.5m, lies 1.2 miles S of Punta del Roncudo. The coast between Punta del Roncudo and Punta del Carrel, 1.2 miles SE, is steep-to, rugged, and fronted by reefs.

Corme, a small town, is situated within a small bay on the N side of the inlet, 1.5 miles SE of Punta Roncudo. A basin, protected by a breakwater, fronts the town and is used by fishing vessels. The shores of the small bay are foul and local knowledge is required.

Lage, a small town, is situated within a small bay on the S side of the inlet, 0.8 mile SE of Punta de Lage. A small harbor, protected by breakwaters, fronts the town and is used by small coasters and fishing vessels.

Punta de Lage (43°14'N., 9°01'W.), the S entrance point of the Ria de Corme y Lage, is the outer extremity of a peninsula which extends 1 mile N from the coast. It consists of a cliff, 74m high, and is fronted by a reef. A light is shown from a tower, 11m high, standing on the point; a conspicuous cemetery stands on the SW slope of the peninsula. Cabezo de Lage, a rocky shoal, lies 1.5 miles N of the point. It has a least depth of 27m and breaks in heavy weather.

4.37 Punta de Catasol (43°13'N., 9°02'W.) is located 1.5 miles SW of Punta de Lage. This prominent point is high, yellowish in color, and fringed by foul ground extending up to 0.5 mile offshore.

Puerto de Camelle is located 3 miles SW of Punta de Catasol. This small cove is encumbered by numerous rocks, but small craft with local knowledge can shelter within.

Penal de Veo, 248m high, is a large and conspicuous rock standing on the summit of a hill, 2.7 miles W of Puerto de Camelle. The coast between is very irregular and is fronted by foul ground extending up to 0.6 mile offshore.

Cabezo del Medio, with a depth of 17m, and Cabezo de La Percebeira, with a depth of 18m, lie 1.2 miles NNE and 1 mile NNW, respectively, of Puerto de Camelle. Both of these detached shoals break with a heavy sea. Seco de Veo, with a depth of 22m, lies 3 miles NNW of Penal de Veo and in heavy weather, a steep sea rolls over this shoal, but it has not been known to break. Depths of less than 40m lie between this shoal and the coast.

Cabo Trece is located 1.5 miles W of Penal de Veo. It is low and fronted by foul ground extending up to 0.5 mile seaward. Ensenada de Trece, a small open inlet, lies on the E side of this cape. A cemetery, which from a distance appears as a white building, is situated 0.2 mile SE of the N extremity of the cape and is prominent.

Las Baleas, consisting of two detached shoals with depths of 12m and 16m, lies 1.5 miles WNW of Cabo Trece.

Ensenada de Villano lies between Cabo Trece and Cabo Villano, 2.3 miles SW. The shores of this bay are steep, indented, and fronted by foul ground extending up to 0.8 mile offshore.

Cabo Villano (43°10'N., 9°13'W.), a steep and rocky promontory, rises to a height of 77m. A rocky islet, which terminates N in a large rock known as Estufro, lies close off the cape. The summit of the promontory stands close SE of the extremity of the cape, and from a distance, resembles a conical, inclined tower.

A light is shown from a prominent tower, with a cupola, 25m high, standing on the highest part of the cape. A racon is situated at the light.

A disused light stands on a peak, 1.2 miles SSE of the light. A conspicuous group of wind generators is reported to stand 0.5 mile SSE of the light.

El Bufardo, a pinnacle rock, awash, lies about 0.4 mile NW of the cape.

Caution.—An IMO-adopted Traffic Separation Scheme extends up to 25 miles from the coast between Cabo Villano and Cabo Finisterre and may best be seen on the chart. Separate lanes for vessels carrying hazardous and for those carrying non-hazardous cargo are best seen on the chart.

Punta de Monte Farelo (43°08'N., 9°13'W.) is located 2 miles S of Cabo Villano and rises close inland to a hill. The coast between is steep, rocky, and fronted by reefs.

Las Quebrantas, an extensive rocky shoal with a least depth of 2m, lies centered 1.5 miles NW of Punta de Monte Farelo. Leixon de Juanboy, a detached rocky patch with a least depth of 8.8m, lies 2 miles W of the same point. The sea breaks over these dangers in heavy weather.

4.38 The **Ria de Camarinas** (43°07'N., 9°13'W.) is entered between Punta de Monte Farelo and Punta de La Barca, 1 mile SW. This inlet recedes 2.3 miles E and is indented by two small bays on its S side and one small bay on its N side. Puerto de Camarinas stands on the W side of this latter bay. The Rio del Puente del Puerto, a shallow river, discharges into the NE part of the inlet and is navigable by boats at HW. The inlet provides shelter to small vessels from all except W winds.

Cabo Villano Light

Between Punta de Monte Farelo and Punta Villueira, the S extremity of the peninsula forming the N side of the inlet, the coast is fronted by numerous dangers. Cabeza de Fuera, with a depth of 4.3m, is the outermost danger and lies 0.5 mile SW of Punta de Monte Farelo.

Punta del Castillo is located 0.3 mile E of Punta Villueira. A prominent fort stands on the point and shoals extend up to 0.3 mile S of it.

Punta de la Barca (43°07'N., 9°13'W.), the S entrance point of the inlet, rises steeply to Cerro de Mugia, a 63m high hill. A prominent large building stands on the N slope of this hill and a light is shown from the point.

Ensenada de Mugia lies close SE of Punta de La Barca. The town of Mugia stands on its W side. The central part of this bay is clear, but its shores are foul. A small harbor fronts the town and is used by small craft.

Punta de Chorente, located 1 mile SE of Punta de La Barca, rises inland to Corpino de Chorente, a steep and conical hill. La Higuera, a detached rock with a depth of 1m, lies 0.3 mile NNE of the point. The bank, on which this rock lies, breaks in rough weather.

Ensenada de Merejo is entered between Punta de Chorente and Punta Merejo, 0.5 mile E. It is used for the cultivation of mussels and is prohibited to shipping.

The coast between Punta Merejo and the entrance to the Rio del Puente del Puerto, 1.5 miles NE, is rocky and high.

Puerto de Camarinas is situated within a small cove on the N side of the inlet and is protected by a breakwater. The shores of the cove are quayed, but dry and can only be used by small craft.

The **Rio del Puente del Puerto** (43°07'N., 9°10'W.) extends 2.2 miles inland to Puente del Puerto. It can be used by boats at HW. Anchorage can be taken, in a depth of 8m, sand, off Puerto de Camarinas.

4.39 Punta de la Buitra (43°06'N., 9°15'W.) is located 2 miles SW of Punta de la Barca. The coast between is indented by a bight with two coves at its head. Alto de Cacheimo, a hill 168m high, rises between the two coves. Punta de la Buitra is the NW extremity of a rugged headland which rises steeply to Alto de la Buitra, 156m high. El Facho de Lourido, 310m high, rises 1.5 miles SE of Punta de la Buitra and is prominent.

Punta Matamao, located 1.5 miles S of Punta de la Buitra, is high and steep. Punta Moreira, fronted by rocks, projects N from the coast, 1 mile SSW of Punta Matamao.

Ensenada de Cuno is entered between Punta Moreira and Cabo Torinana. This inlet is clear of dangers, but of little use to shipping because of its stony bottom.

approach to Cabo Torinana

Cabo Torinana (43°03'N., 9°18'W.), 77m high, is a rugged peninsula which is joined to the mainland by a low isthmus. It is not easily identified from a distance, but appears as an island from the SW. A small rocky islet lies off its W side and has two peaks.

A light is shown from a tower, 11m high, standing on the W side of the cape. A racon is situated 1.6 miles SSE of the light. A disused light stands close E of the light.

Several dangerous rocks and shoals lie within 0.6 mile of the cape and break in heavy weather.

Caution.—Depths off the coast between Cabo Torinana and Cabo Finisterre, 11 miles S, are very uneven and soundings give little warning of its proximity in thick weather. In this vicinity, the tidal currents set N during the flood and S during the ebb.

Cabo Torinana Light

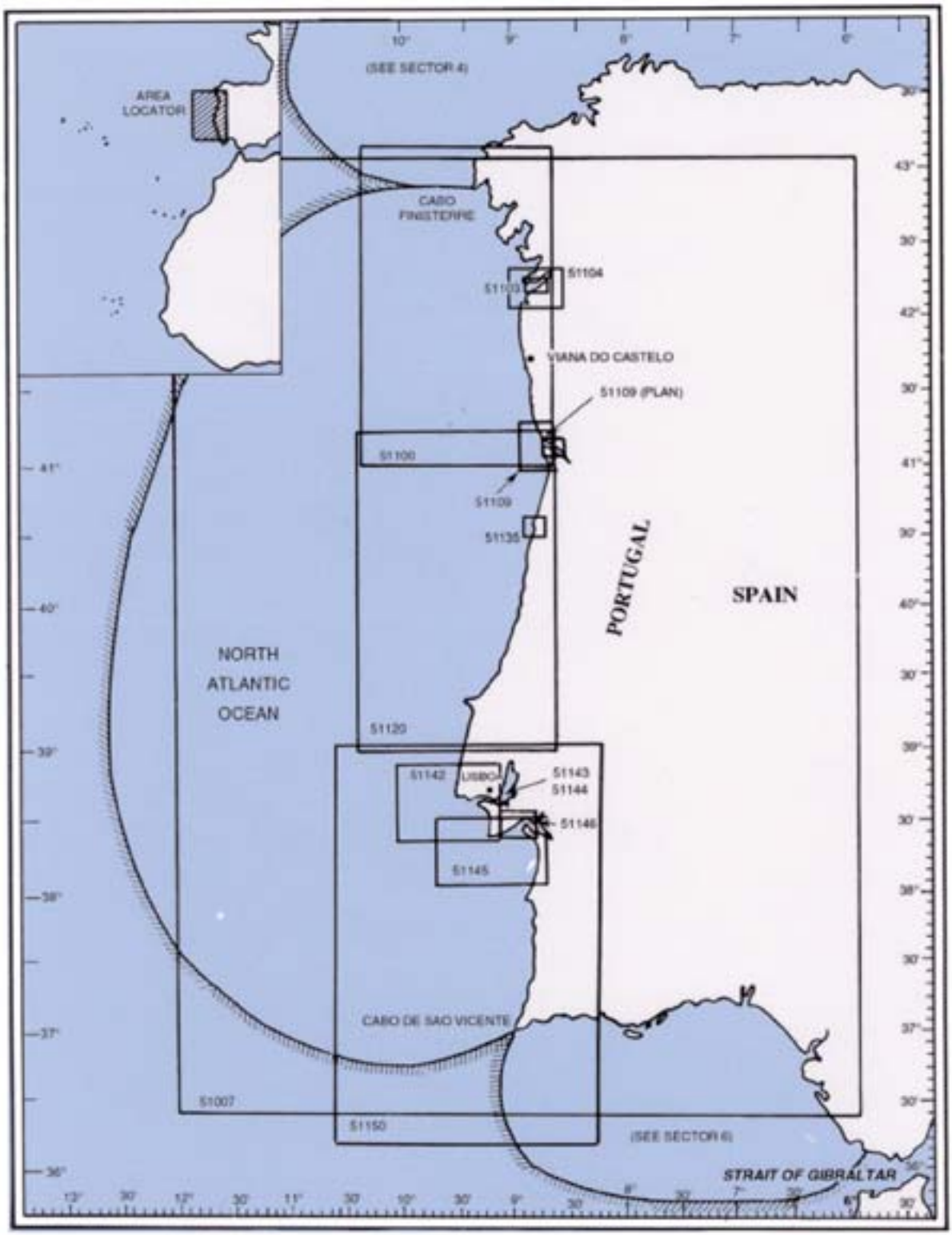
Local magnetic anomalies have been reported to exist within 13 miles of Cabo Torinana.

4.40 Punta Cusinadoiro (Punta de la Vala) (43°01'N., 9°17'W.) is located 3 miles SSE of Cabo Torinana. The coast between is mostly steep and rocky. Monte Gordo, 189m high, stands 0.5 mile inland, 1.8 miles SE of Cabo Torinana, and is prominent.

The bay, entered SE of Punta Cusinadoiro, provides temporary anchorage, in depths of 8 to 10m. Mellon de Lires, a steep and rocky islet, lies on the S side of the mouth of the Rio del Castro, at the head of the bay.

Cabo de La Nave (42°55'N., 9°18'W.) is located 8 miles S of Cabo Torinana and rises close inland to a steep and prominent hill, 252m high. Bajo Sambrea, with a depth of 8.9m, lies 2 miles NNW of this cape. La Muniz, a pinnacle rock with a depth of 4.1m, lies 1.5 miles WNW of Cabo de La Nave.

Cabo Finisterre (42°53'N., 9°16'W.) is located 2.8 miles SSE of Cabo de La Nave and is described in paragraph 5.2.



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

SECTOR **5** — CHART INFORMATION

SECTOR 5

SPAIN AND PORTUGAL—CABO FINISTERRE TO CABO DE SAO VICENTE

Plan.—This sector describes the W coast of Spain and Portugal from Cabo Finisterre to Cabo de Sao Vicente. The descriptive sequence is from N to S.

General Remarks

5.1 The coast of Spain and Portugal lying between Cabo Finisterre and Cabo de Sao Vicente, about 350 miles S, is indented by numerous bays, rivers, and inlets which are backed, in places, by high and rugged terrain a short distance inland. Some of the mountains rise to heights of over 600m and are visible for a considerable distance seaward on clear days; however, individual peaks are generally difficult to distinguish.

The principal commercial ports described in this sector are Vigo, Leixoes, Aveiro, Lisboa, Setubal, and Sines. The other small ports, which lie within the inlets and rivers, are frequented only by small craft and fishing vessels.

Well-sheltered anchorage can be obtained by ocean-going vessels in some of the river mouths and inlets, but most are open to the W and SW and are subject to a heavy swell when the wind blows from these directions.

Winds—Weather.—Prevailing winds off the coast of Portugal are from N or NW. The wind is normally stronger in the late afternoon than in the morning, especially from March to August. In winter, the winds are more from the SW and are stronger than in summer.

Along the W coast of Portugal, fog occurs more often in the N than in the S, while along the S coast of Portugal, fog occurs more often in the W than in the E. In winter, fog is more frequent at night, while in the summer, fog is more frequent during dawn and in the early morning. In either season, the fog tends to dissipate by early afternoon.

Tides—Currents.—Currents tend to be S, at a rate of less than 0.6 knot. However, with strong S or SW winds, currents can become N, reaching a velocity of 0.8 knot, and can last for several days.

Vessel Traffic Service.—A voluntary vessel traffic service (VTS) is in operation to monitor traffic off the coast of Portugal up to a limit of approximately 50 miles seaward. Participation is voluntary but recommended for all vessels over 300 grt, all vessels carrying hazardous or potentially polluting cargo, all passenger vessels, vessels engaged in towing or pushing where the combined length of the vessel and tow or pushed vessel exceeds 100m loa, and all fishing vessels over 24m in length. The VTS can be contacted (call sign: Roca Control) on VHF channels 22 and 79 (primary) or 69 (secondary).

The area of the VTS is bounded by the coast and lines joining the following positions:

a. The Portuguese coast at latitude 41°51.5'N.
b. 41°51.5'N, 10°14.0'W.
c. 38°41.0'N, 10°14.0'W.
d. 36°30.0'N, 9°35.0'W.
e. 36°12.0'N, 7°24.0'W.
f. The Portuguese coast at longitude 7°24.0'W.

Both IMO-approved Traffic Separation Schemes off the Portuguese coast are included in the VTS.

The ports of Viana do Castelo, Figueira da Foz, Portimao, Faro, and Aviero are monitored by Roca Control. Vessels approaching or departing these ports should report to Roca Control on VHF channel 78 (secondary channel). Approach reports should be provided 4 hours prior to arrival at the pilot station, again at 2 hours prior to arrival, at embarkation of the pilot, when alongside, and upon using the anchor. Departure reports are due 15 minutes prior to departure, upon departure, and when the pilot disembarks.

Ship Reporting System (WETREP).—The WETREP (West European Tanker Reporting System) is a VTS system, under SOLAS regulation, which operates in the W approaches to Spain, Portugal, France, Belgium, the United Kingdom (including the Shetland Islands), and Ireland. This system is mandatory for all oil tankers over 600 dwt carrying heavy crude oil, heavy fuel oil, or bitumen and tar and their emulsions. It does not apply to warships, naval auxiliaries, or other vessels owned or operated by a contracting government and used, for the time being, only on government non-commercial service. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Ship Reporting System (COPREP).—COPREP, a mandatory ship reporting system has been established for vessels traveling within the VTS off the Portuguese coast. The following vessels are required to participate in the system.

1. All vessels of 300 gross tons or more.
2. All vessels carrying dangerous, hazardous, and/or potentially polluting cargo.
3. All passenger vessels.
4. Vessels engaged in towing or pushing where the combined length of the vessel and tow or pushed vessel is more than 100m loa.
5. All fishing vessels with an loa of 24m or greater.

The area of the reporting system is bounded by the coast and lines joining the following positions:

a. The Portuguese coast at latitude 39°45'N.
b. 39°45'N, 10°14'W.
c. 38°41'N, 10°14'W.
d. 36°30'N, 9°35'W.
e. 36°15'N, 8°30'W.
f. The Portuguese coast at longitude 8°30.0'W.

All vessels should send a COPREP report to Roca Control, VHF channels 22 and 79 (main working channels) or 69 (secondary channel), on entering the reporting area using the format described in the table titled **COPREP Report Format**.

COPREP Report Format	
Designator	**Information required**
A	Vessel's name and call sign. IMO Identification or MMSI Number on request.

COPREP Report Format	
Designator	**Information required**
C *	Position (latitude and longitude).
D *	Position (range/bearing from a landmark).
E	Course.
F	Speed.
G	Last port of call.
H	Time (UTC) and point of entry in the COPREP area.
I	Next port of call.
P	Hazardous cargo, IMO class, or UN number and quantity.
Q or R	Breakdown; damage or deficiencies affecting the structure, cargo, or equip-ment of the vessel; or any other circum-stances affecting normal navigation, in accordance with the provisions of the SOLAS and MARPOL Conventions.
W	Total number of persons on board (when requested).
X	Miscellaneous remarks (when requested).
* Either C or D may be used.	

Reports are required for the following situations:

1. Upon entering the reporting area.
2. On departure from a port, terminal, or anchorage within the area.
3. When changing the port of destination.
4. When changing the route due to weather, damaged equipment, or other reason.
5. When something is detected that could affect navigation in the area.
6. On leaving the reporting area.
7. When requested by the COPREP operator.

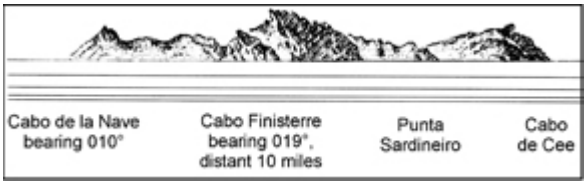
Caution.—Portugal has pre-designated areas along the coast for firefighting aircraft to fill up with water. The areas were chosen for their proximity to potential fires. These areas, known as scooping areas, are controlled by Port Harbormasters. Once an area has been chosen for activation the respective harbormaster will ensure that a local warning is issued to shipping on VHF channel 16 and that exclusion operations are implemented in the chosen area to guarantee the safety of the operation. Mariners should avoid these areas when activated.

For details of the scooping areas, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Many of the navigation lights along this coast are placed so high that they are frequently obscured by fog and mist.

Cabo Finisterre to Cabo Corrubedo

5.2 Cabo Finisterre (42°53'N., 9°16'W.) is the outer extremity of a long, narrow peninsula which rises abruptly to several rugged peaks. Pedras Santas, 229m high, stands 1 mile N



Cabo Finisterre from SSW

These peaks slope gradually N to a low isthmus which, from a distance seaward, gives the cape the appearance of an island. Monte Pindo, 630m high, stands 7 miles E of the cape and assists in identifying it in clear weather. A large prominent rock is situated on the summit.

A light is shown from a tower, with a dwelling, 17m high, standing on the cape. A racon is situated at the light. A disused signal station stands close N of the light.

Centola de Finisterre, 23m high, lies 0.5 mile offshore, about 1 mile NW of Cabo Finisterre. This islet is steep and has the appearance of a cone when viewed from a distance. La Carraca, a shoal, lies 1 mile NW of Centola de Finisterre. It has a least depth of 1.8m and breaks. Peton Manoto, a pinnacle rock with a depth of 10m, lies 0.5 mile W of the same islet.

Socabo, a breaking shoal with a least depth of 7.3m, lies about 0.5 mile SW of Cabo Finisterre. Several other breaking shoals, with shallow depths, lie within 0.3 mile S through SE of the cape and may best be seen on the chart.

Vessel Traffic Service.—A mandatory Vessel Traffic Service is in operation off Cabo Finisterre. The following categories of vessels are required to participate in the reporting system:

1. All vessels 50m long and over.
2. All vessels, regardless of length, carrying hazardous and/or potentially polluting cargo.
3. Vessels engaged in towing or pushing another vessel when the combined length of the vessel and tow or pushed vessel is over 50m.
4. Any category of vessel less than 50m long and engaged in fishing in the Traffic Lane or the Separation Zone.
5. Any category of vessel less than 50m long which is using the appropriate Traffic Lane or Separation zone in order to avoid immediate danger.

The reporting system covers the area between the coast and the following lines:

1. A bearing of 130° to Cabo Villano Light.
2. A bearing of 075° to Cabo Finisterre Light.
3. The meridian of longitude 10°15'W.

This area includes the Traffic Separation Scheme off Finisterre and the designated Inshore Traffic Zones.

The report, called a FINREP, from the vessel to the VTS should contain only information which is essential to achieve the objectives of the system.

FINREP Report Format	
Designator	**Information required**
A	Vessel's name and call sign. IMO Identification Number on request.

FINREP Report Format	
Designator	**Information required**
C *	Position (latitude and longitude), or
D *	Position (range and bearing from a landmark).
E	Course.
F	Speed.
G	Last port of call.
I	Next port of call.
P	Hazardous cargo, IMO class, or UN number and quantity.
Q or R	Breakdown; damage or deficiencies affecting the structure, cargo, or equipment of the vessel; or any other circumstances affecting normal navigation, in accordance with the provisions of the SOLAS and MARPOL Conventions.
* Either C or D may be used.	

Finisterre VTS broadcasts regular warnings to mariners and traffic, navigational, and weather conditions, in Spanish and English.

Finisterre Traffic can also provide a particular vessel with information regarding the vessel's position, course, and speed or the identification of traffic in the vicinity. The vessel should request this information.

5.3 Seno de Corcubion (42°53'N., 9°13'W.), a deep and much-indented bay, is entered between Cabo Finisterre and Punta Remedios, 7.2 miles SE. The W side of the bay is free from dangers; the E side is encumbered by numerous islets, rocks, and shoals.

The E side of Cabo Finisterre extends N for 1.5 miles to Castillo de San Carlos. The village of Finisterre stands close N of this ruined castle and is fronted by a small harbor protected by a breakwater. It has depths of 1.5 to 6.6m and is used by small craft. During NE winds, anchorage can be obtained, in depths of 20 to 25m, sand, SE of the castle and 0.4 mile offshore. Closer inshore the holding ground is poor.

Lagosteira Bay and Sardineiro Bay, lying E of the N end of the peninsula of Cabo Finisterre, are both restricted fishing areas; entry is prohibited to all except local fishing craft.

The **Ria de Corcubion** (42°55'N., 9°11'W.) is entered between Cabo Cee and Punta Galera, 1 mile E. It extends 2.3 miles N to the head and provides sheltered anchorage for all classes of vessels. Depths range from 29m in the entrance to 9m about 1.8 miles within the inlet. Farther N, the depths shoal rapidly. The W shore of the inlet is fairly steep-to, whereas, the E shore is bordered by foul ground which extends up to 0.2 mile offshore.

Ruined forts stand on both sides of the inlet, about 1 mile N of each entrance point. A small cove, with a fish factory and pier, lies on the W side of the inlet, 0.3 mile N of Cabo Cee. A coal depot, with a small basin, is situated 1.5 miles N of the same point. Coal lighters lie at moorings off this basin.

Faro de Cabo Cee

Corcubion, a small town, lies on the W shore of the inlet near the head and is fronted by a drying quay and a pier. Another pier, 110m long, is situated at Punta Fornelos, 0.2 mile ENE. At Playa de Brens, a beach lying close SE of Punta Fornelos, a jetty, 275m long, extends SE from a factory. Tides here rise 3.4m at springs and 2.6m at neaps. It is reported that a vessel of 17,900 dwt, 164m in length, and 9.8m draft has been accommodated here at HW. Pilotage is available. Vessels should provide an ETA through the local agent. The pilot station can be contacted on VHF channel 14 or 16 and should be contacted 1 hour before arrival. The pilot boards in position 42°54'16.8"N, 9°13'28.8"W. In bad weather the boarding position is 42°55'45.0"N, 9°10'41.4"W.

Anchorage can be obtained, in a depth of 13m, about 0.5 mile SE of the pier at Corcubion. Large vessels can anchor, in a depth of 20m, in midstream between the two forts.

5.4 Ezaro Bay (42°54'N., 9°09'W.) is entered between Punta Galera and Punta del Pindo, 1 mile SE. It is small in extent, but provides temporary anchorage in its central part, in depths of 10 to 20m, and is partly sheltered from NW winds. Small craft can be accommodated alongside the berthing facilities at Puerto del Pindo, on the S shore of the bay.

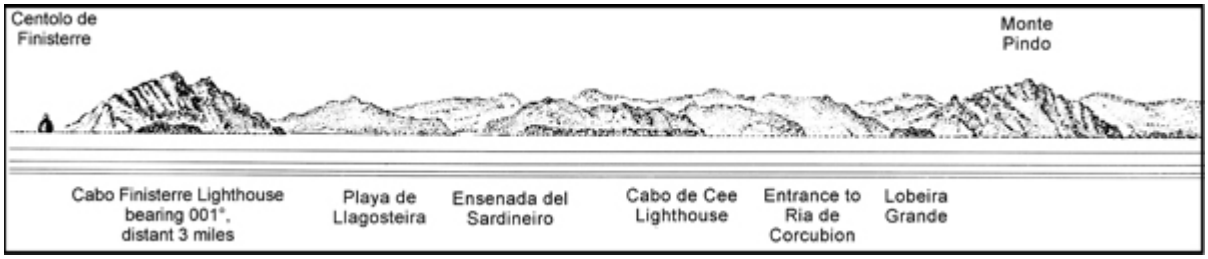
Monte Ezaro, a high peak, stands on the N side of the Rio Ezaro which flows into the head of the bay. Monte Pindo, standing on the S side of the river, dominates this part of the coast. It may also be distinguished from the other peaks in the vicinity by the lack of vegetation.

Los Bois, a group of drying rocks, lies 1.5 miles SE of Cabo Cee. Several of these rocks resemble fishing boats at anchor. A group of rocks, awash, lies close W of Los Bois. El Asno, a rock which dries 0.6m, lies 0.3 mile S of Los Bois.

Carrumeiro Grande, a small islet lying 0.5 mile SW of El Asno, is fringed by shoal water; a truncated pyramid stands on the flat top. Lobeira Grande, a group of islets composed of yellow-colored boulders, lies 1.2 miles SW of Carrumeiro Grande. Camarinas, a rock with a depth of 4m, lies 0.3 mile S of Lobeira Grande, and Ereza, another rock with a similar depth, lies about the same distance N of the group.

Lobeira Chica, a group of above-water rocks surrounded by foul ground, lies 1.2 miles SE of Lobeira Grande. The N rocks attain heights of less than 6m, but are the highest of the group. Golfeira de la Curra, a shoal with a depth of 7.6m, lies 0.7 mile E of the S end of Lobeira Chica.

The coast between Punta del Pindo and Punta Caldebarcos,



Approach to the Ria de Corcubion

Lobeira Grande Light

3.2 miles S, is indented by several shallow and foul coves of little importance. The cove entered close E of Punta Quilmes, located 0.7 mile S of Punta del Pindo, is frequented by numerous fishing vessels during the summer.

5.5 **Ensenada de Carnota** (42°49'N., 9°08'W.) is entered between Punta Caldebarcos and Punta Remedios, 2.8 miles SSW. It has several small coves along its N and S sides where small craft can obtain shelter. Roda Grande, a shoal with a depth of 3.2m, lies in the center of the bay about midway between the entrance points.

Punta Remedios is steep, rocky, and fringed by numerous dangers which extend up to 1.3 miles N, 3 miles NW, and 1 mile W of it. Bajo Duyo, the outermost danger, has a least depth of 4.6m and lies 3 miles NW of the point. Piedras Minarzos, a group of small islets, lies on an area of foul ground, 1 mile W of Punta Remedios, and is the W danger. In a heavy sea, the whole area in the vicinity of these dangers is swept by breakers.

The coast between Punta Remedios and Punta Carreiro, 4.5 miles SE, is backed by uniformly high hills and peaks which makes it difficult to distinguish one from the other. Punta Insua is located 2 miles SE of Punta Remedios. A light is shown from a tower, 14m high, standing on this point.

Punta Carreiro (42°44'N., 9°05'W.) is located 2.5 miles SE of Punta Insua. Monte Louro, rocky and barren, rises from the point and has two peaks. Monte Louro Light is shown from Punta Queixal, which is located 0.5 mile ENE of Punta Carreiro. Playa de Area Mayor, within which is a lagoon, indents the coast and extends up to 1.2 miles NW of Punta Carreiro.

Cabezo de Figueiroa, a shoal with a depth of 3m, lies about 1 mile SSW of Punta Remedios.

Bajos de Los Meixidos (42°46'N., 9°12'W.), a group of shoal depths, lies centered about 5 miles WNW of Punta Carreiro. La Roncasa, nearly awash, is the shallowest part and lies on the E side of the group. There are depths of 2 to 9m over the other parts of the group and breakers usually mark these dangers.

The channel between these dangers and the coast is deep, but it is advisable to keep Cabo Finisterre bearing more than 357° when proceeding S until Piedras de Los Bruyos is in line bearing 073° with the middle of Playa de Area Mayor and with the N foot of Monte Louro.

Piedras de Los Bruyos (42°44'N., 9°09'W.), lying 2.5 miles W of Punta Carreiro, consists of three above-water rocks surrounded by a sunken ledge. In heavy weather, the sea breaks over these dangers. Bajo Ximiela, a small patch with a depth of 2.8m, and Bajo Mean, a small patch with a depth of 2.6m, lie 0.7 mile W and 0.7 mile NNW, respectively, of Piedras de Los Bruyos. Bajos Carballosas, two rocky shoals with depths of 10.5m and 18.3m, lie within 0.5 mile SE of Piedras de Los Bruyos.

5.6 The **Ria de Muros** (42°44'N., 9°03'W.) is entered between Punta Carreiro and Punta Castro, 3.5 miles SE, and extends in a NE direction for 9 miles. The town of Muros stands on its NW shore; the town of Noya stands on the E side of the mouth of the Rio San Francisco, which flows into the SE side of its head. The shores of this inlet are indented by several coves, especially along the N side, and numerous below-water dangers lie off them.

Numerous mussel beds and fish havens are situated in the Ria de Muros and lie within 1 mile of shore.

The most prominent landmarks visible from seaward are Sierra de Barbanza, which rises to a summit, 618m high, 4.5 miles SSE of Punta Castro; Monte Iroite, 669m high, standing 5 miles ENE of Punta Castro; and Monte Louro, which is separated from the land to the N by a neck of low land and from a distance to the W appears as an island.

Punta Queixal (42°44'N., 9°05'W.) extends a short distance from the shore at the SE foot of Monte Louro, 0.5 mile E of Punta Carreiro. Islote de Los Leixos, a group of above-water rocks, lies on an area of foul ground, about 0.5 mile SSW of the point.

Monte Galera (42°48'N., 9°05'W.), 466m high, stands 4 miles N of Punta Queixal. Monte Cabazo, 369m high, stands 1.3 miles SW of Monte Galera and has a broad summit. Monte Oroso, a detached peak 238m high, stands 1.8 miles N of Punta Queixal.

Ensenada de San Francisco (42°45'N., 9°04'W.), entered close N of Punta Queixal, is about 1 mile wide at its entrance and recedes 0.5 mile NW. The central part of this inlet is clear of dangers and has depths of 10 to 34m. A number of buildings standing along the beaches which line the shore are used extensively by the fishing industry. Anchorage can be taken, in a depth of 15m, in the central part of the inlet, sheltered from W and N winds.

Cabo Reburdino (42°46'N., 9°03'W.) rises steeply to Monte Atalaya de Reburdino, a rounded prominent hill.

Ensenada de Muros is entered between Cabo del Punta and Punta San Anton, and has ample depths in its central part, but is obstructed by a mud flat which extends 0.5 mile from its head. Anchorage can be taken almost anywhere within this inlet. The holding ground is good and SE winds raise little sea.

Muros (42°47'N., 9°03'W.), a small harbor, lies close W of Punta del Cabo and is frequented by fishing vessels. The small and shallow basin dries at LW and is protected by a breakwater. A quay, 100m long, can accommodate small craft up to 3.9m draft at HW.

5.7 Punta Castro (42°42'N., 9°02'W.), the SE entrance point of the Ria de Muros, is the outer extremity of a small peninsula. This peninsula is joined to the mainland by an isthmus which almost covers at HW.

Punta Liseira, located 1 mile NNE of Punta Castro, can be identified by a prominent hill, 35m high, standing on it.

Bajos de La Baya, several rocky shoals, lie on an extensive bank which extends between 0.5 and 1.8 miles W of Punta Castro. La Baya, the shallowest shoal, lies awash near the center of the bank. Several other shoal patches within this bank have depths of 1.8 to 9.1m.

Roda del Vilar, a rocky shoal with a depth of 6.3m, lies about midway between Punta Liseira and Punta Balcon de Pilatos, 0.7 mile NE. The latter point consists of a remarkable mass of precipitous rocks. Punta Atalaya is located 0.5 mile farther N and is backed by Atalaya del Son, a prominent hill, which is 20m high and has a chapel situated on its summit.

Between Punta Atalaya and El Xorexo, a rocky and shallow shoal area lying 1 mile N, the coast is fronted by an extensive area of foul ground. El Son, a small and shallow fishing harbor, is situated in the S part of this area, close NE of Punta Atalaya.

Monte Enja (42°42'N., 8°59'W.), 541m high, stands 1.8 miles SE of the chapel on Atalaya del Son. It is conical and isolated from Sierra de Barbanza, which lies farther inland. Monte Dordo, a sharp ridge, 305m high, extends between this mountain and the chapel.

The Finisterre Traffic Control Center is situated on Monte Enja at an elevation of 540m.

Monte Iroite, 691m high, stands 3 miles ENE of Monte Enja. It is one of the highest mountains of the Sierra de Barbanza and the peak is very prominent from seaward.

5.8 Punta Cabeiro (42°44'N., 8°59'W.), marked by a light, rises a short distance inland to three rocky peaks, 87m high. Punta Aguieira is located 0.7 mile E of Punta Cabeiro and a fish-canning factory stands on an islet lying close off it. A bridge connects the islet to the point.

Between Punta Aguieira and Punta Refis de Con, 1.2 miles NE, the shore is indented by several small coves which are encumbered by shoals. Some of these coves contain small villages, with salting factories, which are fronted by piers used by fishing craft.

Monte San Lois (42°46'N., 8°55'W.), 368m high, stands 2 miles NE of Punta Refis de Con. This peak is rounded, has gradually-rising slopes, and appears dark because of the green vegetation on it.

Isla Quiebra, 27m high, lies 1 mile NNW of Punta Refis de Con. Between Punta Refis de Con and Punta Testal, 2.5 miles NE, the shore is bordered by rocky points and sandy beaches. Punta Testal is the N extremity of a low sandy projection on the W side of a creek which extends SE for 1 mile to Noya. The Rio San Francisco and the Rio del Traba flow into the head of this creek. Punta Corbeiro, located 2 miles N of Punta Refis de Con, is low and fringed by foul ground.

Noya (42°47'N., 8°53'W.), a small town, is approached through a dredged channel, 73m wide, which leads between two training walls. The belfry of the town church is prominent. A quay fronts the town and is used by small craft with local knowledge.

Freijo, a small village, stands close N of Punta Corbeiro and is fronted by a small pier; there is also a shipyard where small craft are built. The belfry of the village church is prominent. Vessels with local knowledge can obtain anchorage, in a depth of 5m, off the village.

Banco de La Misela, which mostly dries, extends across the greater part of the inlet between Punta Corbeiro and Punta Testal. Canal de Misela, a narrow channel, provides access to the upper part of the inlet and leads between the W part of this bank and the NW shore. The two rivers, which flow into the head of the inlet, are shallow and are of little commercial importance.

5.9 Cabo Corrubedo (42°35'N., 9°05'W.), the W extremity of a peninsula, is low, sandy, and bordered by foul ground. A light is shown from a prominent tower, with a dwelling, standing on the cape.

Poza de Tierra, with a depth of 29m, is the shallowest part of a rocky bank, known as Las Pozas, which lies 5 miles WSW of the cape.

Bajos de Corrubedo, a group of detached shoals, extends up to 3 miles SSW of Cabo Corrubedo. The principal rocky heads of this group, all of which dry or are awash, include La Marosa, El Rinchador, La Tomasa, Las Baleas, and Los Cobos. Deep channels lie between some of these rocky heads, but they should only be used by vessels with local knowledge. Onshore winds raise a heavy sea over this group of shoals.

Banco de Pragueiro, a group of shoals, lies 3.5 miles S of Cabo Corrubedo and consists of some above-water rocks. In heavy weather, a dangerous sea breaks over this group of shoals.

The coast extending NNE of Cabo Corrubedo is backed, a short distance inland, by the lofty Sierra de Barbanza. Monte Taume, 775m high, stands 3.2 miles NE of the cape and is prominent. Monte Facho, 443m high, rises 1 mile SW of Monte Taume. It is whitish and a large distinctive rock, known as El

Fraile, stands close NNW of the summit. The villages situated on the slopes of these two mountains are prominent from seaward.

Banco Las Basonas (42°38'N., 9°06'W.), an extensive group of rocks, lies between 1.7 and 2.5 miles NW of Punta Caraixinas, a point located 2.7 miles NE of Cabo Corrubedo. Basona Grande, at the E side of the group, is visible at all stages of the tide and is a good mark. El Guincheiro, at the SW edge of the group, is awash at HW. Banco Bustajan, with a least depth of 15m, lies about 1.7 miles NW of Basona Grande. Bajo Nuevo, with a least depth of 11.5m, lies 0.7 mile S of Basona Grande. In heavy weather, the sea breaks over all of these dangers.

Tremalleira, with a least depth of 5m, and Treito de Mar, with a depth of 18m, lie 1.3 miles SSE and 2 miles S, respectively, of Basona Grande. Bajo El Rocin, with a least depth of 13m, lies 1.5 miles WNW of Cabo Corrubedo.

Ensenada de Corrubedo (42°34'N., 9°03'W.) is entered between Punta Praseu, located 1 mile SE of Cabo Corrubedo, and Punta Grana, 2.3 miles SE. This bay is foul in its central part and is backed by sandy beaches. Monte Castro stands 2 miles NNE of Punta Grana. It is 204m high and has a group of large rocks, which resembles a fortress, situated on the summit. Monte de San Alberto, 186m high, rises 1.2 miles NE of Monte Castro. A prominent hermitage stands near the summit and is visible from seaward.

Corrubedo (42°34'N., 9°04'W.), a small drying harbor, lies within a cove, close E of Punta Praseu. There is a depth of 4m within the cove and the harbor is used by fishing boats.

The Ria de Arosa

5.10 The **Ria de Arosa** (42°28'N., 8°58'W.) is entered between Punta Falcoeiro, located 1 mile SSE of Punta Grana, and the W extremity of Peninsula del Grove, 5.5 miles SE. This inlet extends 14 miles NE to its head. It is the most extensive inlet on the NW coast of Spain and provides well-sheltered anchorage over a bottom of mud. Isla Salvora and several reefs, which lie in the N part of the entrance, form a natural breakwater. Numerous islets, rocks, and reefs lie scattered throughout the inlet, but the channels leading to the principal anchorages are well-marked and have sufficient depths.

Villagarcia and Carril, situated at the head of the inlet, are the two principal commercial centers, but several other smaller towns and villages can be found along its shores.

The entrance to this inlet can usually be easily identified by the numerous peaks which rise inland. La Curotina, 503m high, stands 6.5 miles NE of Cabo Corrubedo and is dark and prominent. Monte Castrove, 606m high, stands 10.5 miles E of the W extremity of Peninsula del Grove and has one of the most conspicuous summits in the vicinity. Pico Lobeira, 287m high, stands 5.5 miles NNW of Monte Castrove and has a prominent red cross on its summit. Monte Xiabre, 633m high, stands 5 miles NE of Pico Lobeira and is conical and dark colored.

5.11 **Islas de Sagres** (42°30'N., 9°03'W.) are a group of islets, rocks, and sunken dangers which lie within 1 mile S of Punta Falcoeiro. Canal de Sagres, the channel lying between these dangers and the coastal bank, should not be attempted without local knowledge. Meixon de Vigo, a rock which dries 0.9m, lies 0.8 mile S of the E side of Islas de Sagres. Las Forcadinas, a group of above-water rocks, lies on an area of foul ground, 0.5 mile E of the same islets.

Punta Falcoeiro, located 4 miles SE of Punta Corrubedo, is the NW entrance point. It is fronted by numerous dangers. Islote Falcoeiro, lying close W of the point, is conical and the largest of a group of above-water rocks. Several prominent factory buildings are situated on the E side of Punta Falcoeiro.

Punta Centolleira, a low and stony point, is located 1.3 miles E of Punta Falcoeiro. A small fishing harbor, protected by a breakwater, is situated close SW of the point. Las Centolleiras, consisting of several above-water rocks and islets, lie on a reef which extends 1 mile SSE from Punta Centolleira. Con d'Agosto, a prominent above-water rock, is shaped like a cupola and marks the SE extremity of this reef.

A group of islets lies S of Las Centolleiras and is separated from them by El Carreiro, a channel used by small craft with local knowledge. This area contains many dangers and should be avoided by vessels without local knowledge.

Isla Salvora Light

Isla Salvora (42°28'N., 9°01'W.), dark and reddish in color, is the largest of a group of islands and rocks which lie on the NW side of the main channel leading into the Ria de Arosa. A light is shown from a tower, with a dwelling, 16m high, standing on the S end of the island.

Picachos Gralleiras, a group of peaks, rises to a height of 69m near the S end of the island and is prominent. Cerro Milreu, with a prominent isolated summit, rises to a height of 32m near the NE end of the island. A number of above-water rocks lie on a rocky shelf which extends 0.5 mile N from the island. They terminate in a group of rocks, awash, known as Piedras Pardinas. Anchorage can be taken, in depths of 10 to 15m, close NE of the E extremity of Isla Salvora.

5.12 **Peninsula del Grove** (42°28'N., 8°54'W.), which lies on the SE side of the entrance, is composed of granite with an uneven surface. It is joined to the mainland by a narrow and sandy peninsula. La Garita, 92m high, stands on the W part of Peninsula del Grove. The village of San Vicente is situated on the N slope of this hill.

Rodal de Las Figueiras, a shoal bank with a least depth of 16m, lies 1.5 miles WSW of Punta de La Miranda, the S extremity of Peninsula del Grove. The sea breaks on this bank at times.

Isla Rua Light

Bajo Pajarina, a shoal with a depth of 1.6m, lies 0.7 mile WSW of Punta de San Vicente, the NW extremity of the peninsula. Islote Pombeiro lies 0.3 mile W of Punta de San Vicente and an above-water rock lies near the outer end of the foul ground which extends 0.2 mile N from the islet. A light is shown from a tower, 14m high, standing on this above-water rock which is known as Pombeirino.

From the entrance of the inlet, the fairway leading to its upper reaches extends N for 3 miles. It passes E of Sinal de Castro Fuera, which is marked by a lighted buoy, and W of Bajo Esqueiros, which lies 2 miles N of the NW extremity of Peninsula del Grove. It then continues NE for 2 miles and passes between Isla Rua, a barren and prominent rock, and Jidoiro Pedrigoso, a low islet. Bajo Meixons, a drying reef, lies 0.5 mile S of this islet.

Isla Rua Light

The fairway then extends NNE for 2 miles and passes between Conle Baxeu, a shallow rock, and Bajo Ter, a rock with a depth of 7.4m. From Bajo Ter, the fairway extends ENE for 4 miles to the roadstead anchorage off Villagarcia. It passes S of Moscardino and Fanequeira, and N of Bajo El Seijo. Moscardino is a rock, with a depth of 8.2m, and Fanequeira is a shoal, with a depth of 8.7m. Bajo El Seijo is a drying rock.

Navigational aids mark the sides of the fairway and most of the dangers described above. Vessels should experience no difficulty in making the transit from the entrance of the inlet to the roadstead anchorage off Villagarcia.

5.13 Punta del Castro (42°32'N., 9°00'W.), located 2.1 miles NE of Punta Falcoeiro, is steep and can be identified by a fish factory which stands on it. A small village, situated close NE of this point, is fronted by a quay used by fishing vessels.

The coast between Punta del Castro and Punta Ameixida, a rocky point 0.7 mile NE, is fronted by Banco Castineiras. Numerous above and below-water rocks lie within the limits of this bank, which extends up to 1 mile SE.

Ensenada de Santa Eugenia (42°33'N., 8°59'W.) is entered between Punta Pativa, located 0.7 mile N of Punta Ameixida, and Punta Aguiuncho, 1.3 miles NE. This bay is bordered by an extensive sandy beach, but numerous dangers encumber its approaches. The village of Santa Eugenia de Riveira stands along the SW shore of the bay and contains several fish processing factories. Several quays, protected by a long breakwater, front the village and are used almost exclusively by fishing vessels with local knowledge.

Ensenada de Palmeira (42°35'N., 8°57'W.) is entered between Punta Grades and Punta Cornas, 1.2 miles NE. This bay is encumbered by dangers, which extend up to 0.3 mile offshore, and several islets lie along the shore. Palmeira, a small drying harbor, stands on the SW shore of the bay, close E of a village, and is frequented by fishing boats with local knowledge.

Ensenada de La Puebla del Caraminal (42°36'N., 8°56'W.), a small bay, is entered 0.7 mile NW of Punta Ladina. It has depths of 9 to 20m but a wide bank fringes the shore. Lugar de Jobre, a village with a prominent church, stands on the S bank of the Ria San Antoni, which flows into the SW part of the bay. Caraminal, a village, is situated at the head of the bay and is fronted by a quay which is protected by a breakwater and mostly used by fishing vessels. Several fish canning factories are situated in the village and shellfish beds lie in the vicinity of the harbor. Anchorage can be taken, in depths of 10 to 11m, close W of the harbor.

Ensenada de Barrana (42°37'N., 8°54'W.) is entered between Punta de Cabio and Cabo Cruz, 2 mile NE. This small bay is fringed by foul ground and an extensive beach lies at the head. Torre Goyanes, a prominent tower, stands 0.2 mile N of the mouth of the Rio Corona, which flows into the NW side of the head. A conspicuous bridge spans the mouth of this river, which can be navigated by small boats. The villages of Escarbote and Esteiro are situated on the W and E sides, respectively, of the bay.

Cabo Cruz (42°37'N., 8°53'W.) is the outer extremity of a narrow tongue of land which extends 0.3 mile S from the general line of the coast. A small drying harbor, used by fishing boats, lies on its W side. Between Cabo Cruz and Punta del

Chazo, 1.2 miles ESE, the coast is fronted by an extensive area of foul ground which extends up to 0.7 mile offshore.

5.14 Punta de San Vicente (42°29'N., 8°56'W.), the NW extremity of Peninsula del Grove, is fronted by Laxes de San Vicente, a group of dangerous rocks, which lies 0.3 mile NNE and is marked by a lighted buoy.

Between Punta de San Vicente and Punta Cabeza del Moro, 2.3 miles ENE, the coast is fringed by foul ground which extends up to 0.3 mile offshore. Ensenada de Melojo, a small and shallow bay, lies 0.3 mile S of Punta Cabeza del Moro and provides anchorage to small craft.

Piedras Salvores, a group of rocky shoals, lies centered 1.5 miles NE of Punta de San Vicente and is marked by a beacon.

Ensenada del Grove (42°28'N., 8°51'W.), a bay, lies between the E side of Peninsula del Grove and the mainland. It extends 3 miles S and is almost completely obstructed by drying banks. Several narrow and shallow channels lead through these banks to the head. Isla Toja Grande is the largest of several islands which lie in the entrance to the bay. It is connected to Peninsula del Grove by a causeway.

The village of San Martin del Grove stands on the W side of the entrance to the bay and is fronted by a small harbor. It is protected by breakwaters and used mostly by fishing boats. Several fish processing plants are situated in the village.

5.15 Ensenada de Cambados (42°31'N., 8°49'W.), a small and shallow bay, lies 1.2 miles NE of the N end of Isla Toja Grande. It is obstructed by drying banks and numerous shoals. The villages of Santo Tome, Cambados, and Fefinanes are situated along the shores of this bay and numerous shellfish beds lie in their vicinity.

Monte Castrove, 610m high, stands 6 miles SE of Cambados and is conspicuous from seaward. The churches standing in the villages of Cambados and Fefinanes are also conspicuous. Sheltered anchorage can be taken by small craft, in depths of 7 to 9m, sand, about 0.7 mile W of Cambados.

Isla de Arosa (42°33'N., 8°52'W.) is located 2.8 miles NNE of the NE end of Peninsula del Grove. This island is long and consists of three parts joined by two narrow necks of land. Its highest peak rises in the NW part. The shores of the island are indented by numerous small coves and inlets, most of which are obstructed by drying banks and foul ground.

A extensive rocky bank, on which lies several small islets and rocks, extends up to 1.7 miles W of the W side of the central part of the island. A small and shallow bay, encumbered by shoals, lies NNW of this bank and the village of San Julian de Arosa stands at its head. The island is connected to the mainland by a bridge and an overhead cable which extend between its E extremity and Punta Valeiro, 0.8 miles E.

Villanueva de Arosa (42°34'N., 8°40'W.), a small town, stands on the E shore of the Ria de Arosa, directly E of the NE extremity of Isla de Arosa. It is situated on the N bank of the mouth of the Rio Curras and fronted by a small and shallow harbor which is protected by breakwaters and used by fishing boats. Numerous rocks lie on both sides of the river entrance, but small craft can enter at HW.

5.16 The Head of the Ria de Arosa.—The head of the inlet is entered between Punta Sinal de Boeiro and Punta del Chazo, 2.3 miles NW, and extends N and NE. The small port of Villagarcia is situated within a bay on the SE side of the head.

Between Punta del Chazo and Punta Piedra Rubia, 1.5 miles NNE, the coast is indented by a bay which is obstructed by dangers. Vigia de Ancados, a ruined lookout tower, is situated on the summit of a tree-covered hill, 66m high, which stands 1 mile NNW of Punta del Chazo. It is reported to be hard to distinguish because of the trees in the vicinity. Las Hermanas, two above-water rocks, lie at the outer end of a drying reef which extends 0.7 N of Punta del Chazo. Isla Ostral, a low islet, lies on a drying reef which extends 0.5 mile S from the N side of the bay. Bajo Las Rodas, a detached shoal with a least depth of 3.2m, lies 0.5 mile NE of Punta Piedra Rubia.

Ensenada de Rianjo (42°39'N., 8°50'W.), entered between Punta Porto Mouro and Punta Fincheira, 1 mile NE, is mostly shallow and of little commercial importance. Monte Treito, 628m high, stands about 6 miles N of Ensenada de Rianjo and is visible from all parts of the Ria de Arosa.

The Rio Ula discharges into the NE side of the head of the Ria de Arosa, between Punta del Castro and Isla Cortegada, 1 mile ESE. A rock, which resembles a fortress in ruins, stands on Punta del Castro. This river is navigable at HW by small craft, with shallow drafts, as far as Cesures Bridge, 10 miles upstream. The town of Padron is situated 1 mile above the bridge.

Isla Malveira Grande (Isla San Bartolome), 8m high, lies on the S part of a shoal which extends 1 mile WSW from Isla Cortegada. This islet is prominent because of its rugged cliffs and small square-shaped summit. Several dangers lie within 0.5 mile W and NW of it.

5.17 Punta de Las Sinas (42°35'N., 8°50'W.), located 2.7 miles SW of Isla Cortegada, is fronted by several rocks, 1 to 4m high, which lie up to 0.3 mile offshore. A detached shoal lies about 0.5 mile W of the point.

Ensenada de Gorma, which is fringed by foul ground along its shores, lies between Punta de Las Sinas and Punta Preguntoiro, 1.5 miles ENE. Islote Gorma lies in the middle of this small bay. Monte Arians or Sobran, 207m high, stands 1.5 miles SSE of Punta Preguntoiro and can be identified by its bare and rounded summit.

Ensenada de Villagarcia (42°36'N., 8°47'W.) is entered between Punta Preguntoiro and Isla Malveria Grande. The depths in the approach are moderate, whereas, the N and NE sides of the bay are shallow. A dredged channel, with a least depth of 7m, leads into the bay.

Between Punta Preguntoiro and Punta Ferrazo, 0.7 mile NE, the coast is fringed by foul ground extending up to 0.3 mile offshore. A breakwater extends in a NNW direction from Punta Ferrazo. Villajuan, a small harbor, is situated 0.3 mile NE of Punta Preguntoiro and is frequented by fishing boats. Carril, situated on the N side of the bay, is fronted by a small and shallow harbor which is protected by a breakwater and used by small craft.

5.18 Villagarcia (Villagarcia de Arosa) (42°36'N., 8°46'W.) (World Port Index No. 37830), a small port, is situated 13 miles from the ocean in the S part of Ensenada de Villagarcia. The harbor is protected by a breakwater on its W side,

several islets and shoals on its N side, and the mainland on its E side.

Port of Villagarcia Home Page

http://www.portovilagarcia.com

Tides—Currents.—Tides rise about 3.6m at springs and 2.8m at neaps.

Depths—Limitations.—Vessels enter the harbor through a dredged channel, 200m wide, with a least depth of 7m. An area, with a diameter of 225m, is dredged to a depth of 7m and is used as turning basin.

Pier limitations are, as follows

Pier	Length	Depth alongside
Muelle Commerciale	559m	6.4-6.7m
Muelle de Pasajeros	410m	2.8m
Muelle de Ramal	330m	3.0-6.7m
Escollera de Feriazo	—	10.0m

The harbor has facilities for tanker, bulk, general cargo, ro-ro, and passenger vessels. It was reported (1993) that a vessel of 33,690 dwt, 183m in length, and 8.2m draft had been accommodated in the port at HW.

Pilotage.—Pilotage is compulsory for vessels of more than 500 gt. Vessels should sent an ETA through their agent at least 12 hours in advance. Pilots may be contacted on VHF channels 12 and 16 and board in position 42°35'25.2'"N, 8°50'06.0"W. Pilotage is also provided for Cambados, Caraminal, and Riveira.

Shellfish beds are situated at numerous places along the shores of the inlet.

Landfill operations are reported (2004) in progress within the port.

Anchorage.—Anchorage can be obtained by ocean-going vessels, in depths of 5 to 6m, N of Punta Ferrazo. Small vessels can anchor, in a depth of 4m, close E of the point. Ocean-going vessels can also anchor, in depths of 11 to 14m, 0.7 mile NNW of Islote Gorma (42°35'N., 8°48'W.).

Caution.—During the fishing season, from April to December, care should be taken to avoid the numerous fishing nets which may be encountered within the inlet.

Villagarcia from S

Villagarcia—Muelle Commerciale

The Ria de Arosa to the Ria de Pontevedra

5.19 Ensenada de la Lanzada (42°27'N., 8°54'W.) is entered between Punta de la Miranda, the SW extremity of Peninsula del Grove, and Punta Fagilda, 3 miles SE. This bay is bordered by several beaches, with the exception of its SE part, which is steep and rocky. Punta Lanzada is located at the S end of Playa de Lanzada, an extensive beach lying at the head of the bay. A prominent hermitage stands on the point. Sheltered anchorage can be taken by vessels, in depths of 12 to 14m, about 0.7 mile off the beach, but local knowledge is advisible and this anchorage should be vacated if the wind veers to the W.

Islas Ons (42°22'N., 8°56'W.), consisting of two islands fringed by reefs, lies in the S approach to Ensenada de la Lanzada. Isla Ons, the largest island, is located with its N end lying 2 miles SW of Punta Fagilda. Centollo Grande, 87m high, is a rounded hill standing at the N extremity of the island. A light is shown from a tower, 12m high, standing at the center of the island.

The W side of this island is rocky and foul and should be given a berth of at least 1.5 miles. La Loba, a rock awash, lies on a reef which extends 0.2 mile from Punta Fedorento, the SE extremity of the island. Bajo Zacarias, with a depth of 8.5m,

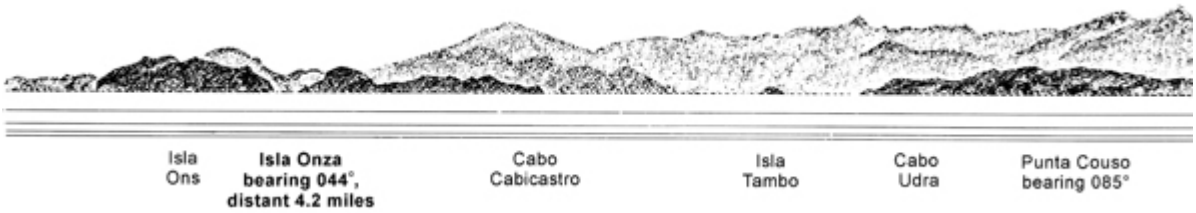
lies 1 mile NNW of the NW extremity of Isla Ons. In heavy weather, the sea breaks over this detached rocky patch.

Isla Onza (42°21'N., 8°56'W.), a small and rounded island, lies S of Isla Ons and is separated from it by a narrow passage, 250m wide. A drying reef extends about 300m from Punta Galera, the S extremity of this island, and a detached patch, with a depth of 3.4m, lies 0.3 mile ESE of it. Several other dangers lie up to 1.2 miles S of the S extremity of this island.

The passage between Punta Fagilda and the N end of Isla Ons is 2 miles wide, but it is obstructed by several dangers and only vessels with local knowledge can navigate it.

Picamillo, a shoal with a least depth of 2.7m, lies 0.7 mile SW of Punta Fagilda. A light is shown from a tower, 13m high, standing on Picamillo. The passage between this danger and Punta Fagilda is known as Paso de La Fagilda.

Lomba de Besta, a 4.2m patch, lies 0.3 mile W of Picamillo. The entire area between Isla Ons and Picamillo breaks when a heavy sea is running.



Entrance to the Ria de Pontevedra from SW

The Ria de Pontevedra

5.20 The **Ria de Pontevedra** (42°22'N., 8°50'W.) is entered between Punta Cabicastro, located 2.7 miles SE of Punta Fagilda, and Cabo Udra, 2.5 miles S. This inlet extends 8 miles NE to its head and has a bottom of mostly mud. It is easy to enter as it is partially protected from W winds and seas by the Islas Ons. The land along both shores is high, but is broken by numerous well-cultivated valleys. Monte Faro Domayo, very conspicuous from seaward, is the highest peak standing on the peninsula which separates the Ria de Pontevedra from the Ria de Vigo to the S.

Care should be taken not to mistake Islas Ons for Islas Cies, lying 8 miles farther S. The former islands are much lower, whereas the latter are bare and rugged.

Punta Cabicastro (42°23'N., 8°50'W.), 45m high and steep, is the N entrance point of the inlet. Helmo, a drying rock, lies close S of the point.

Porto Nova, a small fishing harbor, lies at the head of a cove, 1 mile NE of Punta Cabicastro. It has a depth of 3m and is protected by a breakwater.

Sangenjo Village is situated on the N side of the inlet, 1.7 miles NE of Punta Cabicastro. It is fronted by a small harbor, which is protected by a breakwater and a mile built on a reef. During fine weather, temporary anchorage can be taken, in a depth of 20m, off a beach lying W of the village.

Punta Festinanzo, located 1.5 miles SE of Sangenjo, is low, rocky, and fronted by a group of shoals which extend up to 1 mile SW of it. There are depths of 1 to 18m over this group, and during heavy weather, breakers mark this danger.

The coast between Punta Festinanzo and Punta Chancelas, 2.3 miles NE, is bordered by foul ground which extends 300m offshore. Temporary anchorage can be taken, in depths of 9 to 11m, about 400m offshore, 2 miles NE of Punta Festinanzo.

5.21 **Cabo Udra** (42°20'N., 8°50'W.), the S entrance point of the inlet, is low but rises to a rocky, barren hill 0.3 mile to the E. A similar hill stands 1 mile farther SE. When viewed from the NE or SW, these hills appear isolated because of the deep valley which lies between them.

Between Cabo Udra and Punta Trimino, 1.8 miles E, the coast is bordered by foul ground extending up to 0.3 mile offshore in places. Cabezo de Mourisca, a detached shoal with a least depth of 0.1m, lies about 1 mile NE of Cabo Udra.

Mourisca Light

Ensenada de Bueu (42°20'N., 8°47'W.) is entered between Punta Trimino and Punta Monte Gordo, 1.7 miles E. This small bay has a series of beaches and rocky points along its shores. Monte Liboreiro, 329m high, stands 2.5 miles S of Punta Trimino. It has a prominent and isolated, conical peak. Piedra Blanca, an above-water rock with a white top, lies close off the E side of Punta Trimino. A large factory building stands in a cove, close S of this rock.

The small town of Bueu is situated at the head of the bay and is fronted by a small harbor used by fishing boats. Good anchorage can be taken SE of Punta Trimino, sheltered from all except N winds. Large vessels can anchor, in depths of 11 to 15m, close N of the town.

Monte San Lorenzo (42°19'N., 8°44'W.), 434m high, stands 1.7 miles SE of Punta Monte Gordo and can be identified by a prominent cleft which divides its tip into two peaks. Isla San Clemente, a rocky islet, lies 200m offshore, NE of Punta Monte Gordo. The prominent ruins of a chapel stand on it.

Between Isla San Clemente and Punta Loira, 1 mile NNE, the coast is higher than at any other part on the SE side of the inlet. Punta Loira rises abruptly to Monte Loira, a fairly prominent hill, 116m high.

5.22 The Head of the Ria de Pontevedra.—Isla Tambo (42°25'N., 8°43'W.), 72m high, is a steep island which lies in the middle of the inlet between Punta Chancelas and Punta Pesqueira. A large ruined building stands on its NW side and a light is shown from a tower standing at the S extremity.

Ensenada de Combarro, a shallow and partly drying bay, is entered at the head of the inlet between Punta Chancelas and Punta Campelo, 1.2 miles E. The monastery of San Juan de Poyo, a dark stone building with two towers, stands 0.5 mile NE of the head of this bay. The village of Combarro is situated at the W side of the bay and is fronted by a small harbor used by fishing craft.

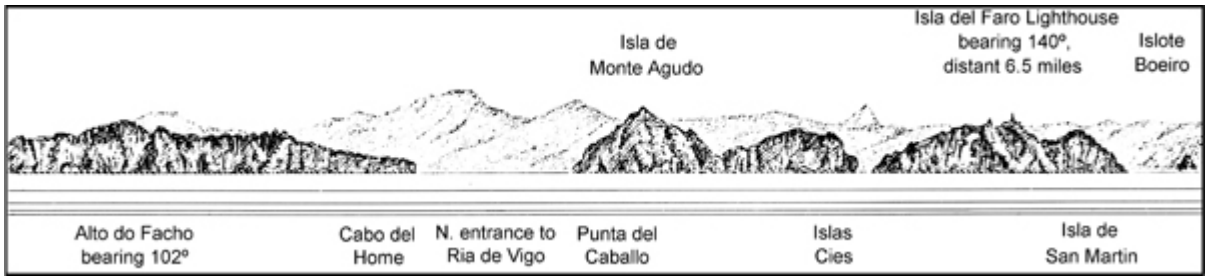
Pontevedra (42°26'N., 8°39'W.), the capital of the province of the same name, stands on the SE bank of the Rio Lerez, 2 miles upriver. The mouth of this river lies 0.7 mile E of Isla Tambo and is entered between two parallel training walls. The bar at the entrance, which dries and frequently shifts, can be crossed at HW by small local vessels with drafts up to 2m. In the inlet at the mouth of this river, the flood current attains a rate of 2.5 knots and the ebb current a rate of 3 knots; during freshets the rate of the ebb may increase to 4 knots.

5.23 Puerto de Marin (42°24'N., 8°42'W.) (World Port Index No. 37860), a small port, lies on the S side of the head of the Ria de Pontevedra, 0.7 mile SSE of Isla Tambo. The Spanish Naval Academy is situated here, but it is also a base for a large fishing fleet.

Port of Marin Home Page

http://www.apmarin.com

Puerto de Marin



North approach to the Ria de Vigo

Tides—Currents.—Tides rise 3.4m at springs and 2.6m at neaps.

Depths—Limitations.—The naval facilities, which include about 900m of berthing space, are situated in the W part of the harbor; the commercial facilities are situated in the central part; and the base for the fishing fleet, which includes about 1,200m of berthing space, is situated in the E part.

The main commercial facilities include Muelle Commercial, which has 850m of total quayage, with depths of 2 to 9m alongside; Muelle de Ribera, which has 140m of total quayage, with a depth of 5m alongside; the fishing basin, which has dredged depths of 4 to 6.5m alongside; and Muelle Comercial Nuevo, which has 242m of quayage, and depths of 9 to 12m alongside.

Vessels up to 229m in length and 11m draft have been accommodated alongside.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA through their agent at least 24 hours in advance. Pilots may be contacted on VHF channel 12 at least 1 hour in advance and generally board between Cabo Udra and Isla Ons.

Anchorage.—Anchorage can be obtained, in depths of 17 to 20m, sand, between 0.5 mile W through SW of Isla Tambo.

Caution.—Shellfish beds lie along the shores of the inlet in many places.

The Ria de Pontevedra to the Ria de Vigo

5.24 Punta Couso (42°18'N., 8°51'W.), marked by a light, is located 2 miles SSW of Cabo Udra and is fronted by rocks extending up to 0.5 mile offshore. The coast between is indented by the Ria de Aldan, a fairly deep and well-sheltered inlet. Las Cabadas, a rocky bank which breaks during onshore gales, lies in the middle of the entrance to this inlet, 0.8 mile N of Punta Couso.

The Ria de Aldan is deep in its central part but is foul up to 0.5 mile from its shores. Sandy beaches, separated by rocky points, line its steep shores. A channel, with depths of 9 to 33m, extends as far as the head of the inlet and is clear of dangers. Several fish processing plants, with small piers, are situated along the shores.

Anchorage can be taken, in a depth of 14m, about 0.7 mile NNW of the mouth of the Rio Aldan, which flows into the head of the inlet. Small vessels can anchor, in depths of 3 to 4m, close off the mouth of this river.

The coast between Punta Couso and Cabo del Home, 3.5 miles S, consists of high, steep shores. Alto de La Cruz, a hill surmounted by a cross, stands 0.3 mile S of Punta Couso. Monte Facho, 177m high, stands 1.7 miles S of Alto de La Cruz. It is very conspicuous and can easily be identified by the town standing on the summit. Las Osas, a group of above-water rocks, lies at the outer end of a bank which extends 0.5 mile SW of Punta Couso.

Approach to the Ria de Vigo

5.25 Islas Cies (Islas de Bayona) (42°13'N., 8°54'W.), consisting of four islands, front the entrance to the Ria de Vigo and form a natural breakwater. They are bare, high, and rugged and can easily be identified.

Isla de Monte Agudo is the N island of the group. The N channel, which leads into the Ria de Vigo, passes between this island and the mainland. Punta Caballo, the N extremity of this island, rises to Monte del Caballo, a 191m high peak. Monte Agudo, 174m high, stands 0.5 mile SE of the point. A prominent monument, 16m high, stands on Punta Muxeiro, the SE extremity of the island. A light is shown from a tower, 5m high, standing on the NE side of the island.

A shoal bank, with drying rocks, extends about 1.3 miles NW from Punta Caballo, the N extremity of the island. Mouselos, a shoal with a depth of 12m, lies about 0.7 mile W of the same point. No attempt should be made to cross this bank because of the irregular depths. The sea breaks heavily over these dangers during bad weather and they should be given a wide berth. Dangerous submerged rocks lie 0.5 mile SW and 1 mile SSW of Punta Caballo.

Isla de Faro (42°13'N., 8°54'W.) lies S of Isla de Monte Agudo and is connected to it by a sandy ridge known as Area das Rodas. A factory building, fronted by a small pier used by fishing vessels, stands on the N end of this ridge. Monte Faro, 173m high and steep, stands on the SW end of the island. A light is shown from a tower, 10m high, standing on the summit. A Isla Vinos, which consists of two islets joined by a reef, lies close S of Punta das Vellas, the E extremity of the island. Ruso, a shallow shoal, lies 0.5 mile NW of the SW extremity of Isla de Faro from which a light is shown.

Freo de La Porta, the passage between Isla del Faro and Isla de San Martin, is bordered by rocky ledges which front both islands. During good weather, this passage, which is 0.3 mile wide, can be used by local vessels with drafts up to 5m.

Isla de San Martin (42°12'N., 8°54'W.) is located S of Isla del Faro. Monte Pereira, 177m high, stands on the E side of the island and is its highest summit. The W coast of the island is steep-to, whereas, the S coast is fringed by foul ground extending up to 0.3 mile offshore. Playa de San Martin, a prominent extensive beach, borders the NE side of the island and a light is shown from Cabo Vicos, the SE extremity of the island.

Los Gabotos, with a least depth of 2.1m, and Bajos Forcados, awash, both lie 0.5 mile SW of Isla de San Martin. Leixon de Piedra Muerta, a group of drying rocks, lies at the outer end of a reef which extends 0.4 mile S of Cabo Vicos. Bajo Carrumeiro, a detached shoal with a depth of 2.6m, lies 0.3 mile ENE of Cabo Vicos.

Islote Boeiro (42°11'N., 8°55'W.), 21m high and rugged, lies 1 mile SW of Cabo Vicos. Castros de Agoeiro, a group of shoals with depths of 4 to 7m, lies 0.5 mile S of this islet. A light is shown from a tower, 7m high, standing on the Islote Boeiro.

The Ria de Vigo

5.26 The **Ria de Vigo** (42°13'N., 8°51'W.) is entered between Cabo del Home and Cabo Silleiro, 8.7 miles S. It extends 15 miles in a general NE direction and is bordered on both sides by high terrain. Several small bays, which provide sheltered anchorage, lie along the shores. About 10 miles above the entrance, the inlet narrows to a width of only 0.3 mile and then opens into Ensenada de San Simon, a shallow basin of little importance to ocean-going vessels. A suspension bridge, with a vertical clearance of 43m, spans the narrowest part of the inlet.

The two main entrance channels pass on either side of Islas Cies. Both of these channels are deep and have wide fairways. Canal del Norte, the N channel, passes between Cabo del Home and the NE side of Isla de Monte Agudo. Canal del Sur, the S channel, passes between Cabo Silleiro and Isla de San Martin. The N channel has a least depth of 36m and there are depths of 16 to 44m in the central part of the inlet.

Vigo, the principal city, stands on the SE side of the inlet. In addition, there are several other villages situated along both shores, the most important of which are Cangas, on the NW side, and Bayona and Coya, on the SE side.

5.27 North side.—Cabo del Home (42°15'N., 8°52'W.) and Punta Robaleira, 0.3 mile S, are the NW and SW extremities of a dark rocky promontory which forms the N side of the entrance. Punta Subrido, located close SE Punta Robaleira, is the S extremity of this promontory, and a reef extends about 200m S of it.

A light, with a racon, is shown from Punta Robaleira; range lights are shown from structures standing on Cabo del Home and Punta Subrido.

Ensenada de Barra is entered between Punta Subrido and

Punta Corbeiro dos Castros, 1.5 miles E. This bay is steep and rocky on its W side and has a sandy beach at its head. During N winds, vessels can anchor, in depths of 12 to 20m, sand, within this bay. A factory, fronted by a ruined pier, stands about midway along the W shore of this bay.

Bajos Castros de Barra, a reef covered with drying rocks, extends 0.5 mile S from the coast, about midway between Punta Corbeiro dos Castros and Punta Roca dos Patos, 0.3 mile E. The sea breaks on this reef at LW and it is marked by a lighted buoy moored close S.

Banco de Melide, with a least depth of 17.7m, lies 1.2 miles S of Punta Corbeiro dos Castros.

Ensenada de Limens (42°15'N., 8°49'W.) is entered between Punta Roca dos Patos and Punta Fanequeiro, 1 mile E. It is bordered by a bank along its W side which extends up to 0.3 mile offshore. A rock, awash, lies on the outer part of this bank. The E side of the bay is fairly steep-to, whereas, its N side is shoal. Numerous small craft shelter in Puerto de Santa Marta, a small cove, lying on the E side of this bay, near the head. It is reported that numerous shellfish beds lie within the bay.

Punta Borneira, located 0.7 mile ESE of Punta Fanaqueiro, is the outer extremity of a projection which separates Ensenada de Limens from Ensenada de Cangas. Bajo Borneira, an above-water rock, lies on the outer end of a reef which extends about 0.4 mile S from Punta Borneira. A light is shown from a tower, 11m high, standing on this rock.

Ensenada de Cangas (42°15'N., 8°47'W.) is entered between Cabo Balea, located close E of Punta Borneira, and Punta Rodeira, 1.2 miles NE. This bay is fairly steep-to in its central part, but shoals towards the head. The W entrance point of the bay rises steeply to a hill, 111m high, with a prominent white chapel standing on its summit. Pico Castelo, a prominent hill, stands 1.5 miles N of the W entrance point and the ruins of a tower are situated on its summit. Monte Magdalena, 342m high, stands 1 mile NNE of Pico Castelo and is also prominent. The ruins of several factory buildings are situated in the vicinity of Cabo Balea, the W entrance point.

The village of Cangas stands in the NW part of the bay at the W end of an extensive beach known as Playa de Cangas. The small harbor, which fronts the village, has shallow depths. It is protected by a breakwater and used by fishing boats. Vessels can anchor, in depths of 10 to 12m, off the village.

Bajo Salgueiron, a dangerous shoal, lies off the entrance to Ensenada de Cangas, about 0.5 mile SE of Cabo Balea. It is marked by a lighted buoy moored close S.

The coast between Punta Rodeira and Punta del Con, 1.5 miles NE, is fronted by a rocky ledge which extends up to 0.5 mile offshore and dries in places. This ledge is marked by a lighted buoy moored 0.5 mile SSE of Punta Rodeira. Con de Pego, a reef, lies at the edge of the ledge and a light is shown from a tower, 4m high, standing on it.

Ensenada de Moana (42°17'N., 8°43'W.) is entered between Punta del Con and Punta Arroas, 1.2 miles E. The village of Moana is situated on the W side of this bay. It is fronted by a small harbor which is protected by a breakwater extending from Punta del Con. The harbor is used by fishing vessels and small craft.

The Rio de Meira flows into the head of the bay. Isole de San Bartolome, on which a chapel stands, lies on the W side of the mouth of the river and is connected to the mainland by an area of reclaimed land. A small harbor, protected by a breakwater, is situated at the S side of this islet and is used by small craft.

It is reported numerous shellfish beds lie within Ensenada de Moana.

5.28 South side.—Cabo Silleiro (42°07'N., 8°54'W.), the S entrance point of the Ria de Vigo, has a high and bold face. The cape is fronted by a reef which extends 0.7 mile NW of it and in places is awash. During heavy weather, the sea breaks up to 1 mile off the cape and it should be given a wide berth.

The coast between Cabo Silleiro and Punta del Buey, 2.3 miles ENE, is steep and fronted by foul ground and a reef. Pico Sanson, 72m high, stands 0.5 mile SW of Punta de Buey. A light-colored stone statue, known as Virgen de La Roca, is situated on this hill and is an excellent landmark.

A disused light tower is situated at the extremity of the cape. A light is shown from a tower, with a dwelling, 30m high, standing 0.4 mile S of this disused tower.

Punta del Buey is the N extremity of Peninsula de Monte Real, a tree-covered headland, fronted by a reef. A prominent walled castle, with a tower at its N end, stands on this headland. El Halladizo, with a depth of 10.5m, lies 0.5 mile WNW of Punta del Buey, at the outer edge of several shoals. During rough weather, a heavy sea breaks over these dangers.

Ensenada de Bayona (42°07'N., 8°51'W.) is entered between Punta del Buey and Monte Ferro, 1.3 miles N. It is open to the W, but is partly sheltered by the shoals, which extend up to 0.7 mile NW of Cabo Silleiro, and the group of islets which extends up to 1.5 miles W of Monte Ferro.

Bayona, a summer resort, is situated in the SE corner of the bay. It is fronted by a small harbor which is protected by a breakwater and mostly used by local small craft and yachts. Small vessels can anchor, in a depth of 7m, mud, close S of the head of the breakwater.

Panjon, a small harbor, is situated at the NE side of the bay and used by small craft with local knowledge.

Punta Lameda, from which a light is shown, is located 1.7 miles N of Punta del Buey. This point is the NW extremity of the peninsula formed by Monte Ferro and is fringed by a reef.

Picos de Galineiro, 707m high, rises 7 miles E of Punta Lameda. This mountain has three summits, with the central one being the highest.

Monte Parada, 412m high, stands 4.5 miles ESE of Punta Lameda and is prominent. Monte Nuestra Senora del Alba, 521m high, stands 2.3 miles NNE of Monte Parada; a hermitage is situated on the N side of its summit. Monte Corujo, 455m high, stands 2.3 miles NNW of Monte Parada.

5.29 Las Estelas (42°09'N., 8°52'W.), a group of islets, lies on a rocky ledge which extends up to 1.5 miles W from the SW side of Monte Ferro. A light is shown from a tower, 6m high, standing on Las Serralleiras, an islet lying at the W end of the group. Several dangers lie up to 0.7 mile NW of the light and are marked by a lighted buoy.

El Carreiro, a shoal with a depth of 6.6m, lies 0.5 mile NE of Punta Lameda and breaks in heavy weather. Numerous other dangers lie between this shoal and Monte Ferro.

The coast between Punta Lameda and Cabo Estay, 2.3 miles

NE, is fringed by foul ground which extends up to 0.3 mile offshore in places.

A measured distance, 2,011.1m long, is situated off this stretch of coast. It is marked by towers and may best be seen on the chart.

Cabo Estay (42°11'N., 8°49'W.) is dark, steep, and fronted by a reef. Bajo Bondana, a detached patch with a depth of 2.7m, lies at the outer end of an area of foul ground which extends up to 1 mile N of the cape.

Range lights, which indicate the fairway through the S entrance channel, are shown from towers standing on the cape. A racon is situated at the front light.

Toralla, a small town, is situated 1 mile ENE of Cabo Estay and fronted by a shallow harbor. Isla de Toralla lies near the outer part of a shoal which extends up to 0.7 mile N and 0.5 mile NW of the town. This islet is joined to the mainland by a causeway and a conspicuous building stands at its N end. Los Travesos, with a least depth of 7.5m, lies about 0.7 mile NNE of Isla de Toralla. An outfall pipeline extends 1 mile NW from the shore, about 0.7 mile NE of the islet.

Cabo de Mar, located 1.7 miles NE of Toralla, is low and formed of white sand. Between this cape and Punta del Molino, 0.5 mile NE, the coast is fronted by foul ground and detached shoals which extend up to 0.6 mile offshore. These dangers are marked at the outer edge by a lighted beacon. A large conspicuous factory building stands on Punta del Molino.

Puerto de Vigo (42°14'N., 8°44'W.)

World Port Index No. 37900

5.30 Puerto de Vigo extends along the SE side of the Ria de Vigo, 7 miles within the entrance. The harbor is divided into three parts. The W part is used by the fishing fleet, the central part by passenger and commercial vessels, and the E part by the Spanish Navy.

Port of Vigo Home Page

http://www.apvigo.com

Tides—Currents.—Tides rise 3.5m at springs and 2.7m at neaps.

The tidal currents within the Ria de Vigo set NE during the flood and SW during the ebb; they attain rates of 0.5 to 1 knot. The direction and force of the wind greatly influences the rise of the tide and the currents.

Depths—Limitations.—Information about the main commercial facilities is given in the accompanying table.

Puerto de Viga—Berthing Facilities		
Pier	**Total length**	**Depth alongside**
Muelle de Transatlanticos	552m	12.0m
Muelle de Comercio	250m	8.5m
Muelle Transversal	636m	9.0m
Muelle de Arenal	636m	9.0 to 11.0m
Muelle de Guixar	457m	17.0m
Pantalan de Petroleros	100m	11.0m

There are facilities for general cargo, bulk, container, tanker, and passenger vessels. There are no restrictions for length or beam. Vessels up to 337m in length and 14.5m draft have been accommodated alongside.

In addition, there are several ro-ro berths, with depths of 8 to 10m alongside, and a marina.

Aspect.—The entrance fairways are indicated by lighted ranges and marked by lighted buoys which may best be seen on the chart.

Pilotage.—Pilotage is compulsory for all vessels of 500 gross tons and over. The pilots can be contacted on VHF channel 14 or 16 and generally board inside of Islas Cies at the inner end of the main entrance channels. Vessels should provide an ETA 24 hours in advance.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) has been established for the port of Vigo and can be contacted (call sign: Vigo Traffic) on VHF channel 10 or 16. The service is primarily for vessels entering or departing Canal del Norte or Canal del Sur.

Anchorage.—Anchorage can be taken, in depths of 10 to 20m, mud, anywhere in the inlet between the port area and the N shore. Vessels working cargo frequently anchor, in depths of 16 to 19m, about 0.3 mile N of Muelle Transversal.

Caution.—Several submarine cables extend from the shore in the vicinity Punta del Molino and may best be seen on the chart.

Construction is being carried out at the W end of the port.

Numerous shellfish bed areas lie within the inlet.

5.31 The Ria de Vigo—Head.—Ensenada de San Simon (42°19'N., 8°38'W.) is an extensive and shallow bay lying at the head of the Ria de Vigo. It is entered through Estrecho de Rande, a narrow strait, which lies between Punta Bestia, on the N side, and Punta de Rande, on the S side. A suspension bridge spans this strait and has a navigable width of 390m between its supporting pillars. Depths through the strait are deep and clear, but shoal rapidly within the bay.

Rande Terminal, an ore berth, is situated on the S side of the strait, about 0.3 mile E of the bridge. It consists of an L-shaped jetty, 150m long, with a depth of 11m alongside.

Monte Faro Domayo, 615m high, stands 2.5 miles NW of Punta Bestia and is the highest land on Peninsula del Morrazo. When viewed from the SW, it appears to have a conical summit, nearly isolated from the other peaks; however, when seen from NW, it appears to have a more level top and is not easily identified.

Monte de Nuestra Senora de La Peneda, 318m high, stands 4 miles NE of Punta de Rande. It has a conspicuous chapel, surrounded by trees, situated on the pointed summit.

There are depths of 1.8 to 5.5m within Ensenada de San Simon to the E of the strait. The depths then decrease to drying

flats in its N part. The Rio de Redondela flows into the SE corner of the bay and the Rio Oitaben flows into its NE part. Both of these rivers are navigable by boats at HW. A group of islets, of which Isla de San Simon is the largest, lies close off the E shore of the bay.

The Ria de Vigo to the Rio Mino

5.32 Punta Orelluda (42°01'N., 8°53'W.), located 5.2 miles S of Cabo Silleiro, is a small projection with several rocks lying off it. Bajo Orelluda, with a least depth of 22m, lies 1 mile W of the point. Bajo de Oya, with a least depth of 20m, and Placer d'os Frades, with a least depth of 33m, lie 1.8 and 2.7 miles SSW, respectively, of the point. During heavy weather, the sea breaks over all these dangers and vessels should pass well to the W of them.

Inland, along this part of the coast, the shore is backed by a lofty and rugged range, which extends from Cabo Silleiro to Puerto de La Guardia, at the foot of Monte Santa Tecla.

Puerto de La Guardia (41°54'N., 8°52'W.), situated 7.5 miles S of Punta Orelluda, is a small harbor formed by a cove. It is protected by breakwaters and has depths of 7.6 to 9m. A conspicuous church stands in the village of La Guardia, at the head of the cove. The harbor is used by fishing vessels with local knowledge.

Bajo Lapo, a shoal with a depth of 11.5m, lies about 0.8 mile NW of the entrance to the cove; Bajo Arado, a shoal with a least depth of 21.5m, lies 0.7 mile W of Bajo Lapo. During heavy weather, both of these dangers break. Las Mamas, La Guardia, at the head of the cove. A lighted range indicates the entrance channel leading to the harbor, which is used by fishing vessels with local knowledge. with a least depth of 8.2m, lies 0.5 mile W of the entrance to the cove.

Two detached banks lie off the coast NW and SW of Puerto de La Guardia. The N bank, with a depth of 13m, lies about 2.2 miles NW of the cove and the S bank, with a depth of 14m, lies about 1.8 miles SW of the cove.

Monte de Santa Tecla (41°53'N., 8°52'W.), a conspicuous mountain with two peaks, stands close S of Puerto de La Guardia. Picacho de San Francisco, the S and highest peak, rises to a height of 350m. A stone pyramid, surmounted by a cross, and a radio mast stand on the summit of the N peak; a chapel stands on the S slope of the mountain. A factory building and two conspicuous chimneys stand at the SW foot.

The **Rio Mino** (Rio Minho) (41°52'N., 8°52'W.) is entered between Punta de Los Picos, which is the S termination of the slopes of Monte de Santa Tecla, and Ponta Ruiva, 0.8 mile S. It rises in the NE part of the province of Galicia and flows S to the border of Portugal, where it turns W. The river then flows for a distance of 130 miles, forming the boundary between Spain and Portugal.

Ilha Insua, a low islet surmounted by a fort, lies in the middle of the entrance. A light is shown from a structure standing on the fort. Entrance channels lie on both sides of this islet. The N channel is wider, but the S channel is reported to be the only one used as it is deeper. The bars, at the entrance of both channels, break with any swell and the depths, together with the shoals and rocks which encumber both channels, are subject to change. The river is navigable at HW by small craft, with drafts up to 2m, as far as Valena do Minho, 15 miles above the entrance. However, its course is interrupted by numerous small islands and sand banks. A conspicuous hotel stands at the N side of the entrance to the river, close E of Pico de Los Picos. Camposancos and Caminha are small towns situated on the NW and SE banks of the river, respectively, 1.5 miles above the mouth. They are both fronted by small harbors and used by small craft and fishing vessels.

The tidal currents, over the bar and within the river, generally attain rates of about 3 knots, but during freshets, the ebb current may attain rates of 4 to 5 knots. Local knowledge is required for entering and local pilots are available.

The Rio Mino to Porto de Leixoes

5.33 The **Rio Ancora** (41°49'N., 8°52'W.) flows into the sea 3 miles S of the mouth of the Rio Mino. The coast between is fringed by foul ground extending 0.3 to 0.5 offshore. Monte Cobertorinho, 221m high, stands near the coast, 1.5 miles S of the entrance to the Rio Mino. A prominent pyramid is situated on its bare summit and a hermitage stands near the W side of its foot.

Ancora, a small drying harbor, lies on the N bank of the Rio Ancora, close inside the entrance. It is protected by breakwaters and only used by fishing vessels. Temporary anchorage can be taken, in a depth of 18m, sand, about 0.8 mile WSW of the harbor.

Montedor (41°45'N., 8°52'W.), a small headland, is located 3.7 miles S of the mouth of the Rio Ancora and rises steeply from the sea. A light is shown from a prominent tower, with a dwelling, 28m high, standing on this headland. A radiobeacon is situated at the light.

Montedor Light

A pine forest is situated close N of the headland and several buildings and a prominent mill stand close S of it. Between this headland and the mouth of the Rio Lima, 4.5 miles SSE, the coast is low and backed, a short distance inland, by Serra de Santa Luzia. This mountain, 550m high, has a conspicuous bare summit, but it is frequently obscured by clouds.

Sumalha, a detached bank with a least depth of 20m, lies 4.2 miles SW of Montedor.

Serra d'Arga, 814m high, is a high tableland which terminates to the S in a steep slope, 8.5 miles ENE of Montedor. It is visible for a considerable distance.

A large sanitarium building stands near the coast, 1 mile S of the mouth of the Rio Ancora and is conspicuous. A prominent church stands in the village of Afife, 1.2 miles SSE of the sanitorium. Anchorage can be taken W of this village on sandy bot-

tom, but vessels should not approach the coast within depths of less than 20m.

Feiticeira, a rock with a depth of 5m, lies 1.3 miles SW of the mouth of the Rio Ancora. O'Boi, a rock with a depth of 4.9m, lies about 0.2 mile W of Montedor.

5.34 Porto de Viana do Castelo (41°41'N., 8°50'W.) (World Port Index No. 37940), a small port, lies close within the mouth of the Rio Lima, 4 miles SSE of Montedor.

Port of Viana do Castelo Home Page

http://www.ipnorte.pt

Tides—Currents.—Tides rise about 3.5m at springs and 2.7m at neaps.

In the entrance, the flood tidal current generally attains a rate of 2 knots and the ebb current 3 knots. During floods, the ebb current may attain a rate up to 6 knots.

Depths—Limitations.—There are depths of 7.6m at springs and 6.5m at neaps over the bar at the entrance.

A channel, with a dredged depth of 3.5m, leads to a basin on the N side of the river. This basin has a depth of 4.2m and is used by fishing vessels. Several repair yards and drydocks are situated close N of it.

A channel, with a dredged depth of 6.5m, leads to a new commercial quay on the S side of the river. This quay has 475m of berthage, with a depth of 8m alongside, and a ro-ro berth at the W end. Generally, vessels up to 130m in length and 6.5m draft can be accommodated. Vessels up to 160m in length and 7.6m draft may enter at HW with special permission.

Aspect.—The Rio Lima enters the sea between Castelo de Santiago, on the N side, and Ponta Cabedelo, on the S side. The harbor entrance is formed between breakwaters which extend 1,000m SSE from the vicinity of Castelo de Santiago and 650m SW and SSW from Ponta Cabedelo. The town extends along the N bank of the river and is fronted by a training wall. It stands partly on level ground and partly on the hillside. A prominent hotel stands on the crest of a hill, 1 mile N of Castelo de Santiago. A large church stands close S of the hotel and at a somewhat lower elevation. The small town of Anha, visible from seaward, is situated on the S slope of a prominent dark hill standing 2 miles ESE of Punta Cabedelo. The river is spanned by a bridge, 1.5 miles above the harbor.

A lighted range indicates the entrance channel; the fairway is marked by buoys.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA at least 24 hours an advance, with a confirmation 6 hours before arrival. Pilots may be contacted on VHF channel 14 or 16 and generally board about 1 mile SSW of the head of the N breakwater.

Regulations.—Roca Control monitors the approach and departure of vessels for Porto de Viana do Castelo. Contact Roca Control on VHF channel 77. See paragraph 5.1 for further information.

Anchorage.—Anchorage may be obtained, in a depth of about 20m, W of the harbor entrance. The best berths are about 1.4 miles WSW, 1.2 miles SW, and 0.8 mile SSW of the head of the N breakwater. The pilot station should be contacted for advice before anchoring off the port.

5.35 The coast between Ponta Cabedelo and the entrance to the Rio Cavado, 9 miles S, is low and sandy with high land in the interior. The Rio Neiva, one of many small rivers encountered along this part of coast, enters the sea midway along this section. Drying sand banks obstruct its entrance.

There are numerous villages and prominent peaks along this stretch of coast. A prominent hill, 190m high, stands 1.2 miles NE of the mouth of the Rio Neiva. Another prominent hill, 254m high and covered with vegetation, stands 2.5 miles SSE of the mouth of the same river. A village, with a prominent church, stands at the foot of this hill, on the W side. The villages of Marinhas and Albeheira stand close together at the foot of a precipice, 1.3 miles N of the mouth of the Rio Cavado. A mountain, 481m high, stands 5.8 miles NE of the mouth of the Rio Cavado and has a prominent isolated summit. Another mountain, 414m high, stands 1.5 miles S of this isolated summit and has a dark-colored conical summit.

Baixo da Eira, with a least depth of 1.8m, and Baixo de San Bartolomeu, awash, are shoals which lie 1 mile offshore, 4 miles and 7 miles S, respectively, of Ponta Cabadelo.

Parcel, with a depth of 13m, and Moiteira, with a depth of 19.5m, lie 4.5 and 5.3 miles SSW, respectively, of Ponta Cabadelo. The sea occasionally breaks over these shoals.

Caution.—In thick weather, this stretch of coast should not be approached within 5 miles and in no case approached within depths of less than 20m.

5.36 The **Rio Cavado** (41°32'N., 8°47'W.) rises in Sierra de Jerez, about 65 miles inland and is navigable by shallow craft up to 3 miles above the entrance. The entrance bar is reported to have silted up and has depths of less than 1m. It is fronted by a several rocks which lie 0.3 mile W of the mouth. The town of Esposende, fronted by a small drying harbor, stands 0.7 mile within the entrance. The harbor is used by fishing boats and pleasure craft, although it has been reported (1996) closed due to silting. The small town of Fao stands on the SW bank, 1 mile farther upriver.

Banco da Foz, Cavalos, Roncador, and Calas are shoal banks which lie up to 1.2 miles offshore in the approaches to the Rio Cavado. The sea breaks heavily over these dangers in bad weather. Shallow channels cross these banks and are used by small craft with local knowledge.

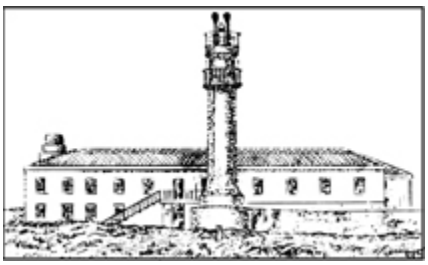
Monte Faro, 183m high, stands 1.8 miles E of the mouth of the Rio Cavado. This bare peak is easily identified as it is the S summit of a ridge of hills and has a steep slope.

Esposende Light is shown from a prominent tower with a dwelling, 15m high, standing on the old fort at the N entrance point of the river.

Caution.—A vessel navigating in this vicinity should give the coast a berth of not less than 3 miles and not approach within depths of less than 50m.

5.37 Ofir (41°31'N., 8°47'W.), a resort village, is situated 1 mile S of the mouth of the Rio Cavado and has a landing place for boats. Three conspicuous tower blocks, each 13 stories high, stand at this village and can be seen from offshore.

The coast between Ofir and the Rio Ave, 12 miles S, is low and consists of sandy beaches with some rocks. Apulia, a resort, is situated near the coast, 2.5 miles S of Ofir. A church and a group of windmills stand in the resort and several radio



Esposende Light

masts, 25m high, are situated 1.5 miles ESE of it.

Serra da Franqueira (41°30'N., 8°39'W.), a mountain range, lies parallel to the coast in this vicinity. Its highest summit rises to a height of 296m, 6 miles E of Apulia. Several buildings stand on this summit.

Monte San Felix (41°26'N., 8°43'W.), 200m high, stands 4 miles SE of Apulia. This prominent isolated peak is rounded and covered with trees. Several windmills stand on its summit and an isolated, high church tower stands halfway up the W slope.

Ponta Carreiros is located 4.2 miles S of Apulia and the village of Avero-Mar, with a conspicuous church, is situated close S of it. Numerous windmills and churches stand along this section of the coast. The town of Amorim, situated 2 miles ESE of Ponta Carreiros, is prominent from seaward.

5.38 **Porto de Povoa de Varzim** (41°23'N., 8°46'W.), a resort town and fishing center, is situated 2.5 miles S of Ponta Carreiros. It is fronted by a small harbor formed by two breakwaters. There are depths of 6m in the entrance and 4m in the harbor basin, which is mostly used by local fishing vessels and pleasure craft. The port monitors VHF channels 11 and 16. Temporary anchorage can be taken, in depths of 10 to 30m, off the entrance to the harbor.

Forcada da Vila, a prominent above-water rock, is one of a group which lies about 1.2 miles S of the harbor.

Regufe Light is shown from a tower, 22m high, standing 0.5 mile SE of the harbor.

Caution.—Vessels without local knowledge navigating in this vicinity should give this stretch of coast a berth of over 2 miles and should stay in depths of at least 40m.

5.39 The **Rio Ave** (41°20'N., 8°45'W.) flows into the sea 2.5 miles S of Povoa de Varzim. The river entrance is obstructed by rocks and a drying sand bank, but the entrance channel usually has a depth of 2m and 0.6m over the bar. A prominent fort stands on the NW entrance point; a church stands on the SE side of the river.

Vila do Conde, a resort village, stands on the N bank of the river, 0.7 mile above the mouth, and a large convent stands on a hill, close NE of it. Both the convent and the ruins of an old aqueduct, which lies parallel to the coast, are prominent from seaward. A small town, with a prominent church, stands on the S side of the river, 1 mile above the mouth. A bridge spans the river near this town.

Vila do Conde is fronted by a small harbor. It is protected by breakwaters, which extend from the entrance points of the river, and is used by local fishing vessels and pleasure craft.

The coast between the Rio Ave and Ponta Boa Nova, 8.5 miles S, is backed by low land which extends inland to Serra de Santa Eufemia. This mountain range has three peaks. The central peak, 236m high, stands 5.5 miles SE of the entrance to the Rio Ave and is surmounted by a prominent hermitage. Monte Santa Gens, 135m high, stand 7 miles S of Serra de Santa Eufemia. This peak is very prominent, especially from SW, when the sun shines on the clay deposits situated on its slopes.

Between the Rio Ave and the resort village of Gafa, 1.8 miles S, the coast consists of a sandy beach. Guilhada, an above-water rock, lies about 0.3 mile offshore WSW of Gafa. The prominent hermitage of Santa Paio stands on the coast 1.8 miles S of Gafa.

In good weather, temporary anchorage can be taken, in a depth of about 20m, anywhere off this section of coast and about 1 mile offshore.

Ponta Boa Nova (41°12'N., 8°43'W.), rocky and salient, is located 7 miles S of the village of Gafa. A conspicuous oil refinery complex stands on the point and includes several chimneys, 100m high with flares.

Leca Light is shown from a prominent tower with dwellings, 46m high, standing on the S part of Bonta Boa Nova.

Leca Light

A high obelisk, which has the appearance of a chimney from seaward, stands 1.5 miles N of the point. An aeronautical light is shown at an airfield situated 2.7 miles NE of the point.

Leixos Ocean Terminal (41°12'N., 8°45'W.) consists of an SBM connected to the shore by a submarine pipeline extending 1.5 miles ENE from the buoy to a point on shore about 0.4 mile N of Leca de Plameira Light. Entry is prohibited into the area with a radius of 1,000m centered on the SBM.

Porto de Leixoes (41°11'N., 8°42'W.)

World Port Index No. 37950

5.40 Porto de Leixoes, a small port protected by breakwaters, lies 1.5 miles SSE of Ponta Boa Nova. It is bounded on the N side by the town of Leca da Palmieira and on the S side by the town of Matosinhos.

Port of Leixoes Home Page

http://www.apdl.pt

Tides—Currents.—Tides rise 3.5m at springs and 2.7m at neaps.

Depths—Limitations.—The outer basin includes three tanker and LPG berths which are situated on the inner side of the NW breakwater. The inner basin is entered through a passage which is 58m wide and spanned by a bridge. There are facilities for general cargo, ro-ro, container, and passenger vessels. Generally, vessels up to 210m in length and 9.5m draft can be accommodated.

Vessels with a draft greater than 9m must wait for high tide.

Aspect.—The harbor consists of two tidal basins protected by two breakwaters. The NW breakwater extends 750m SW and then 1,300m SSE from the shore at Leca da Palmeira. The SE breakwater extends 600m SW and then 350m NW from the shore at Matosinhos.

Castelo do Queijo, an old fort, stands on a small promontory, 0.9 mile ESE of the head of the NW breakwater and is fronted by a stranded wreck; this wreck has been reported (1992) to have been removed. A group of oil tanks stands at a terminal midway along the NW breakwater.

Pilotage.—Pilotage is compulsory with the exception of coastal vessels, local fishing vessels, and pleasure craft. Vessels should send an ETA at least 12 hours in advance, with confirmations sent 4 hours before arrival. Pilots can be contacted on VHF channels 12, 14 and 16 and generally board 0.8 mile S of the entrance.

The port maintains radar surveillance of the approaches and all vessels should report by VHF on channels 12 or 16 at a distance of 2 miles from the harbor if approaching from the S or W, and 3 miles if approaching from the N. Pilots are also available here for the Rio Douro and Oporto.

Regulations.—Vessels approaching the port must give the outer side of the NW breakwater a berth of at least 1 mile.

Leixeos—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
Tanker A	—	14m	Can accommodate vessels up to 100,000 dwt
Tanker B	—	10m	Can accommodate vessels up to 27,000 dwt
Tanker C	—	6m	Can accommodate vessels up to 5,000 dwt
Dock 1 North	455m	9m	
Dock 1 South	520m	9m	
Dock 2 North	670m	10m	
Dock 2 South	690m	10m	
Dock 4 North	400m	11m	
Dock 4 South	440m	10m	
Container North	360m	10m	Can accommodate vessels up to 25,000 dwt

Leixeos—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
Container South	440m	11m	Can accommodate vessels up to 25,000 dwt
CNO	510m	4m	
PC1	567m	4m	
PC2	655m	4m	
PC3	667m	4m	

Vessels must not exceed a speed of 5 knots when entering.

Vessels carrying dangerous cargo, those navigating in fog or bad weather, vessels being towed or towing, vessels maneuvering within the port area, vessels loading or discharging cargo, and vessels at anchor must maintain a continuous listening watch on VHF channels 12 and 16.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) has been established for the Leixoes area and can be contacted (call sign: Leixoes Port Control) on VHF channel 12 or 16.

Anchorage.—Vessels may anchor, in depths of more than 20m, mud and sand, off the port and outside of the prohibited area. An outer anchorage is established with depths between 27 and 39m in an area bounded by positions: 41°06'N, 8°49'W; 41°06'N, 8°45'W; 41°11'N, 8°45'W, and 41°11'N, 8°49'W. However, with strong W winds, anchorage outside may not be practicable. Vessels less than 85m in length, with drafts less than 5m, may anchor, in depths of 6 to 7m, about 0.4 mile E of the head of the NW breakwater and NE of the prohibited area limit.

Caution.—Several wrecks lie in the approaches to the port and may best be seen on the chart.

An isolated shoal, with a depth of 8.1m, lies about 0.4 mile NW of the head of the NW breakwater.

A submarine pipeline crosses the entrance of the harbor and may be seen on the chart.

An anchorage prohibited area, the limits of which are shown on the chart, lies in the approaches to the port and extends up to 0.7 mile W and S of the head of the NW breakwater.

During W gales, a very heavy swell is raised in the approaches to the port. At such times, the visibility may be greatly reduced by driving spray which makes the port entrance difficult to identify.

Due to silting and development within the port, vessels are advised to contact the authorities for the latest information concerning the depths.

Works are reported in progress (2009) in the outer harbor.

The Rio Douro

5.41 The **Rio Douro** (41°09'N., 8°40'W.) rises in Sierra de Urbion in Castile and crosses the most mountainous parts of Leon and Salamanca before it reaches the Portuguese frontier. It discharges into the sea near Oporto after traveling a distance of about 390 miles.

The river is navigable by barges and small craft from its entrance to Regua, about 50 miles upstream, and by boats to Barca d'Alva, 74 miles farther inland.

The mouth of the river can be identified for a considerable distance in clear weather. Any haziness prevalent at dawn is usually clear by about noon. The conspicuous gap formed by the river between Monte Rabida and Monte Cabadelo indicates the entrance from the W and the city of Oporto is usually visible from a distance up to 15 miles seaward in clear weather.

The approaches to the entrance of the river are obstructed by sand banks and shoals, and the entrance channel is subject to frequent changes because of the strong currents. The entrance fairway, which leads between breakwaters, is indicated by a lighted range and marked by buoys.

Numerous buildings stand along the N bank of the river between the entrance and the city of Oporto. This bank is fronted by a continuous wall with several quays. The city of Vila Nova de Gaia, a wine center, is situated on the S bank of the river and is connected to Oporto by four bridges.

Tides—Currents.—Tides at the entrance rise 3.2m at springs and 2.5m at neaps.

Freshets frequently occur between November and May. At such times, the associated tidal currents may attain rates up to 7 knots, making entry into the river impossible. It is reported (1992) that, at exceptional periods, these freshets caused the river to rise by as much as 4m above HW and increased the rate of the tidal currents to 12 knots. However, the construction of an upriver dam has controlled these excessive rates.

The complete absence of any rise or fall of tide and the presence of tree branches in the river are good indications that a freshet is imminent, even though it may not occur for 2 days.

During the winter, a local phenomena known as Arrunhentas, occurs and consists of eddies caused by a flood undercurrent being experienced as the surface current ebbs in the river.

5.42 **Oporto** (41°09'N., 8°37'W.) (World Port Index No. 37960), an important commercial center, stands on the N bank of the Rio Douro, about 3 miles above the entrance. Vessels up to 100m in length and 5.3m draft have been accommodated in the port under favorable conditions; however, most cargo is now usually handled by lighters.

Note.—It was reported (1989) that the port was closed to commercial shipping. Dredging was being carried out in order to resume the use of the port facilities.

It has also been reported (1995) that vessels over 25m long or with a draft greater than 4.2m should not enter the port due to shoaling.

The Rio Douro to Aveiro

5.43 The coast between the Rio Douro and town of Espinho, 8.5 miles S, consists of a sandy beach backed by sand dunes. A number of prominent buildings and windmills, visible from seaward, stand near the coast W of the village of Valadares, 3.7 miles S of the Rio Douro. The hermitage of Senhor da Pedra, a conspicuous building with a dome, is situated near the coast, 1.5 miles farther S.

An outfall pipeline, marked at its seaward end by a lighted buoy, extends 1.1 miles W from the shore, 2 miles S of the Rio Douro.

Espinho, a small village, stands 8 miles S of the Rio Douro and can be identified by its prominent church which stands on high ground above the other buildings and factory chimneys.

A mountain range, which extends in a NW-SE direction, terminates in Monte San Pedro Velho, 18 miles ESE of Espinho. This peak, 1,083m high, is an excellent landmark on a clear day, but should not be confused with Pico de Caramulo, standing 20 miles farther S. Another mountain range, 820m high, extends between the above range and the coast.

Mata de San Jacinto, a group of pine trees, extends along the coast from 1.5 to 2.7 miles N of Barra de Aveiro. These trees protect the entrance from drifting sand.

Caution.—At times, the mountains and certain parts of this section of coast may be very difficult to distinguish because of the heat haze and the sand raised by the wind. At such times, vessels approaching the shore should use caution and those without local knowledge should stay in depths of over 10m.

Numerous fish nets may be encountered along the shores of this section of coast.

It has been reported that sand banks, which break heavily, are continually forming and disappearing along the 20m curve between Espinho and Cabo Mondego (40°11'N., 8°54'W.). These are caused by the action of the winds and currents; vessels are advised to give this section of coast a berth of at least 3 to 4 miles.

Aveiro (40°39'N., 8°44'W.)

World Port Index No. 37970

5.44 Aveiro, a commercial port and fishing center, is situated in the Ria de Aveiro, a narrow lagoon of salt marshes and sand spits.

Port of Aviero Home Page

http://www.portoaviero.pt

Tides—Currents.—Tides rise 3.2m at springs and 2.6m at neaps.

The tidal currents in the entrance attain rates of 4 to 6 knots at springs, but during heavy floods, the ebb currents may attain rates up to 8 knots.

Depths—Limitations.—The entrance bar has a charted depth of 4.5m. Within the bar, the fairway is clear of dangers and the depths increase to 10m in places and then decrease to 3.5m at the E end.

The main facilities include North Terminal Berth, 500m long, with a depth of 8m alongside, situated close within the entrance; South Terminal Berth, 400m long, with a depth of 5.5m alongside, situated 2 miles upriver; and three piers, with depths of 6m alongside, situated 1 mile above the entrance and used by coastal tankers. In addition, there are 250m of berthing space for fishing vessels.

There are facilities for general cargo, ro-ro, bulk, and container vessels. Generally, vessels up to 110m in length and 6m draft can be handled, depending upon the bar conditions. It was reported (1993) that a vessel of 130m in length and 6.5m draft had been accommodated in the port.

Aspect.—The narrow lagoon runs parallel to the coast for 26 miles and is separated from it by a narrow stretch of sand. The city of Aveiro stands on low ground, 4 miles above the en-

trance, and is not readily visible from seaward. The entrance to the lagoon is protected on both sides by breakwaters.

A light is shown from a prominent tower, with a dwelling, 62m high, standing on the S side of the entrance. A prominent water tower stands 0.4 mile SE of the light. A conspicuous control tower, with a water tower close NE, stands at an air base, close N of the entrance.

Aveiro Light

The lighted range has been deactivated.

Pilotage.—Pilotage is compulsory for vessels within the navigable waters of the Rio de Aviero and within an area, with a radius of 2 miles, centered on Aviero Light. Vessels should send an ETA at least 2 hours in advance. Pilots can be contacted on VHF channel 14 and generally board about 1.5 miles W of the entrance.

Regulations.—Roca Control monitors the approach and departure of vessels for Aviero. Contact Roca Control on VHF channel 77. For further information, see paragraph 5.1

Vessels entering or navigating within the port area should maintain a continuous listening watch on VHF channel 13.

Anchorages.—Good temporary anchorage can be taken, in depths of 12 to 20m, sand, about 1.5 miles NW of the head of the N breakwater. The N part of the anchorage is an explosives anchorage area.

Caution.—Fresh E and SE winds raise a heavy sea in the approaches. With strong winds from between SW and NW, the entrance should not be attempted.

The entrance bar is constantly shoaling and shifting and local knowledge is required.

Aveiro to Cabo Carvoeira

5.45 The coast between Aveiro and Cabo Mondego, 29 miles S, consists of a sandy beach and sparsely inhabited land. Farther inland, the terrain becomes mountainous.

Pico do Caramulo, 1,069m high and prominent, stands at the S end of Serra do Caramulo, 26 miles E of Aveiro. This peak can be seen on a clear day at a distances up to 20 miles. Pico do Bucaco, 547m high, stands 12.5 miles SW of Pico do Caramulo. Its lower slopes are thickly wooded on the N side and a village, which stands near the summit, is visible for a considerable distance seaward when the sun shines on it. Picos Cantaros, some of the highest peaks in Portugal, are part of the Serra da Estrela range and stand about 50 miles inland E of Pico de Bucaco. The highest of these peaks rises to a height of 1,993m and is visible from seaward on a clear day.

Cabo Mondego (40°11'N., 8°54'W.), rugged and fringed by several rocks, is the W extremity of the Serra de Buarcos range and should be given a berth of at least 1 mile. This range rises to a height of 251m, about 1.5 miles NNE of the cape, and several buildings stand on the summit. When viewed from a distance from the N or S, this cape appears as an island and should not be mistaken for Ilha Berlenga, located to the S. The sandy beach, which extends several miles N and S of the cape, serve to identify it.

A light is shown from a tower with a dwelling, 15m high, standing on the cape.

Enseada de Buarcos, the roadstead for Porto de Figueira da Foz, lies between Cabo Mondego and Forte de Santa Catarina, 2.7 miles SE. The village of Buarcos is situated 1.8 miles SE of the cape and is fringed by drying reefs. During offshore winds, anchorage can be taken, in depths of 8 to 11m, off the village, taking care to avoid the fringing reefs. In good weather, vessels waiting to enter Porto da Figueira da Foz can anchor, in a depth of 14m, fine sand, W of Forte de Santa Catarina.

5.46 Porto da Figueira da Foz (40°09'N., 8°52'W.) (World Port Index No. 37980), a small commercial port, lies at the mouth of the Rio Mondego. This river is navigable by small craft as far as Foz do Dao, 53 miles above the entrance. The port is also a fishing center and has several shipyards for small vessels.

Port of Figueira de Foz Home Page

http://www.imarpor.pt

Tides—Currents.—Tides rise 3.4m at springs and 2.6m at neaps.

Depths—Limitations.—The entrance fairway inside the bar is 100m wide and has a dredged depth of 7m. Extensive facilities for fishing vessels and a marina are situated close inside the entrance. The commercial quay has 462m of berthing space, with a depth of alongside 4.5m.

Generally, vessels up to 90m in length and 4.3m draft can be accommodated in the port. Vessels up to 100m in length with a bow thruster can be handled.

Aspect.—Breakwaters extend from both entrance points of the river and provide protection. An entrance channel, lined by training walls, leads between them into the harbor. It is indicated by a lighted range. A sand bar, which extends up to 0.5 mile W of the breakwaters, limits the size of vessel using the harbor. A conspicuous suspension bridge spans the river, 1.5 miles above the entrance. Forte de Santa Catarina stands on the rocky point which forms the N side of the entrance. A conspicuous high-rise building stands at the S side of the village of Buarcos, 1 mile N of the entrance.

Pilotage.—Pilotage is compulsory within the port area and within an area, with a radius of 2 miles, centered on Molhe Light. Pilotage is normally available only during daylight hours but can be obtained until 2400 dependent on the weather.

Vessels should sent an ETA at least 24 hours in advance and confirm the ETA 12 hours prior to arrival.

Pilots can be contacted on VHF channel 14 or 16 and usually board about 1 mile from the breakwater heads. Small craft must not impede the movement of larger vessels when boarding a pilot or entering the river.

Regulations.—Roca Control monitors the approach and departure of vessels for Porto da Figueira da Foz. Contact Roca Control on VHF channel 77.

Signals.—Bar signals are shown from a mast at the NE corner of Cachim Dock, as follows:

	Bar Closed	Bar Dangerous
By day	Black sphere at the top of the mast	Black sphere at the middle of the mast
By night	Three fixed lights—green, red, green—disposed vertically	Three flashing lights—green, red, green—disposed vertically

Anchorage.—Anchorage can be taken, in depths of 12 to 15m, about 1.2 miles W of the N breakwater head. For further information, see Enseada de Buarcos in paragraph 5.45.

Caution.—The entrance bar is subject to heavy silting; entry should not be attempted without local knowledge.

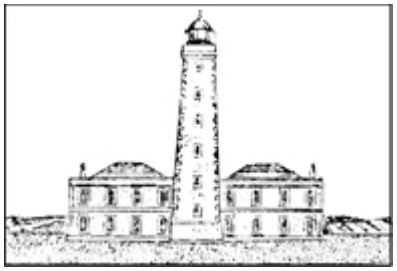
A sunken barge is reported to lie close off the W extremity of the S breakwater.

5.47 The coast between the Rio Mondego and Pontal da Nazare, 34 miles S, consists of a sandy beach, but rises to high terrain in the interior.

Between the Rio Mondego and the Rio Liz, 16.7 miles SSW, the coast is fronted by sand dunes backed by a pine forest. Several groups of fishermen's huts are situated along this section of coast and numerous windmills stand along the shore, about 4.5 miles S of the Rio Mondego. Several conspicuous chimneys are reported to stand 1.5 miles inland, about 5 miles S of the entrance to the Rio Mondego.

Between the Rio Liz and Penedo da Saudade, 7.5 miles SSW, the coast is backed by an extensive pine forest. The prominent chapel of San Pedro de Muel stands 0.5 mile S of Penedo da Saudade and the conspicuous hermitage of Senhora da Vitoria stands 3 miles farther S.

A light is shown from a prominent light tower and dwelling, 32m high, standing at Penedo da Saudade.



Penedo de Saudade Light

During good weather, vessels can anchor, in a depth of 15m, anywhere off this section of coast and about 1.5 miles offshore. Small vessels can anchor, in depths of 12 to 13m, off the mouth of the Rio Liz.

Caution.—Care should be taken to avoid the fishing nets which are often laid up to 2 miles off this section of coast and up to 1.5 miles NW of Pontal da Nazare.

A shoal depth of 15m, whose existence is doubtful, is reported to lie about 20 miles NW of Penedo da Saudade and a depth of 49m is reported to lie 2.5 miles NE of it.

A dangerous wreck, whose position is doubtful, is reported to lie about 8 miles WSW of Pontal da Nazare.

Several ODAS lighted buoys may be moored off this stretch of coast.

5.48 Pontal da Nazare (39°36'N., 9°05'W.), the N entrance point of Enseada da Nazare, is the W extremity of a rocky headland. An ancient fort, a church, and a cluster of buildings stand on its summit, 111m high. A light is shown from a tower, 8m high, standing on the SW corner of the wall surrounding the ancient fort.

Monte de San Bartolomeu, 156m high, stands 1.7 miles ESE of Pontal da Nazare and is prominent. It is conical in shape and is surmounted by a conspicuous hermitage.

Enseada da Nazare, a small bay, is entered between Pontal da Nazare and the Rio Alcoa, 1 mile SSE. Its great depths make it inconvenient as an anchorage, but small craft may anchor close offshore sheltered from NW winds.

Nazare, a small harbor, is situated on the S side of the bay and is protected by breakwaters. It has depths up to 5.5m and is used by fishing vessels up to 15m long.

Caution.—The section of coast between Pontal de Nazaire and Baie de Cascais, about 55 miles S, is subject to intense fog from early morning until noon, especially in summer.

5.49 Ponta do Facho (39°31'N., 9°09'W.) is located 5 miles SSW of Nazare. The coast between is low and is mostly backed by sand dunes. The point rises to a detached conical hill, 96m high, which is surmounted by a prominent pyramid.

Sao Martinho do Porto, a circular lagoon, is entered between Ponta de Santo Antonio, located 0.5 mile S of Ponta do Facho, and Ponta Santana, 200m SW. A light is shown from the S side of Ponta de Santo Antonio. This lagoon is of little importance to navigation as it is shallow and can only be entered by small craft and fishing boats with local knowledge. Vessels can anchor, in a depth of 20m, sand, about 1 mile off the entrance.

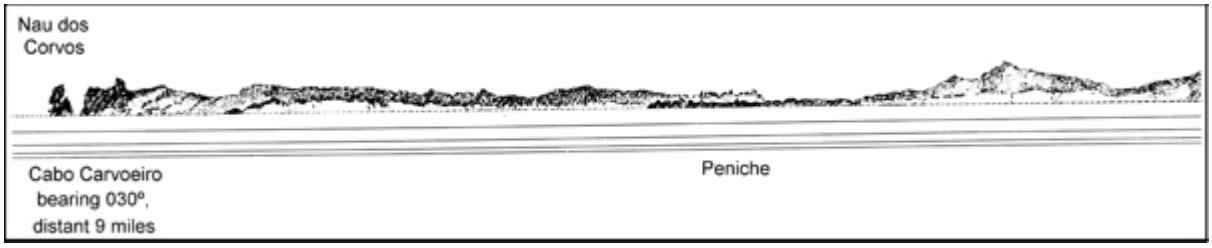
The coast between the lagoon and the prominent village of Foz do Arelho, 6 miles SW, is high and rugged. It rises steeply to Serra do Bouro, a flat-topped ridge, which extends 5 miles SW.

Serra dos Candeerios, a prominent mountain range with seven peaks, lies parallel to the coast, 11 miles inland. Vale Grande, 611m high, stands 13 miles ENE of the entrance to Sao Martinho do Porto and is the highest of these peaks.

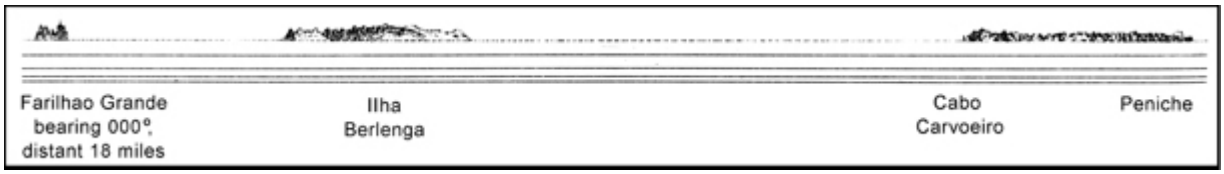
Lagoa de Obidos, a lagoon, lies close SW of Foz do Arelho. It is entered through a narrow outlet which frequently silts up during the summer months.

Ilheu de Fora, located 6 miles SW of the lagoon, is the outermost of a chain of rocky islets which extend 0.8 mile N from the shore.

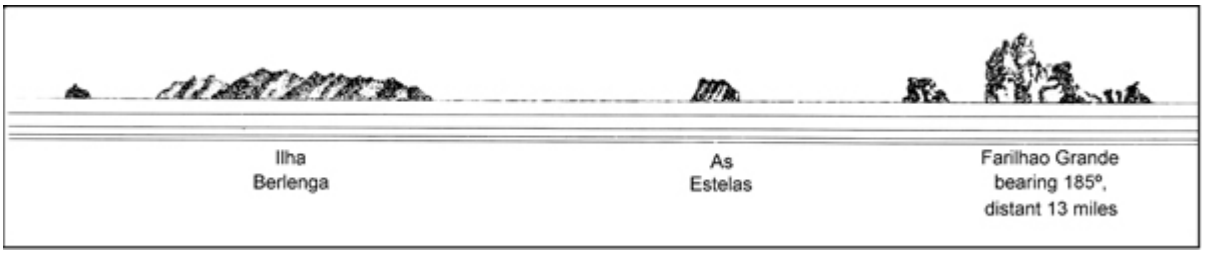
5.50 Cabo Carvoeiro (39°21'N., 9°24'W.), the W extremi-



Peninsula de Peniche from SSW



Os Farilhoes, Ilha Berlenga, and Peninsula de Peniche from S



Ilha Berlenga and Os Farilhoes from N

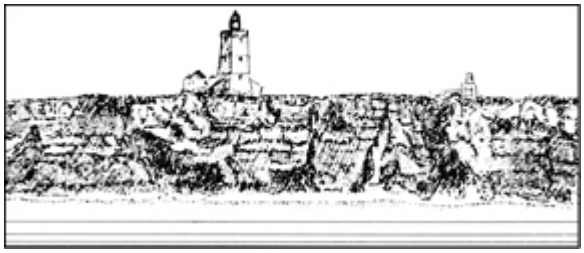
ty of Peninsula de Peniche, is located 3.5 miles WSW of Ilheu de Fora. The peninsula consists of a steep and rocky headland which is joined to the coast by a low and sandy isthmus. When viewed from the N or S, it appears as an island.

A light is shown from a prominent tower, with a dwelling, 27m high, standing on the cape.

Ponta da Papoa, the N extremity of the peninsula, has a conspicuous islet lying close NE of it and a small cove lying W of it. A line of prominent fortifications extends along the E face of the peninsula. Peniche de Cima, the upper town, and Peniche de Baixo, the lower town with the citadel near it, are situated within these fortifications.

Rocky shoals, with depths of 19.9m and 18m, has been reported to lie 3.8 miles W and 1.2 miles N, respectively, of Cabo Carvoeiro.

Enseada de Peniche de Cima, a small bay, lies on the N side of Peninsula de Peniche and is entered between Ponta da Papoa and Ilheu de Fora. Anchorage can be taken, in a depth of 12m, sand and very hard clay, in the central part of this bay. The holding ground is poor and the anchorage is exposed to N and NW winds. A conspicuous hotel is reported to stand near the head of the bay. Anchorage can also be taken, in depths of 11 to 13m, rocky bottom, on the S side of the peninsula, about 0.3 mile offshore. Porto de Peniche, a small harbor, lies at the head of a small bay on the S side of the peninsula and is protected by breakwaters. It has depths of 2 to 3m and is used by fishing vessels and pleasure craft.

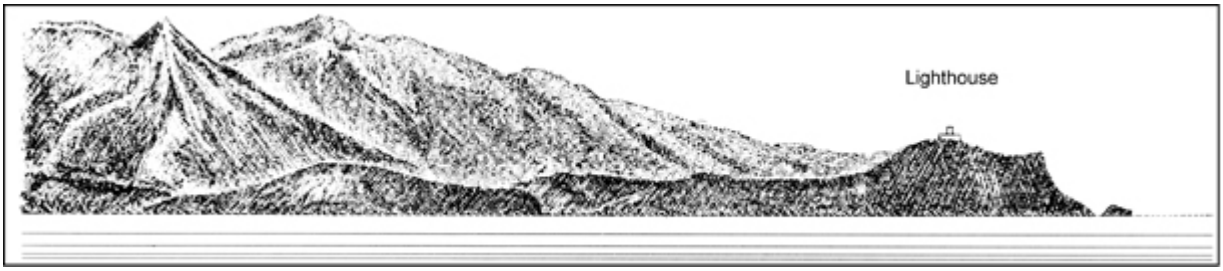


Cabo Carvoeiro Light

5.51 Os Farilhoes (39°29'N., 9°32'W.) consists of a group of steep and rocky islets fringed by shoals. Farilhao Grande, the largest islet, is 96m high and lies 9.5 miles NW of Cabo Carvoeiro. A light is shown from a tower, 6m high, standing on

this islet. Fishing vessels are reported to obtain shelter from winds between the W and NE within the small channels lying between the islets.

A depth of 22m was reported (1972) to lie 1.7 miles WSW of Farilhao Grande. Serro do Nordeste, a shoal bank with a least depth of 13.8m, lies 0.8 mile ENE of Farilhao Grande. The sea breaks heavily at times on this bank and also between it and the islets.



Cabo da Roca from N, distant 10 miles

Ilha Berlenga (39°25'N., 9°30'W.), 92m high, lies 5.5 miles WNW of Cabo Carvoeiro and is fringed by rocks. The island has a flat summit and its sides are steep and greatly indented. It is almost divided into two parts by two narrow inlets which are located on opposite sides of the island and separated by a small isthmus. The SW and largest part of the island is known as Ilha Berlenga; the NE part of the island is known as Ilha Velha.

Carreiro dos Cacoes, the inlet on the N side of the island, is bordered by almost vertical cliffs with a beach at its head. It has depths of 9m in the entrance and 5.5m closer inshore. During W gales, the sea breaks violently against the beach. Carreiro do Mosteiro, the inlet on the S side of the island, has depths of 14m in the entrance and 4m closer inshore.

A light is shown from a prominent tower, with a dwelling, 29m high, standing on the summit of Ilha Berlenga. Forte de Sao Joao Batista, a small and prominent fort, stands on a rocky outcrop, 0.3 mile S of the light.

Ilha Berlenga Light

Las Estelas, a group of islets and rocks, and Serro da Velha, a high rock, lie 1 mile NW and close NE, respectively, of the island. Baixa das Altafanas, a rocky shoal, lies about 0.5 mile SW of Ilha Berlenga. It has a least depth of 14.2m and breaks in heavy weather.

During winds from between the SW and NNW, anchorage can be taken, in about 20m, sandy bottom, off the SE side of Ilha Berlenga.

The channel between Os Farilhoes and Las Estelas is deep and clear, but a strong current sets from the former to the latter and great caution is necessary when navigating through it. The channel between Ilha Berlenga and Cabo Carvoeiro is deep and clear; it can be navigated at any time during clear weather. When navigating off this part of the coast in thick weather, vessels should use caution in order to avoid running onto these islets. They lie well offshore and the depths in their vicinity are great and irregular and give no warning of a near approach.

Regulations.—An IMO-adopted Traffic Separation Scheme is situated up to 20 miles W of Ilha Berlenga and can best be seen on the chart.

Cabo Carvoeiro to the Rio Tejo

5.52 The coast between Cabo Carvoeiro and Cabo da Roca, 35 miles S, consists of sandy beaches for the first few miles, but then it becomes higher with steep, rocky cliffs.

Praia da Areia Branca, a stretch of beach, fringes the coast between 5.5 and 7.8 miles SSE of Cabo Carvoeiro. Porto Dinheiro and Porto Novo, boat landing places, are situated 1.7 and 3.8 miles S, respectively, of its S end. The Rio Alcabrichelle flows into the sea at Porto Novo and a prominent hill, 108m high, stands 0.8 mile SE of its mouth. A conspicuous hotel stands on the N side of the river entrance.

The prominent village of Moinho de Pavoa stands on a hill, 2.3 miles S of Porto Novo; a conspicuous convent is situated close E of it. A prominent yellow building, in the shape of a turret, stands on the beach, 3 miles S of Porto Novo.

Ponta da Lamparoeira (39°04'N., 9°25'W.), a prominent point, is located between two beaches, 17 miles SSW of Cabo Carvoeiro. A stranded wreck lies close off this point. Two conspicuous high-rise buildings are reported to stand near Santa Cruz, 3.8 miles NNE of the point. A prominent hill, surmounted by a pyramid, is situated 1 mile S of Santa Cruz.

A submerged well has been reported to lie about 8.5 miles W of Ponta Lamparoeira.

Inland, a mountain range backs the coast. Monte Junto, 666m high, stands at the NE end of this range, 14 miles E of Porto Novo, and is very conspicuous. The range is visible for a considerable distance on a clear day and is easily distinguished because of its rounded outline and dark color.

The coast between Ponta da Lamparoeira and Ponta da Ericeira, 6.8 miles S, consists of cliffs fringed by a narrow beach. Portinho das Barcas, a landing place, lies 1 mile S of Ponta da Lamparoeira and the village of Barril stands on the S slope of a hill, 1 mile E of it. A conspicuous water tower stands 1.3 miles SE of Portinho das Barcas.

Ponta da Ericeira (38°58'N., 9°25'W.), steep and salient, is marked by a fort and a small town surmounting the cliffs which form the point. The town is fronted by a shallow harbor, protected by a breakwater, which is used by fishing boats.

The coast between Ericeira and Cabo da Roca, 11.5 miles SSW, is composed of cliffs intersected by ravines. Forte de Santa Maria stands on a cliff, 6 miles S of Ponta da Ericeira and a prominent watch tower stands on a hill, 0.5 mile SSE of it.

Mafra Palace (38°56'N., 9°20'W.), a conspicuous white marble building, stands on a hill 4.5 miles ESE of Ericeira. This structure, which is 235m long across its face, consists of the palace, a church, and a convent. It is easily identified because no other building like it stands on the Portuguese coast.

5.53 Cabo da Roca (38°47'N., 9°29'W.) is the W point of Portugal and the continent of Europe. It consists of steep and rocky cliffs, 168m high, fringed by above-water rocks. A light is shown from a prominent tower with a dwelling, 22m high, standing on the cape. A prominent pillar, surmounted by a white cross, stands on a cliff, close SW of the light.

Pedra d'Arca (Broeiro), with a depth of 0.9m, lies at the extremity of foul ground, 0.5 mile W of the cape.

During N and NW winds, a current generally sets S past the cape and attains a rate up to 1 knot.

A prominent rocky range, with a serrated crest and numerous peaks, extends ENE for 5 miles from a position close E of Cabo da Roca. Pena, one of the most prominent peaks, stands near the E end of the range and has a palace, from which a light is exhibited, situated on its summit. Cruz Alta, the highest peak of the range, stands 0.5 mile S of Pena. Monje, 489m high, stands 2.5 miles WSW of Pena and has a beacon on its summit. Numerous villages, which are situated on the N slopes of this range, can be seen from seaward.

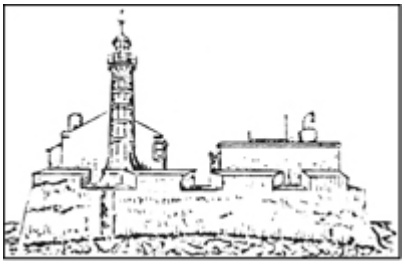
Regulations.—An IMO-adopted Traffic Separation Scheme, the limits of which are shown on the chart, lies up to 21 miles W of Cabo da Roca. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

A voluntary Vessel Traffic Service is in operation off the Portuguese coast extending up to approximately 50 miles offshore. Monitoring is maintained by Roca Control on VHF channels 69 and 70 (primary) or VHF channel 77 (secondary). For further information, see paragraph 5.1

5.54 Cabo Raso (38°43'N., 9°29'W.), low and rocky, is located 4.5 miles S of Cabo da Roca and fringed by rocks. Forte de Sao Braz is situated on the cape. A light is shown from a prominent tower, 13m high, standing on the fort. Praia do Guinncho, a bright expanse of sand rising higher than usual, lies 1.5 miles N of the cape and is prominent from seaward.

Vessels should give this cape a berth of at least 0.5 mile in order to clear the breaking reefs which border it.

Caution.—Local magnetic anomalies have been observed in a position about 4 miles SE of Cabo Raso.



Cabo Raso Light

Submarines, both surfaced and submerged, are reported to exercise off the coast between Cabo Carvoeiro and Cabo Espichel.

Numerous fishing vessels may be encountered in the vicinity of Cabo Carvoeiro.

Approaches to the Rio Tejo (River Tagus)

5.55 The **Rio Tejo** (River Tagus) (38°40'N., 9°18'W.) is approached between Cabo Raso and Cabo Espichel, 21.5 miles SE. It is entered between Ponta da Laje, on the NW side, and Bico da Calha, on the SE side. The city of Lisboa stands on the N bank of the river 7 miles E of the entrance.

The Rio Tejo has its origin in Sierra de Molino, near Alberracin in the Spanish province of Teruel. It flows in general W and SW directions and discharges above Lisboa into Mar da Palha, a large expanse of water, 12 miles long and from 2 to 7 miles wide. It then flows through a channel, 1 mile wide, and finally discharges into the sea. The river is about 480 miles long and is considered to be the longest river on the Iberian Peninsula. It is navigable by vessels of any class to a position above Lisboa, and by vessels of 50 grt to its junction with the Rio Zezere, about 65 miles above its entrance.

5.56 North side.—Between Cabo Raso and Ponta da Alpendurada, 2 miles ESE, the coast remains cliffy. The old signal tower situated near Oitavos, 1 mile ESE of Cabo Raso, is conspicuous to vessels rounding this cape. Guia Light is shown from a prominent tower, 28m high, standing on Ponta da Alpendurada.

Guia Light

Forte de Santa Marta stands on Ponta do Salmodo, 1.2 miles ESE of Guia Light. A light is shown from a tower, 20m high, standing on the fort.

Forte de Santa Marta Light

Baia de Cascais (38°41'N., 9°24'W.) is entered between Ponta do Salmodo and Forte Santo Antonio da Barra, 1.8 miles ENE. Cidadela de Cascais, a walled citadel, stands on the W side of the bay with the town of Cascais close N of it.

The town of Estoril, with its many high-rise buildings, lines the N shore. Navigation is prohibited within 100m of the breakwater due to a submerged breakwater that extends 60m to the S.

Forte de Sao Juliao Light

Ponta da Laje (38°40'N., 9°19'W.), the NW entrance point of the river, is located 4.5 miles ESE of Ponta do Salmodo. This point is high and rocky; Forte de Sao Juliao is situated on the cliffs above it. A light is shown from a prominent tower, 24m high, standing on the fort and a radio mast stands 0.3 mile NNE of it.

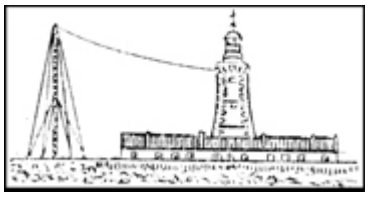
A conspicuous church stands at an elevation of 79m, 2 miles NNW of Ponta da Laje. A prominent sanitarium is situated close to the shore, 1.2 miles WNW of the same point.

Caution.—An anchorage prohibited area, the limits of which may best be seen on the chart, extends up to 2 miles offshore between Cabo Raso and Guia Light. Submarine pipelines extend up to 1.5 miles offshore in this vicinity.

Fishing nets are laid from March to November within 0.5 mile of the shore at several places along the coast in the approaches to the river.

An Acoustic Doppler Current Profiler (ADCP) vessel is anchored in position 38°40.8'N, 9°25.7'W. Mariners are advised to remain clear.

5.57 South side.—Cabo Espichel (38°25'N., 9°13'W.), 150m high, is the W extremity of a steep, bold headland. The cape has a flat, white summit and its S side is reddish in color. A light is shown from a prominent tower, 32m high, standing 0.3 E of the cape.



Cabo Espichel Light

A prominent convent stands on the summit of the headland and a conspicuous dome stands at an elevation of 112m, 8.5 miles NNE of the cape.

Baixa do Cabo, a detached rocky patch with a least depth of 6.9m, lies about 0.5 mile WNW of Cabo Espichel.

Between Cabo Espichel and Bico da Calha, 15.5 miles N, the coast is steep and rocky for about 3 miles, but then becomes low and sandy. A prominent stone survey marker stands on the coast, 2 miles N of Cabo Espichel Light. Costa de Caparica, a town with numerous high-rise buildings, is situated on the coast, 2.5 miles S of Bico da Calha. Chibata, a 112m high hill, stands 0.8 mile E of the town. An aeronautical radiobeacon is situated in the vicinity of this hill.

Bico da Calha (Ponta da Calha) (38°40'N., 9°15'W.), the SE entrance point of the river, is low and sandy. The land rises in ton escarpment, 80m high, about 1.5 miles E of the point.

Forte Bugio, a circular two-story building, stands on the SE side of the entrance, 1.7 miles W of Bico da Calha. A light is shown from a tower, 14m high, standing at the center of the fort.

Caution.—The entrance to the river is obstructed by two extensive shoal banks, known as Cachopo Norte and Cachopo Sul. The former shoal bank extends up to 3.5 miles SW from Ponta da Laje and the latter shoal bank extends up to 3 miles SW from Bico da Calha. The outer ends of these shoal banks are joined by a bar, about 2 miles wide, which has a least depth of 11m.

Lisboa (Lisbon) (38°42'N., 9°10'W.)

World Port Index No. 37990

5.58 Lisboa, the capital and principal port of Portugal, is situated on the N bank of the Rio Tejo, 7 miles E of the enrance. The city, which rises from the N bank of the river, is a dense mass of buildings occupying the S slope of a succession of hills.

Porto de Lisboa Home Page

http://www.portodelisboa.pt

Forte Bugio

Winds—Weather

Fog is frequent in calm periods between October and February, forming in the early morning and generally dissipating during the afternoon.

Tides—Currents

Tides rise about 3.8m at springs and 3m at neaps.

In the middle of Barra Grande, the principal entrance channel, the tidal currents set directly along its axis. However, away from the middle of the channel, they set towards the shoal banks on either side.

During ordinary weather, the maximum rate of the flood current on the bar is 3 knots and the maximum rate of the ebb current is 4 knots. After heavy rains, the rate of the ebb current may increase up to 5 knots. The effect of the ebb current is generally felt 2 to 3 miles seaward of the bar but during freshets, its influence is experienced much farther out.

When a strong ebb current is opposed by a gale from seaward, the sea breaks completely across the bar, so that these breakers cannot be distinguished from those on the shoal banks on either side.

Within the estuary, the flood current runs regularly and generally sets parallel to the shores. The ebb current is more rapid and at its commencement, the waters from Mar da Palha set N and follow the N bank, where eddies are formed. An eddy also sets in along the N bank during the last of the ebb. Tide rips often form E of Pontal de Cacilhas.

Off the city of Lisboa, the ebb current is very strong and, during freshets, may attain a rate of 6 to 7 knots. When these conditions prevail, the current is usually less strong on the S side of the river.

Depths—Limitations

The bar is never impassable even with SW gales, but at such times, heavy rollers break with great force across this channel. During W gales in the winter, or when the freshets are strong, such conditions may continue for several days.

Barra Grande (Barra Sul), the principal entrance channel, leads NE over the bar and between the shoal banks which extend from the entrance points of the river. It had a least reported depth of 11.9m on the alignment of the range line (1994), but lesser depths lie close adjacent. Within the bar, the depths increase rapidly to 18 to 22m.

Vessels with drafts of 11 to 13.7m may enter the port depending upon the sea state and the tide.

Barra Norte, a narrow channel, lies between Ponta da Laje and the N end of Cachopo Norte. It is used by small craft entering the river from the NW. This channel has a least charted depth of 5.2m on the alignment of the range line (1990). Strong winds from S through SW to W cause a strong swell in the channel, especially during the ebb current, and using the channel at this time is not recommended. In reduced visibility, vessels with an loa greater than 12.2m and which are not radar-equipped are not allowed to use the channel.

There are about 7 miles of berthing space available alongside the numerous quays and basins which line the shore fronting the city of Lisboa. There is about 13,000m of total quayage, with depths of 4 to 13m, situated on the N bank of the river, and 3,000m of total quayage, with depths of 3 to 17m, situated

Trafaria (NATO) Fuel Pier

on the S bank of the river. There are facilities for general cargo, ro-ro, container, tanker, LPG, and bulk vessels.

Doca de Pedrouc, entered close W of Torre de Belem, has 1,000m of total berthing space, with depths of 4 to 5.3m alongside, and is used by fishing vessels.

Cais de Alcantara, a container and general cargo terminal, is situated close E of the bridge on the N side of the river. It is 1,100m long and has depths of 10 to 13m alongside.

Doca de Alcantara, the principal basin of the port, is entered at the E end of Cais de Alcantara through a channel 35m wide; this channel is subject to heavy silting and its depths should be verified locally. It has 1,200m of total berthing space with depths of 6.5 to 8m alongside.

Cais da Rocha is situated at the E end of Cais de Alcantara. It is 450m long and has depths of 8 to 13m alongside.

Cais de Santos is situated on the N side of the entrance to Doca de Alcantara. It is 350m long and has a depth of 7m alongside.

Cais de Santa Apolonia, a container terminal, is situated 2.5 miles upstream of Doca de Alcantara. It is 870m long and has depths of 8 to 10m alongside.

Doca do Pocodo Bispa, situated 1 mile upstream of Cais de Santa Apolonia, is the site of a large grain terminal and has a depth of 7m alongside.

Canal de Cabo Ruivo leads up the W side of Mar da Palha to Ponte de Cabo Ruivo and Ponte da Matinha, where there are berths, with depths up to 11m alongside, which are used by tankers and LPG vessels up to 65,000 dwt.

Trafaria (NATO) Fuel Pier, situated close inside the river entrance on the S side of the river, consists of a T-head jetty with dolphins. It has a face, 100m long, with a depth of 9.8m alongside.

Trafaria Grain Terminal is situated close E of the fuel pier. Its main berth is 254m long with a depth of 17m alongside.

Palenca Bulk Terminal is situated at Tagol, close W of the bridge, and consists of two dolphin berths. The main berth has depths of 12 to 16m alongside and can handle vessels up to 90,000 dwt.

In addition, there are several tanker and LPG berths situated along the S side of the river with depths of 8.8 to 12m alongside.

Most of the other basins situated along the river are available only to yachts, small craft, and coastal vessels and, in many cases, they have depths much less than those found alongside the quays. The S shore of the river is subject to silting and the depths at the above mentioned berths may vary considerably.

The Lisnave Shipyard is situated at the E end of the port, on the S side of the river. It has several drydocks, the largest being 520m long and 90m wide with a depth of 12.3m. Vessels up to 1,000,000 dwt can be handled.

A tank cleaning and gas freeing facility, which is operated by the shipyard, has been constructed at Porto Brandao, 1.5 miles W of the bridge. The dolphin berth has a depth of 12m alongside and can accommodate tankers up to 600,000 dwt.

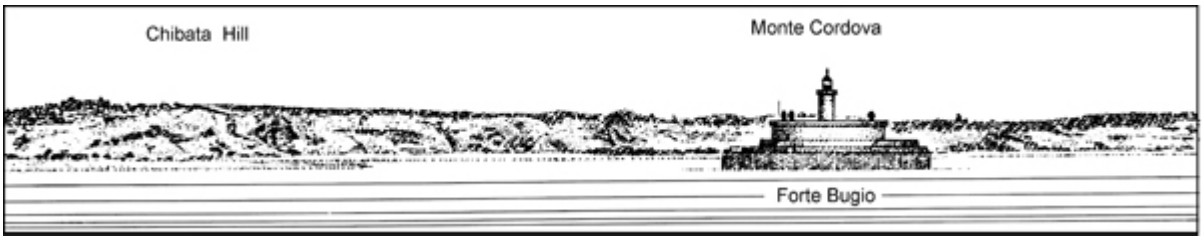
A naval base close S of the shipyard is fronted by a basin which is entered through a channel dredged to a depth of 7.5m.

It was reported that the largest vessel to be accommodated in the port was 555,051 dwt and 414m in length, with a draft of 12.5m.

Aspect

The entrance fairways are indicated by lighted ranges which may best be seen on the chart. The lighted ranges are continuously floodlit by red lights in order to render the range lights distinguishable from the lights of the city. The positions of the

Ponte 25 de Abril



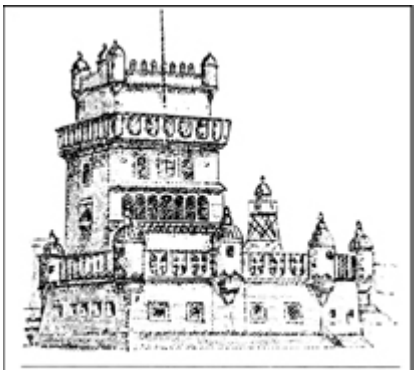
Forte Bugio in range with Monte Cordova bearing 115°

front light towers are indicated by red and yellow stripes painted on the river wall.

An outer lighted buoy marks the seaward approach to Barra Grande and is moored 5.2 miles SW of Forte de Sao Juliao.

On entering the river, the conspicuous Ponte 25 de Abril, a road suspension bridge, will be seen. This bridge crosses the river 7 miles E of Forte de Sao Juliao and is supported by two main pillars, each 190m high. It has a vertical clearance of 70m under the span between the pillars.

Within the river, conspicuous objects include a railway viaduct, which spans the mouth of the Rio da Laje, 0.7 mile NE of Ponta da Lage; five radio station towers, 114m high, standing 1 mile ENE of Esteiro Light; Torre de Belem, a two-story tower with a battery, 26m high, standing 2.5 miles E of Gibalta Light; a yellow stone monument standing near the shore, 0.5 mile ENE of Torre de Belem; Estrela, a church with two towers and a very conspicuous dome, standing 3 miles ENE of Torre de Belem; Castelo de Sao Jorge, situated on a hill, 1.2 miles E of Estrela; the observatory, a white building, standing N of Castelo de Sao Jorge; a number of large silos standing close S of the grain berth at Trafaria; the Statue of Christ, 108m high, standing at an elevation of 222m, close E of the S end of the Ponte 25 de Abril bridge; and the tower of a church standing on a hill, 100m high, 0.5 mile ENE of the statue.



Torre de Belem

Ponte Vasco de Gama, completed in 1998, spans the Rio Tejo above Lisboa, between Olivais on the N bank and Samouco on the S bank.

Ponte Vasco de Gama from N

Pilotage

Pilotage is compulsory inward of Baia de Cascais for the following vessels:

1. Vessels over 25,000 grt.
2. Vessels over 10.5m draft.
3. Towing vessels.
4. LPG vessels.
5. Vessels with any malfunction affecting the engines, steering, or stability.
6. Vessels specified by the port authority.
7. During bad visibility of 1 mile or less.

Pilotage is compulsory for other vessels inward of Torre de Belem (38°42'N., 9°13'W.), but may be arranged from Baia de Cascais.

Vessels should send an ETA message at least 2 hours in advance. Pilots can be contacted on VHF channel 14. The Bar Pilot boards at position 38°40.8'N, 9°24.3'W (exact position subject to agreement with the pilots). The Harbor Pilot boards at position 38°41.1'N, 9°12.9'W (about 0.3 mile S of Torre de Belem). Vessels may contact the pilot station for information concerning traffic movements.

Regulations

A Unit to Identify and Observe Traffic in the Port of Lisbon (UIOTPL) has been formed to identify and observe all maritime traffic, with the exception of naval vessels, in the port between Entres-Torres and Ponte Vasco de Gama. The UIOTPL is in operation 24 hours. It is applicable to all vessels, whether under pilotage or not, and must be contacted by a vessel prior to entering, mooring, anchoring, departing, or moving internally within the observation area. The UIOTPL can be contacted via Lisbon Port Control on VHF channels 61 and 64.

Vessels should not exceed a speed of 10 knots when E of Torre de Belem and, when not under the control of a pilot and within 300m of any shore, they should not exceed a speed of 5 knots.

All vessels must not exceed a speed of 5 knots when in the vicinity of Lisnave Shipyard.

Vessels entering the port through Barra Norte must give way to vessels leaving through Barra Grande and must stay NW of the alignment of Caxias Beacon and Mama Beacon, until it is clear to proceed upriver.

Vessels leaving by Barra Grande should adhere carefully to the alignment of the Gibalta range and the Esteiro range and must not get NW of the beacon alignment.

The area in the vicinity of the junction of the entrance fairways has been designated a Precautionary Area.

Vessel Traffic Service

A Vessel Traffic Service (VTS) Center operates to control navigation within the port limits and provides information and advice to vessels navigating within the Tagus River estuary and its seaward approaches up to a line joining Cabo Espichel Light and Cabo Raso Light. Participation is mandatory for all vessels equipped with VHF radio, except for local fishing vessels, local harbor traffic, and leisure craft of less than 20m loa. Lisboa Port Control can be contacted on VHF channels 12, 13, 16, and 74.

Vessels should report to Lisboa Port control 2 hours before arrival, stating the IMO Standard Ship Reporting items: A, C, G, P, and Q.

Vessels should submit additional reports, as follows:

1. When entering the VTS area (16.5 miles radius from the VTS Center).
2. When crossing the line joining Cabo Espichel Light and Cabo Raso Light.
3. When crossing the line joining S Juliao Light and Bugio Light.
4. When first line is ashore.
5. When unmoored (underway).
6. When anchoring or weighing anchor.

Vessels must send a departure report 15 minutes prior to departure from any berth or anchorage ststing IMO SRS items: I and P.

Signals

Weather information is broadcast by Lisboa Port Control on VHF channel 74. Local weather, forecasts, tidal heights, local harbor conditions, and information on aids to navigation are available on request.

Anchorage

There are designated anchorage areas for merchant vessels in Baia de Cascais.

Merchant vessels with drafts up to 5m should anchor in an area centered 1 mile E of Ponta do Salmodo. Larger vessels, with drafts of more than 5m, should anchor in an area centered 1.5 miles S of the same point. The limits of both areas can best be seen on the chart.

Anchorage in the port is divided into two main designated zones, W and E, which are situated W and E, respectively, of the prohibited anchorage area lying SE of Torre de Belem.

The W zone is subdivided into three areas (W1, W2 North, and W2 South) while the E zone is subdivided into seven areas (E1 through E7); the limits are all best seen on the chart. The bottom is mud and sand with good holding ground, but the tidal currents are strong.

In addition, three anchorage berths designated 3.1, 3.2, and 3.3 are situated, in a depth of 33m, SSW of Torre de Belem and are designated for deep-draft vessels.

A strong ebb current and a W wind may cause vessels to range considerably with the possibility of dragging. Large vessels are usually not subject to drag if anchored near the S shore.

Caution

Several prohibited anchorage areas, the limits of which may be seen on the chart, are situated within the port.

Several ferries cross the river at points indicated on the chart.

A vessel passing through Barra Norte and entering the main current running though Barra Grande may have its bow deflected as much as 45° off course unless compensated for by immediate rudder action. When inbound, this is not important because the narrows would have already been cleared, but when outbound, unless prompt and positive action is taken, a vessel could run into danger.

Numerous fishing vessels may be encountered in the approaches of the port. At night, in good weather, fishing boats anchor seaward of the bar and show lights only on the near approach of another vessel, so that numerous lights may suddenly be seen in this vicinity.

Several outfall pipelines extend into the river and may be seen on the chart.

Several wrecks lie in the channel in the vicinity of the E and W approaches to the bridge and may best be seen on the chart.

A shoal, with a least depth of 8.5m, lies on the S side of the channel, about 1.2 miles upstream of the bridge.

Several submarine cables lie within the vicinity of the port and may best be seen on the chart.

Strong E winds raise the heaviest seas within the port.

Submarines frequently exercise in the vicinity of the approaches to the port.

Lisboa to Porto de Setubal

5.59 The bight of the coast lying between Cabo Espichel and Cabo de Sines, 31 miles SE, is backed on its N side by **Serra da Arribida** (38°30'N., 9°00'W.), a high mountain range. This range extends ENE and Formosinho, its highest peak, rises to a height of 502m about 11 miles ENE of Cabo Espichel. Monte Cordova is the principal summit of Serra de Sao Luis, a NE extension of Serra da Arribida. Its rounded summit rises to a height of 394m, 4.5 miles NE of Formosinho. Monte Palmela, 269m high, stands 2.8 miles NE of Monte Cordova. A prominent town and a castle are situated on its summit.

Enseada de Sesimbra (38°26'N., 9°06'W.), a small bay, lies 5.5 miles ENE of Cabo Espichel. A resort town stands at the head of the bay and is fronted by a harbor which is protected by a breakwater. A conspicuous castle stands on a hill above the town, and a prominent radio mast stands 0.6 mile NE of it. The harbor has depths of 2 to 5m and is used by fishing vessels and pleasure craft. Anchorage can be taken, in depths of 14 to 17m, off the harbor.

Caution.—Several submarine cables, which may best be seen on the chart, extend seaward from a point lying on the NE side of Enseada de Sesimbra.

Care should be taken to avoid the fishing nets and traps laid off this section of coast.

A measured distance (1 mile) lies off the coast in the vicinity of Enseada de Sesimbra. It is indicated by several beacons and may best be seen on the chart.

Porto de Setubal (38°31'N., 8°53'W.)

World Port Index No. 38000

5.60 Porto de Setubal, an important commercial port and fishing center, is situated on the N bank of the Rio Sado, close within the entrance. The Rio Sado, which flows into the lagoon forming Porto Setubal, has its origin in the hills of Sao Martinho, 70 miles inland. It is navigable by small craft as far as Alcacer do Sals, 27 miles above the bar.

Port of Setubal Home Page

http://www.portodesetubal.pt

Tides—Currents.—Tides rise 3.4m at springs and 2.7m at neaps.

The tidal currents mostly follow the direction of the channels and the ebb current may attain a rate of 3 knots at springs.

Depths—Limitations.—The entrance channel has a least charted depth on the bar of 8.9m, although it has been reported (1995) that the channel has been dredged to 12m.

The main facilities include the following:

1. Cais Novo da Secil, a cement factory quay, is 105m long, with a depth of 9.6m alongside.
2. Cais das Fontainhas, a general cargo and container quay with a ro-ro ramp, is 525m long and has depths of 8.6 to 9.6m alongside.
3. Cais das Pirites Alentejanas, a power station quay, is 125m long, with a depth of 8m alongside.
4. Cais da Sapec, a fertilizer factory quay, is 112m long, with a depth of 8.3m alongside.
5. Cais da Socel, a paper and pulp quay, is 60m long, with a depth of 4m alongside.
6. Cais da Boliden, a gas-freeing berth, is 260m long, with a depth of 8.5m alongside.
7. Cais da Eurominas, an ore quay, is 154m long, with a depth of 8m alongside.
8. Cais Navais de Troiaf fronts a naval installation which is situated on the S side of the river, 2 miles SE of Ponta Adoxe. This quay is 230m long and has a depth of 12m alongside.
9. The Lisnave Shipyard complex, formerly the Setenave Shipyard complex, is situated close W of Cais da Eurominas and includes a drydock, 450m long and 75m wide. Vessels up to 700,000 dwt can be handled. It is reported (1994) that this building and repair complex is to be expanded.

In addition, there are a number of small basins situated along the N bank with depths of 2 to 4m. These are used by fishing vessels, coasters, car ferries, yachts, small craft, and hovercraft.

Generally, vessels are not limited by length or beam, but are limited by the bar to a draft of 9.6m.

Aspect.—The port is entered between Forte do Outao, 8.5 miles ENE of Sesimbra, and Ponta Adoxe, 1.3 miles E. A light is shown from a tower, 11m high, standing on Forte do Outao.

Ponta Adoxe is the NW extremity of Peninsula de Troia, a long and narrow sandy spit which separates the estuary of the Rio Sado from the ocean. Its seaward side is known as Costa da Gale. A number of conspicuous high-rise buildings stand on this spit.

The river entrance is fronted by a shifting sand bar. An entrance channel, 3 miles long, leads from the bar into the port and is bordered by extensive shoals. Inside these shoals, the river widens and the depths increase. A large part of the river is occupied by an extensive middle ground composed of mud and sand which dries in places. The commercial port is situated along the N bank of the river.

The entrance channel is indicated by a lighted range and the fairway is marked by beacons and lighted buoys. The outer lighted beacon, situated on the NW side of the entrance channel, is equipped with a racon.

Conspicuous landmarks include a church and a convent standing 0.4 mile inland, 2.8 miles WSW of Forte do Outao; the Secil cement factory standing on the NW side of the river, 0.3 mile N of Forte do Outao; a chimney standing 0.5 mile N of the factory; and several radio masts standing, at an elevation of 286m, 1.3 miles W of Forte do Outao.

Prominent landmarks include Forte de Albarquel, from which a light is shown, standing on a point, 1.6 miles NE of Forte do Outoa; Castelo Sao Felipe, standing on a reddish-colored hill, 0.5 NE of Forte de Albarquel; a water tank, standing 2.2 miles NE of Ponta Adoxe; two chimneys, standing at a power station, 3 miles ENE of Ponta Adoxe; and a fertilizer factory, standing 0.8 mile SE of the power station.

Pilotage.—Pilotage is compulsory within the navigable waters of the Rio Sado and within an area of radius 5 miles centered on Outao light.

Vessels should send an ETA at least 6 hours in advance and a confirmation 2 hours before arrival. Pilots can be contacted on VHF channels 14 and 16 and generally board about 1 mile seaward of the bar.

During bad weather from the SW, vessels will be provided with information on the state of the bar and any pilotage restrictions.

Regulations.—The maximum speed allowed when crossing the bar or navigating within the port is 10 knots.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) controls traffic within the port limits and provides information to vessels navigating in the Sado River estuary and its seaward approaches within a circle with a radius of 4 miles centered on Lighted Beacon No. 2. Participation is mandatory for the following vessels:

1. Vessels of more than 300 gross tons.
2. All vessels of 15m or greater loa.
3. All vessels carrying 12 or more passengers.

Contact Information.—Setubal Port Control can be contacted on VHF channels 12, 16, 18, and 73.

Anchorage.—An anchorage area, the limits of which are shown on the chart, lies E of Forte de Albarquel and is designated for commercial and military vessels.

Caution.—A submarine cable lies between Ponta Adoxe and Forte de Albarquel. Anchoring is prohibited in the vicinity of the cable.

At night, care should be taken not to confuse the front entrance range light with an advertising sign which stands close NW of the alignment.

A dangerous wreck lies in an approximate position about 5.5 miles ESE of the entrance bar.

The entrance bar is composed of fine sand and is subject to silting. The local authorities should be contacted for the latest information.

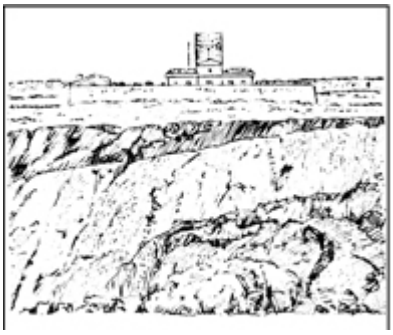
Porto de Setubal to Cabo de Sao Vincente

5.61 The coast between Ponta Adoxe and Cabo de Sines, 32 miles S, is generally low in the N part and fringed by a sandy beach with a few dunes. In the S part, within 14 miles of the cape and 6 miles inland, the land rises to Serra da Grandola, a range of hills standing parallel to the coast. The town and castle of Santiago de Cacem stand on the most prominent of these hills, 9.5 miles ENE of the cape. A light is shown from Pinheiro da Cruz, 16.5 miles S of Ponta Adoxe.

Caution.—Care should be taken to avoid the fishing nets which are laid off the shores as far as 15 miles S of the entrance to Setubal.

A submarine cable extends 1.3 miles seaward from a point on the shore, about 1.5 miles N of Cabo de Sines. Navigation is prohibited in its vicinity.

5.62 **Cabo de Sines** (37°57'N., 8°53'W.) is a salient and steep but relatively low point. A light is shown from a prominent tower with a dwelling, 22m high, standing on the cape.



Cabo de Sines Light

Perceveira d'Aguiao and Perceveira are prominent islets lying 0.3 mile NW and 0.4 mile SW, respectively, of the cape.

Conspicuous chimneys stand 3 miles NE, 3.8 miles E, and 4 miles SE of the light. The cape can also be easily identified by the conspicuous flares and storage tanks of the refinery and petrochemical complex situated at Porto de Sines.

The coast between Cabo de Sines, and Ilheu do Pessegueiro, 8.5 miles SSE, consists of an open bay, facing SW. The Rio Junqueiro flows into this bay, 4.5 miles SE of the cape.

5.63 **Porto de Sines** (37°57'N., 8°52'W.) (World Port Index No. 38005) is partially sheltered by Cape Sines and extends up to 2 miles S of it. It is a major deep-water port serving an extensive industrial complex.

Port of Sines Home Page

http://www.portodesines.pt

Sines—Oil and Petrochemical Terminal

Sines

Tides—Currents.—Tides rise 3.4m at springs and 2.6m at neaps.

Depths—Limitations.—The W breakwater extends 1,700m S from the S side of Cabo de Sines. The E breakwater extends 800m W and 1,100m NW from a point on the shore 2 miles SE of the root of the W breakwater.

The oil and petrochemical terminal is situated close E of the W breakwater, which has three berths on its inner side. The S part of this breakwater, including the outer oil berth, was destroyed by storms in 1979 and is reduced in size.

A coal terminal is situated close inside the E breakwater and several small basins, situated between the terminals, are used

Sines

by small craft, fishing vessels, and pleasure craft.

The private Multipurpose Terminal has one wharf, which is 645m long and can accommodate vessels up to 150,000 dwt, with a maximum length of 295m and a maximum draft of 18m. Another wharf, which is 205m long, can accommodate vessels up to 250m long with a maximum draft of 15m.

Additional berth information can be found in the accompanying table titled **Sines—Berth Information**.

Pilotage.—Pilotage is compulsory within an area, with a radius of 5 miles, centered on Molhe East Light. The pilot boards within a 3-mile radius of the head of the W breakwater, depending on the weather and the size of the vessel. Vessels should send an ETA 72 hours, 48 hours, and 12 hours in advance and confirm their arrival at least 4 hours in advance.

It is reported (1993) that traffic lanes have been established in the approaches. These lanes lie parallel to centerlines which radiate on bearings of 171°, 253°, and 311° from the head of the W breakwater and extend up to 10 miles from the port.

Sines—Berth Information			
Berth	Maximum vessel		
	LOA	Draft	Size
Petroleum Terminal			
No. 2	240 to 350m	22.5m	100,000 to 350,000 dwt
No. 3	135 to 280m	17.0m	10,000 to 150,000 dwt
Refinery Terminal			
No. 4	135 to 290m	18.0m	10,000 to 150,000 dwt
No. 5	120 to 282m	17.0m	10,000 to 100,000 dwt
LPG Terminal			
No. 6	70 to 106m	10.0m	
No. 7	70 to 106m	10.0m	
Petrochemical Terminal			
No. 9	78 to 160m	10.0m	1,000 to 3,000 dwt
No. 10	78 to 172m	11.0m	3,000 to 20,000 dwt
Coal Terminal			
Outer Wharf	190 to 250m	14.0m	30,000 to 50,000 dwt
Inner Wharf	up to 300m	19.0m	Up to 150,000 dwt
General Cargo Terminal			
N Berth	up to 125m	5.5m	
S Berth	up to 100m	6.0m	

Regulations.—Vessels carrying dangerous cargo should contact the port when within 12 miles of the entrance.

Fishing vessels, small craft, and pleasure craft must not impede the movement of large vessels.

Anchorage.—Three designated anchorage areas have been established in the following positions from the head of the E breakwater:

1. About 0.3 mile W, for vessels up to 20,000 dwt.
2. About 0.8 mile SSW, for vessels between 20,000 and 150,000 dwt.
3. About 1.8 miles S, for vessels over 150,000 dwt.

Caution.—Wave recorder (ODAS) lighted buoys may be encountered in the vicinity of the approaches to the port.

Deep-draft vessels should keep at least 1.5 miles from the

coast when approaching the port from the N and 2 miles when approaching from the S.

Submarines frequently exercise within the waters off the coast in the vicinity of the port.

5.64 Ilheu do Pessegueiro (37°50'N., 8°48'W.), 21m high, is a dark, rocky islet on which stands the ruins of a fort. A channel, 300m wide, separates this islet from the mainland and is foul in its N part. Porto Covo, a village, stands on the N side of a small inlet which is entered close NE of the islet. There is a landing place for fishing boats on a beach at the head of this inlet. A conspicuous water tower stands 0.5 mile E of the inlet.

Porto de Vila Nova de Milfontes (37°43'N., 8°47'W.), a small town, is situated at the entrance of the Rio Mira which flows into the sea 6.7 miles S of Ilheu do Pessegueiro. A light is shown from a turret on a dwelling, 5m high, standing on the N entrance point of the river. A prominent bridge spans the river, 1 mile E of the entrance. The river mouth is narrow and is obstructed by a shifting bar which frequently has a least depth of less than 1m. The river is navigable by shallow draft vessels as far as Vila de Odemira, 12 miles above the entrance.

Baixa do Cavalo, a shoal with a least depth of 6.5m, lies 1 mile NW of the N entrance point. Vessels with local knowledge may anchor, in a depth of 13m, outside of the bar.

Cabo Sardao (37°36'N., 8°49'W.), a high and steep promontory fringed by rocks, is located 7.5 miles S of the Rio Mira. A light is shown from a prominent tower with a dwelling, 17m high, standing on the cape. The village of Barcas stands in an inlet, with a landing place for fishing boats, 2.7 miles S of the cape.

Ponta da Atalaia (37°19'N., 8°52'W.), located 17 miles SSW of Cabo Sardao, consists of high, vertical cliffs which project NW from the coast. Pedra da Atalaia, a prominent rock, stands 0.4 mile W of this point. It is almost as high as the cliffs and can be identified from the N or S by its triangular shape.

Ponta da Arrifana, marked by a fort, is located 1.8 miles S of Ponta da Atalaia and is fronted by several rocks extending 0.3 mile seaward. Pedra da Agulha, a high rock surrounded by smaller rocks, lies 1.2 miles S of this point; from a distance Pedra da Agulha appears like a vessel under sail.

Cabo Sardao Light

Serra de Monchique is located E of Ponta da Atalaia and has two distinct peaks. Foia, the W peak, stands 13.5 miles E of the point, and Picota, the E peak, stands 3 miles farther E. Both of these peaks consist of bare rock which reflects the sunlight and appears whitish in color, especially when viewed from the N.

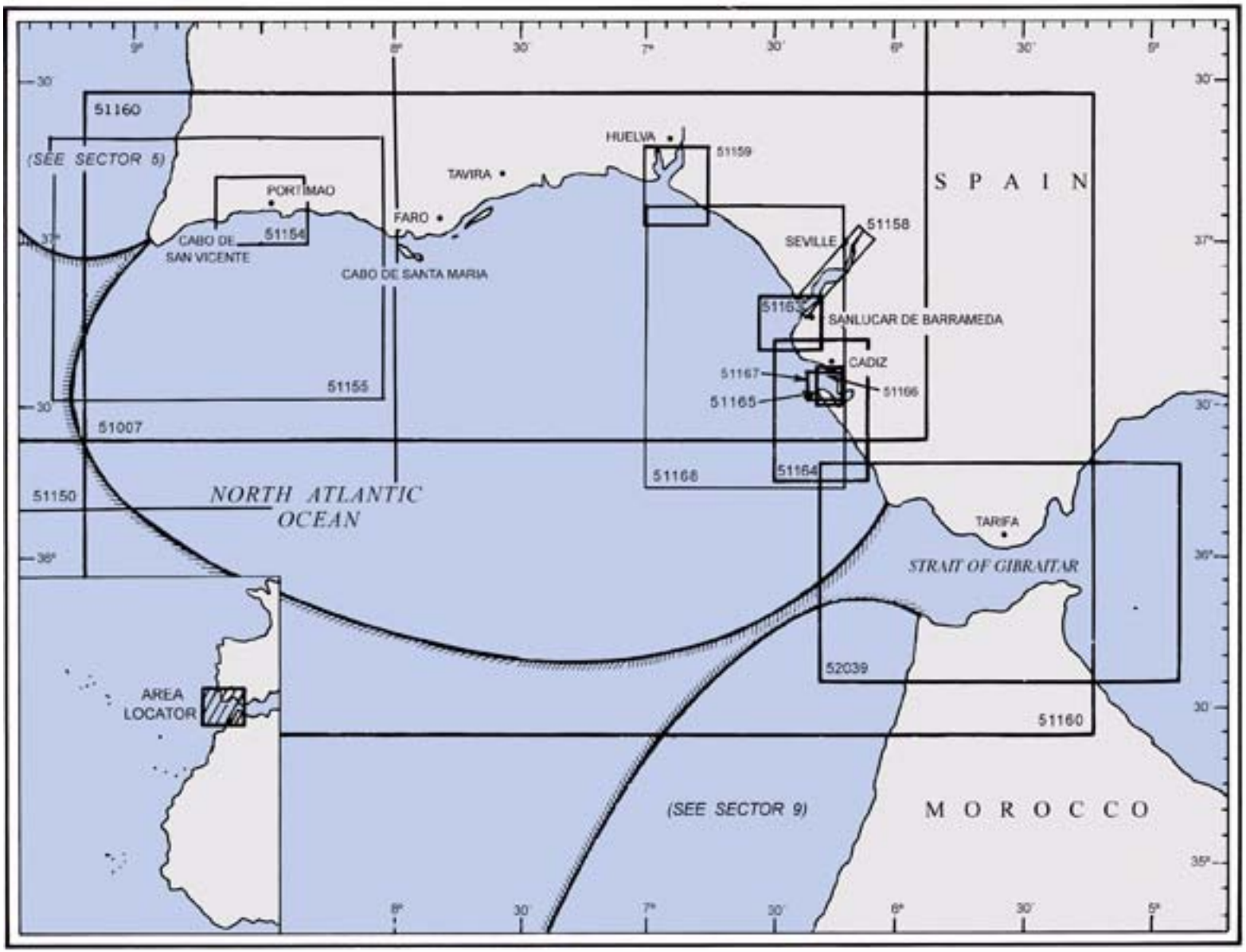
5.65 Pontal (37°12'N., 8°55'W.), located 7.8 miles S of Ponta da Atalaia, is a rocky and reddish point. It is prominent, being higher than the coast in the vicinity. A fort stands on the point, and a village is situated 1.2 miles SE of it.

Pedra da Gale, an above-water rock, lies about 0.8 mile SW of Pontal at the extremity of a rocky bank.

A prominent building stands near the coast, 2.5 miles S of Pontal; Torre da Aspa, a conspicuous white monument 10m high, stands on a hill, 5 miles SSW of it.

Ponta do Telheiro (37°03'N., 8°59'W.), a promontory of bright red cliffs, is located 9.3 miles SSW of Pontal. The coast between is fronted by numerous above-water rocks and vessels should stay at least 1 mile from it.

Cabo de Sao Vicente (37°01'N., 9°00'W.), located 1.8 miles SSW of Ponta do Telheiro, is described in paragraph 6.2.



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

SECTOR **6** — CHART INFORMATION

SECTOR 6

PORTUGAL AND SPAIN—CABO DE SAO VICENTE TO CABO TRAFALGAR

Plan.—This sector describes the SW coast of Portugal and Spain between Cabo de Sao Vicente and Cabo Trafalgar. The descriptive sequence is from the NW to SE.

General Remarks

6.1 The coastal area between Cabo de Sao Vicente and Cabo Trafalgar, 153 miles ESE, is generally low and sandy, with the exception of the land in the vicinity of the former cape, which is prominent from seaward. The mouth of the Rio Guadiana (37°11'N., 7°25'W.) defines the border between Portugal and Spain.

Cadiz and Huelva are the only ports of any major commercial importance to ocean-going traffic, but several other smaller ports are situated along this stretch of coast. Cadiz is the only suitable main port of refuge, the other ports being obstructed by bars over which dangerous seas break during stormy weather, rendering them impassable.

The shoals, which extend about 15 miles WSW from Cabo Trafalgar, are the only offshore dangers. The only other dangers, which might be encountered, lie close inshore and nowhere do they extend more than 3 miles from the general line of the coast.

Vessel Traffic Service.—A voluntary vessel traffic service (VTS) is in operation to monitor traffic off the coast of Portugal up to a limit of approximately 50 miles seaward. For further information, see paragraph 5.1.

Ship Reporting System (WETREP).—The WETREP (West European Tanker Reporting System) is a VTS system, under SOLAS regulation, which operates in the W approaches to Spain, Portugal, France, Belgium, the United Kingdom (including the Shetland Islands), and Ireland. This system is mandatory for all oil tankers over 600 dwt carrying heavy crude oil, heavy fuel oil, or bitumen and tar and their emulsions. It does not apply to warships, naval auxiliaries, or other vessels owned or operated by a contracting government and used, for the time being, only on government non-commercial service. For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Ship Reporting System (COPREP).—COPREP, a mandatory ship reporting system has been established for vessels traveling within the VTS off the Portuguese coast. For further information, see paragraph 5.1.

For further details, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

Caution.—Portugal has pre-designated areas along the coast for firefighting aircraft to fill up with water. The areas were chosen for their proximity to potential fires. For details of the scooping areas, see paragraph 5.1 and Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

From the April 15 to July 15, vessels should give the coast between Quarteira and the Rio Guadiana a berth of at least 5.5 miles. From the July 15 to September 15, vessels should give the coast between Olhao and the Rio Guadiana a berth of at least 3.5 miles. This is to avoid the fishing nets which extend seaward from the shore in places along this stretch of coast. Vessels are warned not to navigate through them.

The approaches to Faro, Olhao, and the Rio Guadiana are generally net-free.

Fishing nets for the tunny fishery are laid during the season off various points between the Rio Guadiana and Tarifa. Vessels should stay at least 8 miles from the coast and exercise caution when entering or leaving ports in this area. It was reported (1985) that, due to a decline in tunny fishing, many of these nets had been permanently removed.

Submarines frequently exercise offshore in the waters described within this sector.

Cabo de Sao Vicente to Cabo de Santa Maria

6.2 **Cabo de Sao Vicente** (37°01'N., 9°00'W.), 53m high, is the SW extremity of Portugal and consists of a steep, rocky mass. The W side of this cape is broken by numerous caves and when the sea breaks into them, the noise produced can be heard for a considerable distance offshore. Gigante, a high and isolated rock, lies close off the cape and is prominent.

A light is shown from a tower attached to a conspicuous convent, 28m high, standing on the cape.

The currents in the vicinity of the cape generally set strongly towards the land and have a tendency to set toward the cape. The S currents predominate, but N currents may be encountered during SW gales.

Caution.—Fishing vessels frequently anchor in the vicinity of the cape.

A local magnetic anomaly has been reported within 0.8 mile of Cabo de Sao Vicente.

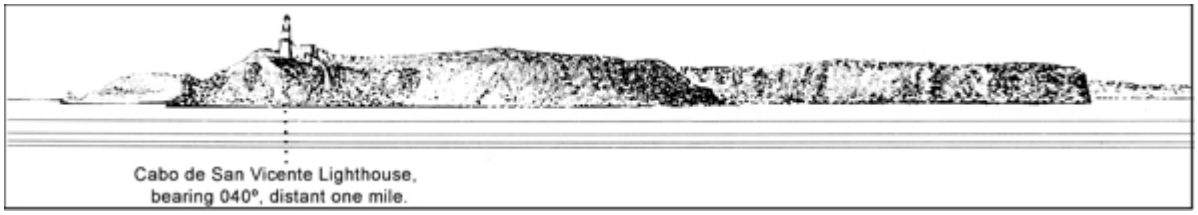
Overfalls have been occasionally reported within 3 miles of the cape.

An IMO-adopted Traffic Separation Scheme, the limits of which are shown on the chart, lies up to 14 miles SW of Cabo de Sao Vicente.

6.3 **Ponta de Sagres** (36°59'N., 8°57'W.), a steep and rocky headland, projects 0.7 mile from the general line of the coast, 3 miles SE of Cabo de Sao Vicente. This point, 36m high, is inaccessible on all sides except at the isthmus which joins it to the mainland. A light is shown from a prominent tower with a dwelling, 13m high, standing on the headland.

Enseada de Belixe, entered between the cape and the headland, is a small bay bordered by high, steep cliffs. During offshore winds, anchorage can be obtained, in a depth of 14m, 0.3 mile offshore, at its W side. A fort stands at the N corner of the bay.

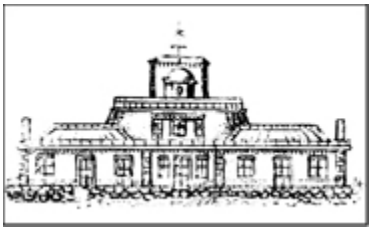
Enseada de Sagres lies between Ponta de Sagres and Ponta da Atalaia, 1 mile NE. Temporary anchorage can be obtained,



Cabo de Sao Vicente

Cabo de San Vicente Light

Ponta de Piedade Light



Ponta de Sagres Light

in a depth of 13m, sand, during the summer with offshore winds, within this bay. The village of Sagres stands at its head.

Caution.—Several submarine cables extend seaward from a point on the shore 8.5 miles NE of Ponta da Atalaia and may best be seen on the chart.

6.4 Ponta da Piedade (37°05'N., 8°40'W.) is located 12.5 miles ENE of Ponta da Atalaia. This point slopes gently towards the sea, then falls away abruptly near its extremity. Several above-water rocks lie close off its E side. A light is shown from a tower on a dwelling, 12m high, standing on the point.

Baia de Lagos (37°06'N., 8°37'W.), entered between Ponta da Piedade and Ponta do Facho, 5 miles ENE, is well-sheltered from W and N winds. There are depths in the entrance in excess of 20m, but shoals lie towards the head of the bay and extend up to 0.3 mile offshore. Lagos, a small harbor, lies on the W shore of the bay, at the mouth of the Rio Bensafrim. It is protected by breakwaters and used by small craft with local knowledge. Dangerous wrecks lie about 0.5 mile SE and 1.8 miles ESE of the river mouth. A conspicuous hotel stands 0.5 mile SSW of the river mouth. Vessels can obtain anchorage, in a depth of 16m, good holding ground, about 0.8 mile E of the harbor entrance.

The Rio de Alvor flows into Baia de Lagos, 3 miles NE of Lagos; a prominent fort stands on the coast, 0.7 mile E of the river mouth. The river is entered through a channel dredged to 2.5m between two breakwaters. Small craft, with local knowledge, can enter at HW and reach the village of Alvor, 1.3 miles above the entrance.

6.5 Portimao (37°08'N., 8°32'W.), a small port and fishing center, lies within the mouth of the Rio Arade, 6.5 miles E of Lagos.

Portimao Home Page

http://www.imarpor.pt

Tides—Currents.—Tides rise about 3.5m at springs and 2.7m at neaps.

Depths—Limitations.—The harbor facilities include an old quay, 150m long, with a depth of 5m alongside, which is used by coasters and naval vessels; a basin for fishing vessels, which has 400m of total berthing space, with depths of 2 to 5m alongside; and a new commercial quay, 300m long, with a depth of 10m alongside.

Generally, vessels up to 150m in length and 7.9m draft can be accommodated. It was reported (1991) that development was being carried out in order to permit vessels of up to 9m draft to be handled in the port.

Aspect.—The town stands on the W bank of the river, 1.5 miles above the entrance. The river is entered between Forte Santa Catarina and Ponta do Altar, 0.8 mile SE. The mouth is protected by breakwaters which form an entrance, 250m wide. A lighted range indicates the entrance fairway, which is about

90m wide. A light is shown from a tower with a dwelling, 10m high, standing on Ponta do Altar and a signal station is situated close to it. A prominent fort stands on the E side of the river, 0.8 mile N of the light. Two prominent hotels, one surmounted by a television mast, stand on the W side of the entrance, 1.3 miles NW of the light.

Pilotage.—Pilotage is compulsory within the port limits and within an area with a radius of 2 miles centered on Molhe West Light. Pilots can be contacted on VHF channel 14 or 16 and board about 1 mile S of the head of the W breakwater. Vessels should send an ETA 24 hours prior to arrival.

Regulations.—Roca Control monitors the approach and departure of vessels for Portimao. Contact Roca Control on VHF channel 77.

Anchorage.—Vessels can anchor, in a depth of 7m, about 0.5 mile W of the entrance or, in a depth of 15m, about 1 mile WSW of Ponta do Altar.

6.6 Ponta de Alfanzina (37°05'N., 8°26'W.) is located 4.5 miles ESE of the entrance to Portimao. The coast between is rocky and is marked by a few small beaches. A light is shown from a tower, 21m high, standing on the point.

Alfanzina Light

A prominent tower stands 1 mile ESE of the entrance to Portimao; a village, with a prominent fort, stands 1.5 miles farther ESE. A submarine pipeline extends 0.8 mile SSW from a point on the shore, 1.7 miles WNW of Ponta de Alfanzina.

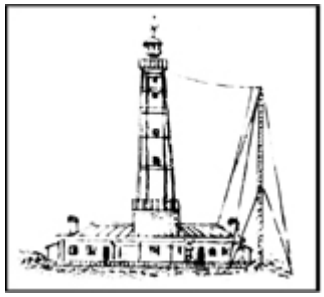
Albufeira (37°4.9'N., 8°15.4'W) is a fishing port with a marina which supports recreational use.

Vilamoura (37°04'N., 8°07'W.), an extensive marina, is situated 15.5 miles E of Punta de Alfanzina. Armacao de Pera, Albufeira, and Olhos de Agua are resort villages standing along the shores of bays lying between the point and the marina. Small coasters, with local knowledge, may anchor off these villages during offshore winds. Numerous high-rise buildings and prominent hotels are situated along the shores of the bays. An isolated rocky patch, with a depth of 26m, lies about 9.5 miles SW of Vilamoura.

The resort village of Quarteira is situated 0.8 mile ESE of Vilamoura. The shore between is backed by conspicuous hotels and high-rise buildings.

Cabo de Santa Maria (36°58'N., 7°52'W.) is located 7 miles SE of Quarteira. The coast in the vicinity of the cape is formed by a chain of low, sandy, and narrow islands. Between this chain of islands and the mainland are extensive sand banks, which are intersected by narrow channels leading to the small ports of Faro, Olhao, and Tavira. High ground stands behind the coast in this vicinity.

A light is shown from a tower, with a dwelling, 45m high, standing on the island of Ilha de Culatra, 2 miles ENE of Cabo de Santa Maria. Two 1.9m shoals lie 1.5 miles SSW of the light.



Cabo de Santa Maria Light

Caution.—Vessels navigating in the vicinity of Cabo de Santa Maria should not approach the coast at night or in thick weather, because shoal banks extends up to 0.5 mile S of the low islands.

Cabo de Santa Maria to the Ria de Huelva

6.7 The **Ria Formosa** (36°59'N., 7°53'W.) is an extensive marshy estuary fronted by the low and sandy islets which extend NW and NE of Cabo de Santa Maria. Barra Nova de Faro-Olhao, the principal entrance channel, leads between the islands of Ilha da Barreta and Ilha da Culatra, close E. Its entrance, indicated by a lighted range, is protected by breakwaters. Within the entrance this channel divides, with one branch leading NW to Faro and the other NE to Olhao. Depths on the bar are subject to constant change. It was reported (1989) that there were depths of 3 to 4m at LW and 6 to 8m at HW.

Pilotage.—Pilotage is compulsory and is generally carried out only by day. Vessels should send an ETA at least 6 hours in advance. Pilots can be contacted by VHF and usually board about 1 mile S of the entrance.

Anchorage.—Vessels can obtain anchorage, in a depth of 42m, about 1 mile S of Cabo de Santa Maria Light. Vessels occasionally discharge cargo into lighters at this anchorage. Small craft may obtain anchorage, in a depth of 11m, about 1.5 miles E of the light or, in a depth of 10m, 0.8 mile SE of the light.

Caution.—Strong currents may be encountered over the bar and can attain rates up to 7 knots at springs.

6.8 Faro (37°01'N., 7°55'W.) (World Port Index No. 38030), a small commercial port, is situated on the W side of the estuary, about 4 miles above Cabo de Santa Maria.

Faro Home Page

http://www.imarpor.pt

There is a quay, 200m long, with a depth of 7.9m alongside and a tanker LPG berth, 110m long, with a depth of 6.1m alongside.

Vessels up to with a maximum length of 120m and a maximum draft of 6.1m can be accommodated; however, vessels over 110m in length should obtain prior authorization to enter the harbor.

The town can be identified by two white steeples of the churches and by a prominent white chapel, which stands on a hill, close E of it.

Pilotage is compulsory within the navigable waters of the Ria Formosa and within a circle with a radius of 4 miles centered on Cabo de Santa Maria light. Arrivals and departures are dependent on the tides. Vessels should provide an ETA at least 24 hours in advance. The pilots can be reached on VHF channel 14 or 16 and board 1 mile S of the moles.

Roca Control monitors the approach and departure of vessels for Faro. Contact Roca Control on VHF channel 77. For further information, see paragraph 5.1

Olhao (37°01'N., 7°50'W.), a small harbor, is situated on the E side of the estuary, 4.5 miles E of Faro. A main basin has depths of 2 to 2.8m. The harbor is used exclusively by fishing vessels, pleasure craft, and local ferries, but is closed to commercial shipping. The pilot station at Faro accepts requests for Olhao.

6.9 **Tavira** (37°08'N., 7°39'W.), a small harbor, is situated at the mouth of the Rio Gilao, 11 miles NE of Olhao. The town stands on both banks of the river, which is spanned by a bridge, 1 mile above the entrance. The entrance fairway passes between the island of Ilha de Tavira and an unnamed spit close NE. It is indicated by a lighted range and protected by breakwaters. Small craft and fishing vessels can reach the harbor at HW.

Caution.—It has been reported (1996) that the bar could not be crossed due to silting.

The coast between Tavira and the Rio Guadiana, 6.5 miles ENE, is low and sandy, with numerous tourist complexes. Monte Gordo, standing 2 miles W of the river mouth, is a town with several high-rise buildings. A hotel and a water tower, both conspicuous, are situated close E of the town.

6.10 The **Rio Guadiana** (37°10'N., 7°24'W.), 450 miles long, has its origin in Spain, but near the coast forms the boundary between Portugal and Spain.

The river is entered between Ponta da Areia (Ponta de Santa Antonio), which is flat and sandy, and the W side of Isla Canela, close E.

Sand banks and shoals extend up to 1.5 miles S of Isla Canela and 1 mile S of Ponta da Areia. A breakwater extends 2,100m SSE from Ponta da Areia and forms the W side of the entrance. Another breakwater, which is normally submerged, except during low spring tides, extends 1,600m SSE from the W extremity of Isla Canela to the NW end of Banco do O'Bril, a sand bank which dries, and forms the E side of the entrance. A channel, marked by buoys, leads over an entrance bar which extends up to 1 mile seaward. The depths across this bar and within the river are subject to constant change because of weather and current conditions. It was reported (1989) that there was a least depth of 2m on the bar and depths of 3 to 7m within the river channel. Vessels with drafts of up to 4.5m can cross the bar at HW. Navigation over the bar is permitted during daylight hours only, and should be done only with a pilot.

The tidal currents at the entrance usually flow at rates up to 1.5 knots during the ebb and 1.2 knots during the flood. During the winter freshets, these rates greatly increase and discolored water may flow for a considerable distance seaward of the bar; entry should not be attempted at this time.

A light is shown from a tower with a dwelling, 46m high, standing close N of Ponta da Areia. A radiobeacon is situated at the light.

A tourist complex, with several prominent buildings, is situated on Isla Canela and a conspicuous tower stands on this island, 1.5 miles ENE of Ponta da Areia.

Vila Real de Santo Antonio (37°11'N., 7°25'W.), a resort town, is situated on the W bank of the Rio Guadiana, 2 miles above the entrance. The berthing facilities front the town and include a quay, 300m long, with a depth of 6m alongside, and a basin with a depth of 2m. They are used by small craft, fishing vessels, yachts, and local ferries. Entry should not be attempted without local knowledge.

Ayamonte (37°13'N., 7°24'W.), a small town, stands on the E bank of the river, 0.7 mile above Vila Real de Santo Antonio, in Spanish territory. The berthing facilities front the town and include a quay and a basin which have depths of 0.1 to 5m alongside. They are used by fishing vessels, small craft, and yachts.

A bridge, with a vertical clearance of 20m, spans the river, 1 mile N of Ayamonte. Pomarao, a former ore port, is situated on the W bank of the river, 23 miles above Ayamonte. It can be reached, on suitable tides, by small vessels with drafts less than 5m. This part of the river is mostly used by pleasure craft.

6.11 The **Ria de La Higuerita** (37°11'N., 7°20'W.) flows into the sea 3.5 miles ENE of the Rio Guadiana. Its entrance is protected by breakwaters and lies between Punta de La Mojarra, the E end of Isla Canela, and Punta del Caiman, 0.5 mile NNE. The bar at the mouth is shallow and constantly shifting. The town of Villa de Isla Christina stands on the E side of the river, 0.5 mile N of the entrance. It is fronted by berthing facilities which are used exclusively by local fishing craft. Several high-rise buildings in the S part of the town are visible from seaward.

The **Rio de Las Piedras** (37°12'N., 7°05'W.) flows into the sea 12 miles E of the Ria de La Hiquerita. The coast between consists of a sandy beach backed by low, bare hills. A prominent tower stands on a reddish hill, 6.5 miles ENE of Punta del Caiman.

The river entrance lies between Punta del Gato and the mainland, close N. This point is the E end of a low spit which runs parallel to the coast for about 6 miles. The village of El Rompido stands on the N bank of the river, 2.5 miles within the entrance. A light is shown from a tower, 29m high, standing at the village.

A shallow bar obstructs the entrance and is subject to constant change. Entry without local knowledge should not be attempted. The river is also shallow, but is navigable by small craft up to 7.5 miles above the mouth.

Caution.—Several submerged wellheads lie offshore in the waters S of the Rio de Las Piedras and may best be seen on the chart. These structures may stand as much as 8m above the sea bed.

The Ria de Huelva

6.12 The **Ria de Huelva** (37°10'N., 6°56'W.), the estuary of the Rio Odiel and the Rio Tinto, lies 7 miles ESE of the entrance to the Rio de Las Piedras. The estuary is bounded to the

SW by Isla Saltes, a swampy island, on which there are scrub-covered sandy ridges up to 3m high. It is bounded to the NE by the coast, which trends SE for 7 miles to Punta del Picacho.

Punta Umbria (37°11'N., 6°58'W.), the W entrance point of the river, lies S of Isla Saltes and is the outer extremity of a tongue of very low land which is almost completely covered by brush. Several buildings stand on the N side of the point and a breakwater extends 0.5 mile S from it. Canal de Punta Umbria, a shallow passage, leads between Punta Umbria and Isla Saltes and is used by local fishing boats and pleasure craft.

Punta del Picacho (37°08'N., 6°50'W.), the E entrance point of the river, lies 6.2 miles ESE of Punta Umbria and consists of sand covered by brush and stones.

A light is shown from a prominent tower, with a dwelling, 25m high, standing on the point. A large marina is located close S of the light.

Punta del Picacho Light

Dique de Juan Carlos I is a breakwater which has been constructed over the sand banks which extend about 7 miles SE from the S end of Isla Saltes. This breakwater has a total length of 11.5 miles and extends from the S part of the city along the S side of the river approach channel to a position 1.5 miles S of Punta del Picacho.

A light is shown from a prominent tower, 27m high, standing on the head of the breakwater. A racon is situated at the light.

Canal del Padre Santo, the main approach channel, is entered 1.5 miles S of Punta del Picacho and, after passing over the bar, continues NW to the estuary of the Ria de Huelva. Its seaward entrance is marked by a lighted buoy moored about 1 mile SSE of the head of the breakwater. The fairway over the bar is marked by lighted buoys and indicated by a lighted range, which may best be seen on the chart. Several beacons, which are used in connection with dredging operations, stand close NW of Punta del Picacho and are frequently moved.

Cerro del Puntal, 44m high, stands 1.3 miles NW of Punta del Picacho. This hill is pine-covered and can be identified from seaward, as it is one of the highest in the vicinity and is surmounted by a watchtower. Its green summit contrasts sharply with its white slopes.

Punta de la Arenilla lies 5.5 miles NW of Cerro del Puntal. The shore between is low and sandy. A prominent oil refinery stands 3 miles NW of Cerro del Puntal.

Punta del Convento lies 0.3 mile ENE of Punta de la Arenilla. A conspicuous convent and a white marble monument, 48m high, stand close E of this point. The monument is generally the first object to be seen when approaching the coast and from any distance, it appears as a light tower.

The **Rio Tinto** (37°13'N., 6°56'W.), extending NE, is entered between Punta de La Arenilla and Punta del Sebo, 0.5 mile N. The mouth of the river is spanned by Puente del Tinto, a high road bridge with two passages for small craft. A prominent white-colored monument to Christopher Columbus, 50m high, stands on the S end of Punta del Sebo, close W of the bridge. The river is navigable by small craft at HW as far as Barillo, 9 miles above its mouth.

Christopher Columbus Monument

The village of Palos is situated on the S bank of this river, 2 miles above the bridge. Christopher Columbus sailed from this place on August 3, 1492 on his first voyage to the Americas.

The **Rio Odiel** (37°13'N., 6°56'W.) extends N from its confluence with the Rio Tinto at the S end of Punta del Sebo. Puente de Santa Eulalia spans the river 3.5 miles N of its mouth; above this bridge, the river is obstructed by banks of mud and sand.

Huelva (37°15'N., 6°57'W.)

World Port Index No. 38220

6.13 Puerto de Huelva, a well-protected commercial port, lies at the head of the Ria de Huelva, which is formed by the confluence of the Rio Odiel and the Rio Tinto.

Huelva Home Page

http://www.puertohuelva.com

Tides—Currents.—Tides at the bar rise 3.2m at springs and 2.5m at neaps. Tides in the port rise 3.5m at springs and 2.7m at neaps.

The tidal currents usually follow the course of the channel. Gales from seaward may increase the rise of tide and delay the time of HW; strong offshore winds have the opposite effect. The currents off the port area may attain rates up to 3.7 knots at springs and 1 knot at neaps.

Depths—Limitations.—The entrance bar was reported (1992) to have a dredged depth of 10m.

The port is divided into two basins. The inner basin extends N up the Rio Odiel from its junction with the Rio Tinto. The outer basin extends S from Punta de La Arenilla and fronts the refinery.

In general, vessels up to 180m long, with a maximum draft of 7.1m, can be accommodated in the inner basin while the outer basin can accommodate vessels up to 230m long, with a maximum draft of 10.7m. Details of berthing facilities are given in the accompanying table.

Huelva—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
Inner Basin			
Levante	670m	7.0-8.0m	General cargo. Passengers.
Rio Tinto	390m	7.0m	Out of service.
Rhone Poulec	150m	4.0m	Bulk liquid.
Fosforico	120m	7.0m	Dry bulk and bulk liquid.
Abanos	120m	6.5m	Bulk liquid.
Foret	120m	9.5m	Bulk liquid. Maximum vessel draft of 7.5m.
Minas de Almagren	120m	9.5m	Bulk liquid. Maximum vessel size of 15,000 dwt.
EIASA (Aragonesas)	150m	8.0m	Dry bulk and bulk liquid.
Tharsis	320m	6.0m	Out of service.
Mooring buoys	—	3.3-6.5m	West side of basin.
Outer Basin			
Ing. Juan Gonzalo	902m	12.0m	General and bulk cargo.
Torre Arenillas Oil	560m	13.0m	General and bulk cargo.
Torre Arenillas Dry Bulk	465m	12.0m	
Saltes	299m	5.5m	Fitting-out facility
Reina Sofia	700m	8.0-9.5m	Bulk liquid.
ENAGAS	320m	6.0m	LNG. Maximum vessel size of 35,000 dwt.

Huelva Offshore Oil Terminal (37°05'N., 6°55'W.) consists of an offshore SBM tanker berth situated in a depth of 21.3m, 5.5 miles SSE of Punta Umbria. A submarine oil pipeline, marked by lighted buoys, extends N and NNE from the berth to a refinery which is situated 5 miles NW of Punta del Picacho. Tankers of up to 153,000 dwt, with a maximum length of 288m and a maximum draft of 16.3m, have been accommodated.

Huelva—East Port

Huelva from SW

Huelva—The Rio Odiel from N

Pilotage.—Pilotage is compulsory for all vessels over 500 gross tons and is available 24 hours, with restrictions dependent on vessel draft. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance and a confirmation message 1 hour before arrival. Pilots may be contacted on VHF channel 14 and generally board about 1 mile SSE of the head of the entrance lighted buoys. During bad weather, the pilot vessel will remain under the shelter of the banks.

Anchorage.—During good weather, vessels can obtain anchorage, in depths of 16 to 20m, outside the bar. Four designated anchorage areas have been established S of the bar, as follows:

1. Anchorage Area A—For vessels with a maximum length of 120m carrying dangerous cargo.
2. Anchorage Area B—For vessels with a maximum length of 120m carrying non-dangerous cargo.
3. Anchorage Area C—For vessels of more than 120m in length carrying dangerous cargo.
4. Anchorage Area D—For vessels of more than 120m in length carrying non-dangerous cargo.

Caution.—In heavy weather, a sea breaks across the bar at about the time of HW and should be allowed for when entering.

All areas of the river and berths are subject to change due to heavy silting.

A restricted area, the limits of which are shown on the chart, lies in the vicinity of a submarine oil pipeline which crosses the river channel 3 miles below Punta de la Arenilla. Anchoring and trawling are prohibited within this area.

The Ria de Huelva to the Rio Guadalquivir

6.14 The coast between Punta del Picacho and Punta de Malandar, the N entrance point of the Rio Guadalquivir, 30 miles SE, consists of a sandy beach backed by sand dunes.

Playa de Mazagon, a narrow beach with a few fishing villages standing along it, extends between Punta del Picacho and Torre del Oro, 5.2 miles SE. Torre del Oro, in ruins, stands on a point of low land which is isolated at LW. A prominent white house stands close N of the ruins. Three conspicuous radio masts, the highest being 142m high, stand at the meteorological rocket launching site, 0.7 mile NW of the ruins.

The coast between Torre del Oro and Torre del Cabonero, about 15 miles SE, is backed by a chain of reddish-colored sand dunes which attain a height of almost 100m.

Torre de La Higuera, in ruins, is situated 9.2 miles SE of Torre del Oro. At LW, the ruins resemble a ship aground. A prominent white Guardia Civil Station stands on a hill 4.2 miles ESE of Torre de La Higuera and 1.2 miles inland.

A light is shown from a prominent masonry tower, 24m high, standing close NW of Torre de la Higuera.

The prominent buildings of a town stand near the coast, 4 miles SE of Torre de la Higuera; Torre Carbonero, a large round tower, stands 2.5 miles SE of these buildings. Several small buildings are situated near this tower.

The coast between Torre Carbonero and Punta de Malandar, 9.5 miles SSE, is low and backed by sand dunes; an extensive pine forest lies farther inland. Torre de Salabar, a tower surrounded by trees, stands 4 miles SE of Torre Carbonero, but is difficult to identify.

Caution.—Several wrecks, some dangerous, and a few well heads lie offshore along this stretch of coast and may best be seen on the chart.

The Rio Guadalquivir

6.15 The **Rio Guadalquivir** (36°47'N., 6°24'W.), 300 miles long, flows into the sea off the town of Sanlucar de Barrameda. This river is navigable as far as the city of Sevilla, 54 miles above its mouth. The land in the vicinity of the river is low and level as far as Coria, 7 miles below Sevilla, but it then gradually rises in elevation towards the city.

Abra de Sanlucar, known locally as Broa de Sanlucar or simply La Broa, lies between Punta de Malandar and Punta del Perro, 4.7 miles SW. This broad and shallow estuary of the Rio Guadalquivir is encumbered by numerous shallow depths and shoals. In addition, drying banks front the shores and extend up to 0.5 mile seaward.

Punta del Perro (36°44'N., 6°26'W.), the S entrance point of the estuary, is low, rocky, and backed by sand dunes. A light is shown from a conspicuous tower on a building, 62m high, standing on the point. Santuario de Regla, a conspicuous building, and Casa Breva, a conspicuous white house with a tower, stand 0.5 mile S and 3.5 miles SE, respectively, of the light.

Bajo Salmedina, a drying reef, is the outermost danger of a bank which extends up to 1.5 miles W of Punta del Perro. The shallow passages lying between this reef and the point are used only by small craft with local knowledge; a ruined beacon stands on, and a stranded wreck lies close NW of, the reef.

Piedra Sietebrazas, a rocky bank with a depth of 4.1m, lies 1 mile N of Punta del Perro and breaks in heavy weather. Piedra Tesoro, a patch with a depth of 6.4m, lies close WNW of Piedra Sietebrazas.

Chipiona, a small village situated close E of Punta del Perro, can be identified by the conspicuous belfry tower of its church and its numerous white buildings. A marina fronts the village and is protected by a breakwater. Piedra Loreto, a rocky shoal with a depth of 0.2m, lies within the shore bank, 0.6 mile NE of the head of the breakwater.

6.16 **Punta Malandar** (36°48'N., 6°22'W.), the N entrance point of the estuary, is marked by the ruins of a tower and a building. Bajo Picacho, a drying reef with a stranded wreck on it, lies 2.6 miles WSW of the point. It is the outermost danger on the N side of the estuary and is marked by a lighted buoy moored about 1 mile W of it. Placer de San Jacinto, an extensive sandy and rocky shoal, lies centered 1 mile E of Bajo Picacho.

There is generally a dredged depth of about 6.5m over the bar. Vessels should contact the local authorities in advance for information concerning the latest depths.

The entrance channel, which leads over the bar and into the river, is entered 3 miles SW of Punta Malandor. Its seaward entrance is marked by an outer lighted buoy moored about 1.5 miles NNW of Punta del Perro. The fairway is marked by lighted buoys and indicated by a lighted range, which may best be seen on the chart.

Winds—Weather.—Gales from the W sometimes completely close the entrance channel over the bar to navigation. At such times, due to the uneven rocky bottom, seas frequently

Huelva—Petroleum and Mineral Piers

break seaward of Bajo Picacho.

Tides—Currents.—Tides at the bar rise 3.3m at springs and 2.5m at neaps. Tides at Sevilla rise 2.1m at springs and 1.8m at neaps.

Winds from the W may increase the rise of tide and delay the time of HW; winds from the E may have the opposite effect.

The tidal currents attain rates of up to 3 knots at springs and 1.5 knots at neaps. When the river is flooding, the flood cur-

rents decrease in velocity but the ebb currents sometimes attain rates of 5 to 6 knots and reddish-colored water may extends up to 5 miles seaward.

During a freshet, there are usually two currents on the bar during the flood, one running in along the S shore and the other constantly running out along the opposite shore.

Pilotage.—Pilotage is compulsory for all vessels of more than 500 grt. There are land based pilot stations at Chipiona and Seville. The pilots board in position 36°46'N, 6°27'W in the vicinity of Buoy No. 1 (El Perro). Vessels bound for Puerto de Sevilla should arrive off the entrance at least 90 minutes before HW.

Vessels should send an ETA at least 24 hours in advance, with any amendments up to 12 hours before arrival; the message should also include vessel length, beam, draft, air draft and maximum speed.

Regulations.—Navigation in the river above Bonanza is prohibited at night for tankers and other vessels carrying dangerous cargo.

Vessels with drafts greater than 6m are prohibited from leaving at night.

It is reported that pilots generally insist that vessels over 155m in length navigate only during daylight due to the bends in the river.

Vessels transiting the Rio Guladalquiver should maintain a continuous listening watch on VHF channel 12.

Above El Marmol (37°10'N., 6°07'W.) to Puerto de Sevilla, speed in the river is limited to a maximum of 10 knots.

Vessels may enter or leave the river starting 1.5 miles after LW.

Anchorage.—Anchorage can be taken seaward of the shoals which obstruct the estuary during good weather with offshore winds. There is good holding ground, in a depth of 11m, about 1.5 miles NW of Punta del Perro and, in depths of 6 to 9m, about 2 miles N of the same point.

Caution.—Depths on the bar and within the river are subject to change as a result of silting. The local authorities should be contacted for the latest information.

Several restricted areas, the limits of which are shown on the chart, lie in the N approaches to the estuary and extend up to 3.5 miles offshore. Anchoring and fishing are prohibited in these areas due to the presence of artificial reefs.

Overhead cables, with a minimum vertical clearance of 49m, span the river channel about 6 miles below Sevilla.

6.17 Bonanza (36°48'N., 6°20'W.), a small town and port for the city of Sanlucar de Barrameda, is situated on the E bank of the river, 6.5 miles NE of Punta del Perro. Vessels stop here to obtain river pilots. Muelle de la Sanidad, the principal quay, is 242m long and has a depth of 4m alongside. It is protected by a detached breakwater, 250m long, with a depth of 5m along the inner side.

6.18 Puerto de Sevilla (37°22'N., 6°00'W.) (World Port Index No. 38270), situated in Canal de Alfonso XIII at the S side of the city, was formerly a part of the Rio Guadalquivir. It now consists of an extensive wet basin which is blocked at the N end and entered through a lock at the S end.

Sevilla Home Page

http://www.apsevilla.com

Depths—Limitations.—The river fairway has a navigable width of about 80m and is dredged to depths of 5.5 to 6.5m.

The lock is 200m long and 25m wide. The wet basin, which forms the port area, is 2.5 miles long and 82 to 110m wide, with depths of 6.5 to 8m.

The Centenario Bridge, a suspension bridge with a vertical clearance of 48.5m, crosses the basin at the N end of Darsena de Alfonso XIII. The Delicias Bridge, at the N end of Muelle de Tablada, is a swing bridge with a horizontal clearance of 40m and a vertical clearance in the closed position of 10.1m.

The lock is crossed by overhead power cables with a vertical clearance of 44m.

The main facilities include Muelle de Tablada, 1,122m long, with a depth of 7.5m alongside; Darsena del Centenario, which has 1,450m of total berthing space, with a depth of 7.5m alongside; Muelle de las Delicias, 592m long, with a depth of 7.5m alongside; and Campsa Oil Terminal Berth, which has a depth of 7m alongside and can handle tankers up to 170m in length.

In addition, there are several small privately owned quays with depths of 7m alongside.

There are facilities for bulk, ro-ro, general cargo, tanker, and container vessels. The presence of overhead power cables and the dimensions of the lock limit the size of vessels. Generally, vessels up to 196m in length, 24m beam, 42m masthead height, and 6.5m draft can be accommodated.

The Rio Guadalquivir to Bahia de Cadiz

6.19 The coast between Punta del Perro and Punta Candor, 6.5 miles SSE, is backed by sand dunes and fringed by an area, with uneven depths of less than 10m, which extends up to 1.8 miles offshore. This section of the coast should be given a berth of at least 2.5 miles and vessels should stay in depths of 20m or more.

Punta Candor (36°38'N., 6°24'W.), a flat and sandy point, is fronted by drying reefs. Two conspicuous towers stand on the point.

Bajos Lainez, a group of shoals, extends between 1 mile and 1.8 miles W of the point and have a least depth of 6.1m at their outer edge. Gallardo, a detached rock with a depth of 9.3m, lies 1.7 miles WSW of the point. Several shoal patches, with depths of 8 to 9.5m, lie up to 2 miles SSW of the point and break in heavy weather.

Bajo El Quemado, a detached 8.9m shoal patch, lies 2.5 miles S of Punta Candor and is marked by a lighted buoy moored close W.

An extensive area of rocky ground and shoal patches lies between Punta Candor and Punta de La Morena, 2 miles SE. Cabezo de Los Asnos, the outermost danger, lies about 1.3 miles SW of Punta de La Morena and has a least depth of 1.8m.

Caution.—An area, within which anchoring and fishing are prohibited due to submarine cables, extends seaward from a point on the coast 3 miles NNW of Punta Candor; this area may best be seen on the chart.

A measured distance, 2,958.75m, lies off this stretch of coast, close N of Punta Candor. It is indicated by beacons and may best be seen on the chart.

Naval and air exercises are frequently carried out in the waters off this stretch of coast.

Approaches to Bahia de Cadiz

6.20 Bahia de Cadiz (36°35'N., 6°20'W.) is entered between Punta de La Morena and Castillo de San Sebastian, 5.5 miles SSE. Rota Naval Base is situated on the N side of this bay, close inside the entrance. Puerto de Santa Maria lies at the head of the bay, on the N side. The long and narrow island of Isla de Leon, on which the city and port of Cadiz are situated, lies at the S side of the bay.

There are depths of 14 to 18m in the entrance and central part of the bay. However, the E side between Punta de Santa Catalina and the entrance to the Rio de San Pedro, 3 miles S, is obstructed by a large shoal which has depths of 5.5m and less over most of its area.

When approaching Cadiz in clear weather, the interior mountains will probably be the first land to be seen. Cabezo del Moro, 1,650m high and rounded, is the highest part of the Sierra de Ronda range and stands 45 miles ENE of Castillo de San Sebastian. Pico del Aljibe, 1,090m high, stands 33 miles E of the same castle and is very prominent. Medina Sidonia, sugarloaf-shaped and 337m high, stands 15 miles WSW of Pico del Aljibe. The tower standing close to its summit is prominent, and the town, situated on its W slope, appears as a conspicuous white patch.

Berrueco Grande (36°27'N., 6°03'W.), 175m high, stands 5.8 miles W of Medina Sidoniaan. This mountain is isolated, whitish-colored, and can be easily identified by its two summits, one of which is surmounted by a white building. Berrueco Chico stands close S of Berrueco Grande. The summit of this mountain is lower, but is more pointed.

Sierra de San Cristobal, a range of hills, rises from low level land, 4.2 miles ENE of Puerto de Santa Maria, and terminates SE in an abrupt vertical fall known as Morro de Jerez.

Punta de La Morena (36°37'N., 6°21'W.) is the S extremity of a small projection which forms the N entrance point of the bay. The town of Rota stands on this projection. A breakwater extends SE from the point and forms a small basin used by fishing boats and pleasure craft.

Rota Light is shown from a tower, 28m high, standing on the point. An aeronautical light is shown from a conspicuous water tower, 49m high, standing 1.3 miles NNE of the light.

Bajo de Las Cabezuelas, with a least depth of 5.3m, is an extensive shoal which lies centered 1.5 miles SE of Punta de La Morena and is marked by a lighted buoy moored close SE of it. Numerous rocks and shoal depths lie between this shoal and the point.

6.21 Punta de Santa Catalina (36°35'N., 6°16'W.), steep and reddish in color, is located on the NE side of the bay, 4.7 miles ESE of Punta de La Morena.

This point is fringed by a drying reef; the prominent ruins of a castle stand on it.

Castillo de San Sebastian (36°32'N., 6°19'W.), the S entrance point of the bay, stands on the S of two drying reefs which extend W from the N extremity of Isla Leon. This prominent castle is connected to the mainland by a causeway and a small cove lies between the drying reefs. A light is shown from a prominent tower, 37m high, standing on the castle.

The NW end of Isla Leon, on which the city of Cadiz stands, is fringed on its S, W, and N sides by numerous dangers, foul ground, and depths of less than 10m, which extend up to 1.5 miles offshore. These dangers are marked on the W side by a lighted buoy, which is moored 1.2 miles WSW of the castle. This lighted buoy was reported (1990) to be off station.

Las Puercas, two large drying rocks, lie about 0.5 mile N of Punta Candelaria, the N extremity of Isla Leon. A beacon stands on these rocks.

El Diamante, a rocky shoal with a least depth of 4.7m, lies 1.1 miles NNE of Las Puercas. La Galera, another rocky shoal, with a least depth of 2.1m, lies 0.4 mile NE of El Diamante.

Canal del Sur, a narrow channel, leads into the bay between the N shore of Isla Leon and the dangers lying in the vicinity of Las Puercas. It is only used by small craft with local knowledge.

Canal del Norte, a secondary channel, leads between the NE shore of the bay and La Galera shoal. It is unmarked and has a least depth of 8m.

Canal Principal (36°34'N., 6°18'W.) is the main channel leading to the inner part of the bay. It passes between the shoals fronting the N shore of Isla Leon and El Diamante shoal. The fairway is 250m wide and is marked by lighted buoys.

Caution.—Vessels approaching the bay from S should give the shoals, which extend W from Castillo de San Sebastian, a wide berth, especially if a swell is observed in their vicinity.

A restricted anchorage area, the limits of which are shown on the chart, extends up to 1.5 miles S of the entrance to Rota Naval Base.

Occasionally, fog has been reported to form a very persistent bank across the whole of the entrance to the bay.

6.22 Rota Naval Fuel Depot (Rota Naval Base) (36°37'N., 6°19'W.) (World Port Index No. 38280) is situated on the N side of the bay, 1.5 miles E of the town. The depot is leased to the U. S. Navy and consists of an artificial harbor enclosed by two converging breakwaters.

Tides—Currents.—Tides rise 3.1m at springs and 2.4m at neaps.

It has been reported (1998) that tidal heights can change extremely quickly, with changes of as much as plus or minus 1m occurring within 5 minutes.

Depth—Limitations.—The entrance between the breakwater heads is 300m wide, but due to shoaling the navigable width is only about 250m. It has been reported (2008) that additional dredging has widened the entrance to 275m.

Pier No. 1, situated on the inner side of the W breakwater, is 750m long and has charted depths of 10.5 to 11.9m alongside. Pier No. 2, a jetty, extends into the NW part of the harbor; it is 350m long and has charted depths of 8.9 to 10.5m alongside. Pier No. 3, a T-shaped tanker pier, extends into the NE part of the harbor; it is 488m long and has depths of 9.4 to 10.5m alongside.

It has been reported (1998) that the basin has been dredged to 11m. Additional reporting (2008) indicates that dredging has increased the depths in the basin to 11.5 to 13.0m. Local officials should be consulted for current conditions.

Aspect.—Landmarks include a prominent church standing in the town, 0.5 mile N of Punta de La Morena; a prominent mast standing on the N side of the harbor, 0.4 mile NW of the root of the W breakwater; a conspicuous group of tanks standing N of the harbor; and La Inmaculada, a conspicuous build-

ing, standing on the NE shore of the bay, 1.8 miles SE of the root of the E breakwater, although it has been reported (1998) that new construction in the vicinity may obscure this building.

Lights are shown from the heads of each breakwater, and a lighted range, which may best be seen on the chart, indicates the entrance fairway. It is reported that this range can easily be identified by a large dish antenna which stands close W of the front structure. It has been reported (1998) that the range lights for entering the port are difficult to make out at night due to background lighting in the basin.

Pilotage.—Pilotage is compulsory for all merchant vessels. Pilots will board about 2 miles S of the entrance.

Merchant vessels bound for the Rota Naval Fuel Depot, or for Cadiz with cargo for the depot, are required to send an ETA 72 hours and 24 hours in advance, stating the nature and quantity of the cargo carried. If the ETA needs amending by more than 4 hours, an additional message must be sent. Radiotelephone contact should be made with Rota Control 2 hours prior to arrival on VHF channel 13 or 16.

Anchorage.—Vessels bound for Rota Naval Fuel Depot may anchor within the restricted anchorage area which extends up to 1.5 miles S of the harbor entrance.

Caution.—Care should be taken to avoid the shoals lying SSW of the harbor entrance and the shoal patches of 9.1m and 7.9m lying about 600m and 900m ESE, respectively, of the head of the W breakwater.

It is reported that shallower depths than charted have been found within the harbor.

Puerto de Santa Maria

6.23 Puerto Sherry (36°35'N., 6°15'W.), an extensive recreation harbor, is situated at the E side of the bay, 0.7 mile E of Punta de Santa Catalina. It is protected by a breakwater and is used mainly by small craft. There are depths of 3.2m in the approach and 3.4m in the harbor.

Tides—Currents.—Tides rise 3.2m at springs and 2.6m at neaps.

Depths—Limitations.—Breakwaters extend 1 mile SW from the NW side of the river mouth and 275m SW from the SE side of the river mouth. The entrance channel formed between them is 80m wide and has a least depth of 5m (1990).

The main commercial quay is 774m long, with depths of 6 to 6.5m alongside. There are berths for fishing vessels and small craft situated upriver, with depths of 1 to 4.5m alongside. The harbor has facilities for bulk, ro-ro, tanker, and container vessels. Vessels up to 30,400 dwt, 171m in length, and 7m draft have been accommodated at HW.

Pilotage.—See Cadiz in paragraph 6.24.

Anchorage.—Vessels can obtain anchorage, in depths of 6 to 7m, sand, between 0.2 and 0.5 mile SW of the head of the NW breakwater.

Puerto de Santa Maria (36°36'N., 6°14'W.), a small port, is situated close NE of Puerto Sherry. It lies along the W bank of the Rio Guadalete, close within the entrance.

Cadiz (36°32'N., 6°18'W.)

World Port Index No. 38290

6.24 Cadiz, an important port, lies at the E side of the N end of Isla de Leon. It consists of a commercial harbor, situated adjacent to the city, and an international free zone harbor, situated 2 miles S of the city.

Cadiz Home Page

http://www.puertocadiz.com

Cadiz from S

Tides—Currents.—Tides rise 3.3m at springs and 2.5m at neaps.

The rise of tide within the bay may be greatly increased and the time of HW delayed by strong W winds; the opposite occurs with strong E winds.

The tidal currents usually follow the direction of the channel during both the flood and the ebb. The duration of the flood current increases with W winds, when it sometimes lasts for about 8 hours. In these circumstances, the ebb current lasts for about 4 hours. Within Canal Principal, the currents attain rates of 1.5 to 3 knots during springs and are weak during neaps.

Cadiz—Free Port from W

Cadiz—La Cabezuela

Depths—Limitations.—The main entrance channel leading to the port was reported (1991) to be dredged to a depth of 13m to a position about 0.5 mile N of the head of Dique de San Felipe. From there, depths in the channel range from about 12 to 16m, except for a shoal patch of 10.5m lying about 0.2 mile W of Muelle Industrial.

An overhead cable spans the main channel close N of the free trade port area. It has a vertical clearance of 50m; vessels must ensure a minimum clearance of 3.62m beneath this cable.

The Jose Leon de Carranza Bridge spans the harbor channel close S of the international free zone harbor. It is a double bascule bridge with a passage for shipping, 90m wide, situated near the center. Outbound vessels passing through the bridge have priority over inbound vessels.

An overhead cable spans the channel close S of the bridge. It has a vertical clearance of 50m; vessels must ensure a minimum clearance of 2.96m beneath this cable.

The commercial harbor, which lies adjacent to the city, is protected by two breakwaters and has three basins at its head.

Darsena de Poniente, the NW basin, provides the principal berthing facilities. These include Muelle Reina Sofia, 600m long, with depths of 11 to 13m alongside; Muelle Alfonso XIII,

374m long, with a depth of 10m alongside; Muelle Ciudad (formerly Muelle Generalisimo Franco), 316m long, with a depth of 10m alongside; Muelles Reina Victoria, 220m long, with a depth of 10m alongside; and Marques de Comillas, 460m long, with a depth of 10m alongside.

There are facilities for general cargo, container, bulk, ro-ro, and passenger vessels.

The middle basin of this harbor has depths of 5 to 6m and is used almost exclusively by fishing vessels. The SE basin has depths of 7 to 9m and is used as the approach to a dry dock. Several berths, formed by a row of dolphins situated on the inner side of the SE breakwater, have depths of 8.5m and are used by vessels under repair or awaiting drydock.

A tank cleaning and gas freeing dolphin berth is situated on the E side of the SE breakwater, outside of the commercial harbor. It is connected to the breakwater by a catwalk and can handle tankers up to 400,000 dwt and 11m draft.

Muelle Industrial, a bulk terminal, is 500m long, with a depth of 13m alongside. It is situated in an industrial area on the E side of the port. It is reported (1992) that this terminal will be extended to provide berthing space for container and general cargo vessels.

The international free zone harbor is entered 2 miles S of the commercial harbor. It is sheltered from E winds by a breakwater, but is exposed to winds from other directions. The main facilities include Muelle de Poniente, 325m long, with a depth of 9.5m alongside and Muelle de Ribera, 320m long, with a depth of 9.5m alongside.

The main channel in the upper harbor trends E from the bridge for 3 miles and leads between shallow flats to Arsenal de la Carraca, a naval base and dockyard. The fairway is marked by lighted buoys.

There are extensive facilities for shipbuilding and repairs within the port. At the W side of the harbor there is a drydock, 385m long and 66m wide, which is capable of handling vessels up to 400,000 dwt. At the E side of the harbor there is another large drydock, 525m long and 100m wide. This drydock is used for building and can handle vessels up to 1,000,000 dwt.

It is reported that a vessel of 390,364 dwt, 373m in length, and 12.8m draft has been accommodated within the port.

Aspect.—The city of Cadiz can readily be identified by its whitish appearance and its resemblance to an isolated island.

Conspicuous landmarks include the cathedral, with two towers and a dome, standing in the S part of the city, 1 mile E of Castillo de San Sebastian; a telecommunications tower, 118m high, standing 0.6 mile SE of the cathedral; the chimney of a power station situated 2 miles SE of the cathedral; and two pylons, 155m high, which carry a power line over the S part of the harbor channel in the vicinity of the power station.

Prominent landmarks include Torre de Tavira, 40m high, standing in the center of the city, 0.2 mile NW of the cathedral; the Jose Leon de Carranza Bridge, which spans the harbor channel 0.6 mile SE of the power station; an observatory, with a high tower, standing on a hill, 3.2 miles SE of the bridge; and the hospital building, which stands in the NW part of the city.

The entrance channels, which lead into the commercial harbor and the free trade port area, are indicated by lighted ranges which may best be seen on the chart.

Pilotage.—Pilotage is compulsory for all vessels of more than 500 gross tons. Vessels should sent an ETA message to Cadiz Traffic Control on VHF channel 14, 1 hour in advance of arrival at the pilot station. Pilots can be contacted on VHF channel 14 or 16 and generally board 2 miles SW of San Sabastian Light. Pilots for Puerto de Santa Maria are also available at this station.

Vessel Traffic Service.—A Vessel Traffic Service has been established in the Cadiz area. The service encompasses the waters of the Bahia de Cadiz, bounded by the following positions:

a. Castillio de San Sabastian.
b. 6°31.80'N., 6°23.90'W.
c. 36°38.18'N., 6°24.00'W.

Participation in the VTS is mandatory for all vessels. Vessels within the VTS area must maintain a listening watch on VHF channels 14 and 74.

Inbound vessels entering the VTS area must report their ETA to Cadiz Traffic Control on VHF channel 74 two hours prior to arrival at Fairway Lighted Buoy. This report must contain the following information:

1. Vessel's name.
2. IMO number.
3. Flag.
4. Call sign.
5. Draft.
6. Cargo information and total quantity in metric tons.
7. Proper operation of propulsion and steering systems.
8. Any dangerous cargo.
9. Total number of persons on board.

An additional report is required to confirm the ETA 1 hour prior to arrival at Fairway Lighted Buoy.

Anchorage.—Vessels can obtain anchorage, in depths of 13 to 15m, muddy sand, about 1 mile W and NW of El Diamante shoal.

Caution.—An area, within which anchoring is prohibited due to the existence of submarine cables and obstructions, extends across the harbor channel and may best be seen on the chart.

Work has begun on a new bridge across Bahia de Cadiz. The construction area is marked by buoys and a restricted area.

Bahia de Cadiz to Cabo Trafalgar

6.25 The coast between Castillo de San Sebastian and Islote de Sancti Petri, 10 miles SSE, is formed by the W side of Isla de Leon. The city stands on its N part, but farther S, the land is low and sandy.

Torregorda, a conspicuous tower, 28m high, stands near a group of buildings, 5 miles SSE of Castillo de San Sebastian. Cerro de Los Martires, a group of barren hills, stands 2 miles SE of the tower. Several buildings and a hermitage are situated near the summit of the highest hill.

Bajos de Leon (36°29'N., 6°18'W.), an extensive shoal bank with a least depth of 3.9m, lies centered about 2.5 miles S of Castillo de San Sebastian. Placer de Los Martires, a long and narrow shoal bank, lies with its N end located about 2 miles SSE of Bajos de Leon. It has a least depth of 6.4m and extends about 3.5 miles SSE.

Caution.—An area, within which anchoring and fishing are prohibited due to the existence of submarine cables, extends W from the coast in the vicinity of Torregorda tower and may best be seen on the chart.

Explosive dumping areas, the limits of which are shown on the chart, lie centered 13 miles WSW and 30 miles SW of Castillo de San Sebastian.

An outfall pipeline extends 1.6 miles SW from a point on the coast, 1.9 miles NNW of Torregorda tower.

Occasionally, a floating target, with associated buoys, is moored 1 mile WSW of Torregorda tower.

6.26 Islote de Sancti Petri (36°23'N., 6°13'W.), a low and rugged islet, lies 0.7 mile S of the S extremity of Isla de Leon. A drying reef extends 1 mile N from this islet and a group of drying rocks lies close S of it.

A light is shown from a tower, 16m high, standing on the castle which is situated on the islet.

A chapel and the town of Chiclana are situated on Cerro de Santa Ana, 4 miles NE of Islote de Sancti Petri. Both the chapel and the town are conspicuous from seaward, as their white color contrasts with the green vegetation in the vicinity.

Cano de Sancti Petri (36°24'N., 6°12'W.) is a narrow, winding, and shallow channel which separates the S end of Isla de Leon from the mainland. The entrance is fronted by a bar over which there are depths of 1 to 3.8m. The channel is used by small craft and fishing boats with local knowledge.

The coast between Islote de Sancti Petri and Cabo Roche, 6.2 miles SSE, is bordered by a sandy beach along its S part. Torre Bermeja, a round tower, 9m high, stands 1.5 miles ESE of Islote de Sancti Petri. Torre del Puerco, a round tower in ruins, stands 2.3 miles NNE of Cabo Roche and Cerro de La Cabeza del Puerco, a 49m high hill, stands 0.5 mile NE of it. With E winds, vessels can anchor, in depths of 15 to 16m, about 1 mile off the above beach.

6.27 Cabo Roche (36°17'N., 6°08'W.) is formed by a low, steep, and reddish-colored cliff. A light is shown from a tower, 20m high, standing on the cape.

Puerto de Conil, a small fishing harbor, lies close E of the cape and is protected by a breakwater.

A rocky shoal ridge, with depths of 3 to 11m, extends 3.7 miles SSE from a position 1.5 miles WSW of Islote de Sancti Petri. The shallowest parts of this ridge break in heavy seas. Depths of 20m lie about 0.5 mile W of this ridge and are usually marked by a heavy swell which breaks at times. Vessels are advised to give this area a wide berth.

Los Marrajos (36°19'N., 6°11'W.), a rocky bank, lies centered about 2.5 miles NW of Cabo Roche. Its shallowest parts have depths of less than 5m. La Pasada, a detached shoal with a depth of 7.9m, lies 4 miles NW of Cabo Roche and several other detached shoals, with depths of 7.2 to 9.5m, lie within 1.5 miles NW of it.

La Piedra que Revienta, a detached shoal with a depth of 3.7m, and Los Navios, a detached shoal with a depth of 7m, lie 3 miles W and 3 miles WSW, respectively, of Cabo Roche. Another detached shoal, with a depth of 6.3m, lies 0.8 mile WSW of Los Navios. All these shoals break in heavy weather.

Lajas de Cabo Roche (36°17'N., 6°09'W.), a group of shoals with depths of 3.7 to 11m, lies within 1.5 miles S and SW of Cabo Roche and is marked by breakers during a heavy sea.

Conil (36°18'N., 6°08'W.), a conspicuous village, is situated 2.8 miles SE of Cape Roche. The coast between is steep, rocky, and somewhat higher than the land in the vicinity of the cape. The village stands on the slope of a hill and is visible from a considerable distance seaward because of its white houses and windmills. La Atalaya, a prominent tower, stands close NW of the village and a conspicuous radio mast stands 0.5 mile inland, 0.8 mile NW of it.

Caution.—A restricted area, the limits of which are shown on the chart, lies centered 12 miles W of Cabo Roche. Anchoring and fishing are prohibited within this area.

An area, within which anchoring and fishing are prohibited due to the existence of submarine cables, extends seaward from the coast in the vicinity of Conil and may best be seen on the chart.

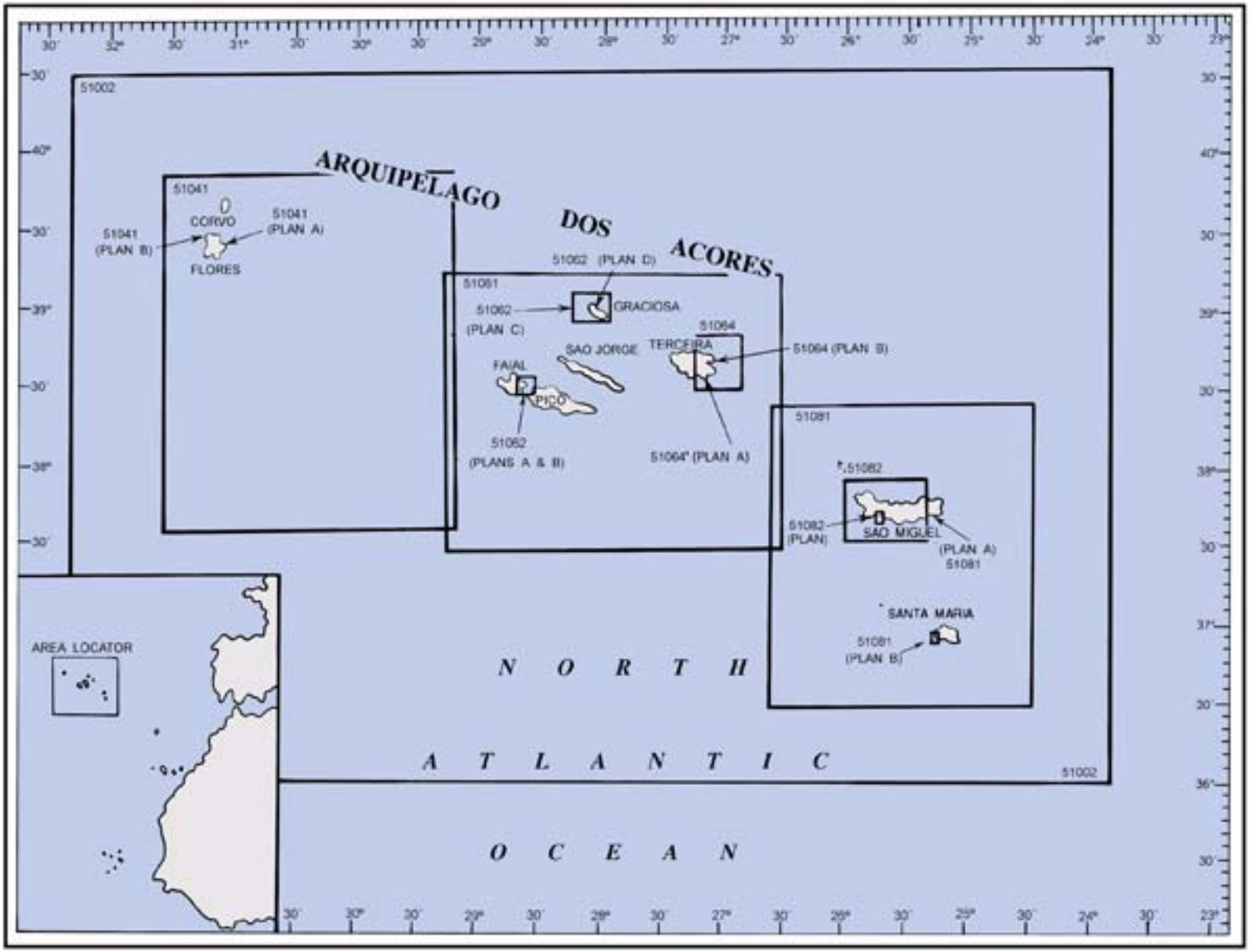
6.28 Torre Nueva (36°14'N., 6°04'W.), a conspicuous tower, stands 2.5 miles SSE of Conil on the only rocky point to be found along this section of the coast. Other towers are situated near the coast, but most are reported to be in ruins. A conspicuous building, known as Casa del Queso, stands near the coast, 1 mile SE of Torre Nueva. The coast between Torre Nueva and Cabo Trafalgar, 3.4 miles SSE, is low and sandy. It rises inland to Altos de Meca, a level hilly ridge, which extends NE from the cape. A group of windmills is situated at the NE extremity of this ridge at a height of 218m.

Lajas de Conil (36°13'N., 6°06'W.), a group of rocky shoals, is located on a bank which lies between 1 and 2 miles SW of Torre Nueva. La Laja, with a depth of 1.3m, is the shallowest shoal and lies on the N part of this bank. It breaks when there is the slightest sea. Cabezo de Patria, a rocky shoal with a depth of 4.2m, lies 2 miles WNW of Torre Nueva.

During E winds, vessels can obtain anchorage, in depths of 9 to 16m, anywhere off the coast between Torre Nueva and Cabo Trafalgar; however, if the wind shifts to the N or NW, vessels are advised to proceed to sea or to move to the anchorage lying E of the cape.

Cape Trafalgar (36°11'N., 6°02'W.), 20m high, is located 8.5 miles SE of Cabo Roche. A light is situated at this cape; shoal banks lie up to 15 miles SW of the cape.

The cape and its off-lying dangers are fully described in Pub. 131, Sailing Directions (Enroute) Western Mediterranean.



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

SECTOR 7

THE ARQUIPELAGO DOS ACORES (AZORES)

Plan.—This sector describes the three groups of islands which form the Arquipelago dos Acores. The descriptive sequence is from the NW to SE.

General Remarks

7.1 The Arquipelago dos Acores is located 770 miles off the coast of Portugal. It consists of nine islands which are divided into three groups: the NW Group, the Central Group, and the Southeast Group. The Northwest Group, which includes Corvo Island and Flores Island, is separated from the Central Group by a clear channel, 120 miles wide. The Central Group is formed by Faia Island, Pico Island, Sao Jorge Island, Graciosa Island, and Terceira Island. The channel separating the Central Group from the Southeast Group is 75 miles wide and clear of dangers, with the exception of Banco Dom Joao de Castro, which lies 33 miles SE of Terceira Island and has a least depth of 6.7m. The Southeast Group is formed by the islands of Sao Miguel Island and Santa Maria Island, with Ilheus das Formigas, a narrow group of rocks, lying about 20 miles NE of the latter.

These islands, which belong to Portugal are, with the exception of Santa Maria, of volcanic origin. They may be considered as consisting of a number of craters which form an extensive ridge, 300 miles long, between 39°45'N and 36°55'N, and 31°20'W and 24°45'W.

The islands are generally mountainous, radar conspicuous, and visible from a considerable distance.

Tides—Currents.—Currents in the vicinity of the archipelago may set in any direction, but there is a slight predominance of currents which set between the SSW and SSE throughout the year. The velocity of most of the currents observed did not exceed 1 knot.

Caution.—Local magnetic anomalies have been reported in several locations throughout the islands.

Numerous fishing vessels may be encountered in the vicinity of these islands.

Several ODAS buoys may frequently be encountered in the vicinity of these islands.

It is reported (2005) that seamounts with depths of 606m and 598m lie, respectively, in positions 38°29'N, 26°34'W and 40°24'N, 26°54'W.

Northwest Group

7.2 **Corvo Island** (39°42'N., 31°07'W.), the N and smallest island of the archipelago, consists of a single extinct volcanic mountain. The crater of this mountain, which is known as Caleirao, occupies the whole of the NW part of the island. Peaks of 670m and 777m stand on the N and S sides, respectively, of this crater.

Except in the S part of the island, the coasts fall vertically to the sea and are inaccessible.

Corvo Island

Corvo Light and nearby windmill

Ponta Negra (39°40'N., 31°07'W.), fringed by rocks, is the S extremity of Corvo Island. A light is shown from a tower, 4m high, standing on the point and three windmills are situated close E of it.

The E coast of the island, NE of this point, is formed by high cliffs fringed by rocks. A conspicuous pyramid-shaped rock, 45m high, stands on the shore on the NE side of a bay, 0.8 mile N of Ponta Negra Light. Two prominent buildings, with a mast, stand at the head of the bay, 0.4 mile NW of Ponta Negra.

Vila Nova (39°41'N., 31°06'W.), the principal town of the island, is situated in Portinho da Casa, a small bay, lying close NE of Ponta Negra. A prominent church stands in the S part of the town. A pier, 50m long with depths up to 4m alongside, is situated at the head of the bay.

During good weather, vessels can obtain anchorage, in depths of 18 to 27m, 0.4 to 0.6 mile W of Ponta Negra Light.

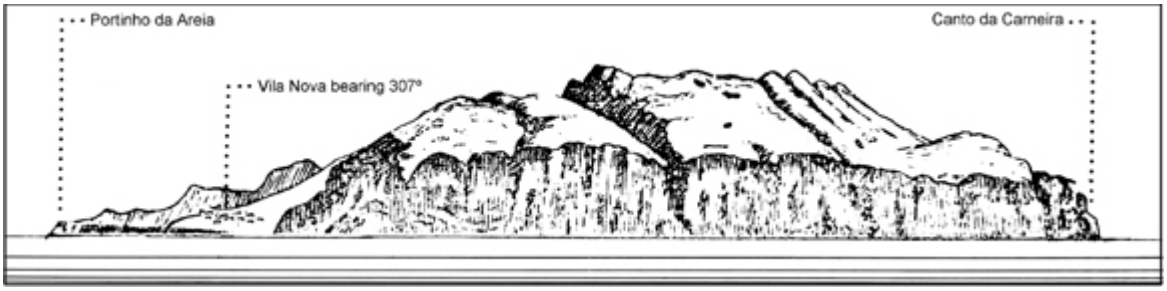
Ponta do Vale, the SE extremity of the island, is located 1.5 miles NE of Ponta Negra. It is surmounted by a prominent conical hill, 267m high.

Canto da Carneira (39°43'N., 31°05'W.), the NE extremity of the island, is located 1.9 miles N of Ponta do Vale. This point is formed by a bluff, 232m high, and a rock, with a depth of 2.1m, lies 0.3 mile N of it. A light is shown from a tower, 8m high, standing on this bluff.

Ponta do Torrao, the N extremity of the island, is formed by an inaccessible projecting rock, 112m high, with a prominent overhanging cliff. An islet, 124m high, lies close to the shore between this point and Ponta Torrais.

Ponta Torrais, the NW extremity of the island, is located 1.7 miles WNW of Canto da Carneira. It is a conspicuous point, which rises steeply to the edge of the crater, and a small islet lies close off the N side.

Ponta Oeste, the W extremity of the island. is located 1.5 miles S of Ponta Torrais. It presents the appearance of low cliffs descending in terraces to the sea.



Corvo Island—SE coast

Tides—Currents.—Within the vicinity of Corvo Island and Flores Island, the flood tidal current sets N and the ebb current sets S, with rates of 1.5 knots at springs and 0.7 knot at neaps. These tidal currents, when opposed by gales, create a confused sea off the N and S extremities of both islands.

It is reported that there is also a current in the vicinity of these two islands which sets in a general SE direction, with a rate of 0.3 to 0.8 knot depending upon the force of the wind.

7.3 Flores Island (39°26'N., 31°12'W.), located 9.5 miles SSW of Corvo Island, is the W island of the archipelago. It is mostly mountainous, but cultivated and wooded. Testa da Igreja, the summit of the island, slopes gradually N and numerous waterfalls can be seen on its S part.

Ponta Delgada (39°31'N., 31°12'W.), the N extremity of the island, is moderately high and surmounted by a small conical hill. The point is fronted by rocks, which extend up to 0.4 mile seaward, and several radio masts are reported to stand on it.

Baixos do Joao de Lisboa, a shoal with a least depth of 30m, lies 2 miles NE of the point.

Ponta Ruiva, the NE extremity of the island, is located 2.5 miles SE of Ponta Delgada. The coast between consists of a bay with low cliffs along its shore. Anchorage, sheltered from winds from the SE through S to W, can be obtained, in depths of 35 to 45m, sand, midway between the two points.

Ilheu de Alvaro Rodrigues, fronted by rocks on its N side, lies close offshore, 1 mile SSE of Ponta Ruiva. Sheltered anchorage may be obtained, in a depth of 66m, sand, close SE of this islet.

7.4 Santa Cruz (39°27'N., 31°07'W.), a small harbor, lies 2.5 miles SSE of Ilheu de Alvaro Rodrigues. The coast between is fringed with rocks which extend up to 0.3 mile offshore. The town, the principal one of the island, may be identified by its castle and by Monte das Cruzes, a pointed hill, standing 0.5 mile WSW of it. Two conspicuous radar antennas stand near the summit of this hill.

A light is shown from a tower, 6m high, standing on the N side of the town. A prominent factory and a chimney stand 0.5 mile N of the light. A conspicuous airport control tower stands 0.4 mile NW of the light.

The harbor consists of two small basins, with depths of 2m, which are used by fishing vessels and small craft. The entrance channels leading to the basins are indicated by lighted ranges, but numerous obstructions lie in the approaches and local knowledge is essential. The town can be contacted on VHF channel 14 or 16.

Anchorage may be obtained, in a depth of 75m, 0.4 mile SE of the light. This berth is sheltered from winds from the N through W to SW.

Caution.—A local magnetic anomaly has been reported in the vicinity of Santa Cruz.

7.5 Ponta da Caveira (39°25'N., 31°08'W.), a low and rocky point, is located 2 miles SSW of Santa Cruz. The coast between forms a bay which is bordered by a shingle beach and affords the best anchorage off the island. Vessels are advised to anchor, in a depth of 37m, about 0.8 mile SSW of Santa Cruz Light, or, in a depth of 27m, about 1.4 miles SSW of the light.

Ponta da Lomba, located 1.7 miles SSW of Ponta da Caveira, is high, steep, and can be identified by a prominent church standing 0.5 mile NW of it.

Ponta do Baixo, located 1.8 miles SSW of Ponta da Lomba, is steep and fronted by rocks.

Lajes (Lajes das Flores) (39°23'N., 31°10'W.), a small town, stands on the SW shore of a small and rocky bay which is entered close N of Ponta do Baixo. A prominent church, with two towers, stands in the town.

A light is shown from a tower with a dwelling, 16m high, standing on Ponta das Lajes, 0.4 mile SW of Ponta do Baixo; a conspicuous water tower stands close NNW of it. A breakwater extends 300m ENE from the E extremity of Ponta das Lajes and protects a small quay at its root.

Anchorage can be obtained, in a depth of 30m, 0.4 mile E of

Lajes das Flores Light

Ponta do Baixo, or, in a depth of 22m, 0.4 mile ENE of the point.

Construction is being carried out in the vicinity of Ponta do Baixo.

7.6 Baixa do Morros (39°21'N., 31°11'W.), a pinnacle rock with a depth of 5.5m, lies about 1.4 miles SSW of Ponta das Lajes.

Ponta dos Ilheus, low and rocky, is located 3.5 miles W of Ponta das Lajes and is the SW extremity of the island. Baixa do Escolar, with a depth of 19m, lies about 1.5 miles S of this point.

Anchorage can be obtained, in a depth of 42m, off a small cove, about 0.7 mile W of Ponta dos Ilheus.

Ponta das Cantarinhas, located 1.3 miles N of Ponta dos Ilheus, is low and has a conspicuous islet lying close off it. Ponta dos Bredos, located 2 miles N of Ponta das Cantarinhas, is high, cliffy, and has a whitish appearance. A prominent column-shaped rock lies close off this point.

Faja Grande, located 1.8 miles N of Ponta dos Bredos, is a low point on the N side of a promontory which forms the W extremity of Flores Island. Two above-water rocks lie 0.5 mile NW of the point. A light is shown from a structure, 6m high, standing on the point and a conspicuous chimney stands 0.6 mile S of it.

Several very conspicuous waterfalls may be seen in the valley, which is dominated by a peak rising inland from the coast, lying between Faja Grande and Ponta dos Bredos.

Ponta dos Fenais, located 2.3 miles N of Faja Grande, is low and backed by a steep and black hill. Ilheu de Monchique, 33m high, lies 1 mile WNW of the point. This prominent islet is precipitous and 33m high. During offshore winds, vessels can obtain anchorage, in depths of 45 to 55m, within the bay lying between Ponta dos Fenais and Faja Grande. Baixa Rusa, an above-water rock, lies on a patch of foul ground which extends up to 0.4 mile W of Ponta dos Fenais.

Ponta do Albarnaz (39°31'N., 31°14'W.), the NW extremity of Flores Island, is located 2 miles NNE of Ponta dos Fenais. It is steep and of a reddish color. A light is shown from a tower, with a dwelling, 15m high, standing on the point.

Central Group

7.7 Faial Island (Fayal Island) (38°35'N., 28°42'W.) is mountainous, wooded, and its center is occupied by an extinct volcanic crater. Cabeco Gordo, the summit of the island, rises to a height of 1,044m at the S side of this crater. Several other volcanic peaks stand in the NW part of the island. The coasts are mostly precipitous with the lowest parts being along the S and W sides of the island.

Monte da Guia (38°31'N., 28°38'W.), the SE extremity the island, is formed by an extinct volcano, 144m high. It is steep, rounded, and surmounted by a conspicuous radio mast.

The coast trends W for 6 miles from Monte da Guia to Ponta Castelo Branco and is steep and fringed by rocks. Ponta Forte is located 1.3 miles E of the latter point and the installations of an airport are situated close inland of this point.

Ponta Castelo Branco, the SW extremity of the island, is formed by a round and conspicuous peninsula, which from a distance appears like a large detached rock; it is surmounted by a fort.

Ponta dos Capelinhos, a steep-to promontory 160m high, is located 6 miles NNW of Ponta Castelo Branco. It is the NW extremity of the island and a disused light stands on it. A stranded wreck is reported to lie on the N side of this point.

A light is shown from a tower, 14m high, standing on a point along the coast, 1.5 miles SSE of Ponta dos Capelinhos.

From Ponta dos Capelinhos, the coast trends E for 3.5 miles and then NE for 3 miles to Ponta dos Cedros. It forms a large bight with the small town of Praia da Norte standing at the head, above a sandy beach.

Anchorage can be obtained, in a depth of 37m, sand, about 0.4 mile off the head of this bight.

Ponta Jorge, located 1 mile SW of Ponta dos Cedros, consists of high, vertical cliffs. This point can easily be identified by a peak, 147m high, standing 0.5 mile NE of it.

Ponta da Ribeirinha (38°36'N., 28°36'W.), the NE extremity of the island, is located 6 miles SE of Ponta da Ribeirinha. It is high and steep with a small sandy beach at the base. A prominent chapel stands on a cliff at the S side. A light is shown from a prominent tower, with a dwelling, 20m high, standing close NW of the point.

Between Ponta da Ribeirinha and Ponta da Espalamaca (Cavalo), located 2.8 miles S, the coast is divided into two bights which afford anchorage to small vessels. Ponta da Espalamaca is bold and cliffy; a shoal, with a depth of 4.2m, extends up to 0.3 mile NE of it.

7.8 Horta (38°32'N., 28°37'W.) (World Port Index No. 38080), the main town of the island, is situated in Baia da Horta, which offers one of the best anchorages in the archipelago. This bay is entered between Ponta da Espalamaca and the NE side of Monte da Guia, 1.5 miles SW.

Port of Horta Home Page

http://www.portohorta.com

Winds—Weather.—The bay is exposed to the heavy seas which set in during SW gales.

Tides—Currents.—Tides rise 1.6m at springs and 1.3m at neaps.

Depths—Limitations.—The main berthing area is situated along the inner side of the breakwater. It is 410m long with depths of 4 to 6.5m alongside. Several mooring buoys are

Horta breakwater Light

situated in depths of 10m, in the central part of the harbor. A quay, situated at the head of the harbor, can only accommodate lighters and small craft. A marina, with extensive facilities for yachts, is situated at the NW side of the harbor.

It is reported that vessels up to 14,200 grt, 146m in length, and 7.5m draft have entered the harbor. Larger vessels anchor outside and discharge cargo into lighters.

Aspect.—The town is situated on the lower slopes of Monte Carneira, 268m high, which dominates the W side of the bay. A steep and black hill stands on Entre Montes, the isthmus, which connects Monte da Guia to the island. A harbor fronts the town and is protected by a breakwater which extends NNE from the N side of this isthmus.

A prominent statue of a crucifix stands 0.5 mile WNW of Ponta da Espalamaca; a conspicuous radio mast stands close WNW of it. A conspicuous meteorological observatory is situated on a hill, 58m high, standing 0.4 mile SW of the head of the breakwater. Four prominent radio masts and a conspicuous water tower stand close NW of the observatory. The prominent twin towers of a church are situated close SE of the observatory. A conspicuous clock tower stands in the N part of the town.

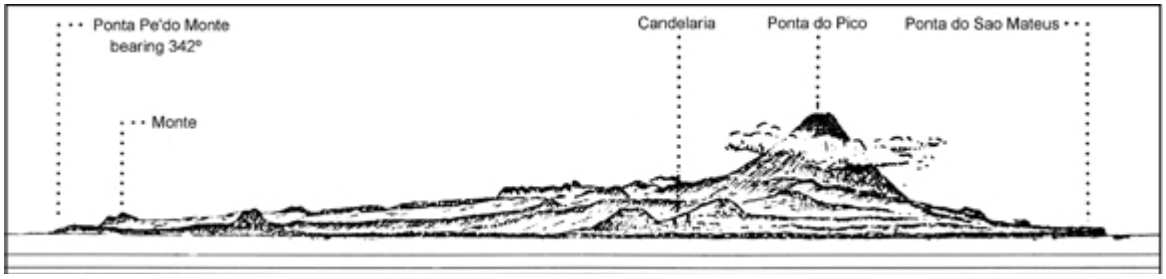
A light is shown from a framework tower, 15m high, standing on the head of the breakwater.

Pilotage.—Pilotage is compulsory within an area with a radius of 2 miles centered on the breakwater light. Pilots may be contacted on VHF channel 14 or 16 and board about 0.5 mile outside the breakwater at the juncture of the Faial/Pico channel or the Faial/St. George channel; otherwise the pilot boards at the breakwater. Vessels should send an ETA 48 hours and 24 hours in advance.

Anchorage.—Vessels anchor, in a depth of 33m, about 0.2 mile E or 0.3 mile SE of the breakwater head.

Caution.—During strong winds from between the SW and SE, a steep and confused sea may be experienced at the anchorage and within the harbor, At such times, vessels of any size should not attempt to enter the harbor.

The holding ground in the harbor is reported to be bad.



Pico Island

A local magnetic anomaly has been reported in the vicinity of the port.

Numerous disused submarine cables have been reported to exist within an area lying about 0.4 mile NNE of the head of the breakwater.

Princess Alice Bank (37°58'N., 29°18'W.) lies about 42 miles SW of Faial Island. This bank has a least reported depth of 17m and numerous fishing vessels may be encountered in its vicinity. Depths of 20m (1958), 60m (1947), and 50m (1958) were reported to lie about 10 miles S of this bank.

Acor Bank (37°12'N., 28°58'W.), with a least depth of 144m, lies about 18 miles NE of Princess Alice Bank. Depths of 18.3m (1945) and 46m (1954) were reported to lie about 6 miles WNW of this bank.

7.9 The Canal do Faial, which separates Faial Island from Pico Island, is 2.5 miles wide at its narrowest part between Ponta da Espalamaca and Ilheus da Madalena. In general, the depths in this channel are more irregular in the S part than in the N part. The Faial Island side of the channel is safer, as heavy rollers may exist at the E side off the NW coast of Pico Island. The flood tidal current in the channel sets NNE and the ebb current sets SSW; they attain rates of 1 to 2 knots. The ebb tidal current generally sets strongly into Baia da Horta, where rates up to 2.5 knots have been experienced.

Baixa do Sul lies in the middle of the channel at the S end, about 1.5 miles ESE of Monte da Guia. It is steep-to with a least depth of 7.1m. During SW gales, the sea breaks heavily over this rock.

Baixa do Norte, with a least depth of 16.2m, lies 0.8 mile WNW of Ilheus da Madalena.

A patch, with a depth of 25m, was reported (1980) to lie 3.2 miles ESE of Ponta da Ribeirinha, and a patch, with a depth of 24m (sounding doubtful), was reported (1966) to lie 0.7 mile ENE of Ponta da Espalamaca.

Caution.—A submarine power cable crosses the channel be-

tween a point close N of Ponta da Espalamaca and Madalena.

Ferries ply frequently across the channel.

7.10 Pico Island (38°30'N., 28°20'W.) takes its name from the highest mountain of the archipelago which stands in its W part. This mountain, 2,352m high, almost completely occupies the W part of the island and has a remarkable summit which terminates in a sharp cone. It is still an active volcano and smoke, flames, and ashes have been emitted to some distance. The summit is frequently obscured by clouds, but in clear weather has been reported visible from up to 75 miles seaward.

Between this mountain and the E end of the island are several other prominent mountains, of which Pico Topo is one. This mountain, 1,008m high, stands 9 miles WNW of the E extremity of the island.

Pica Mountain

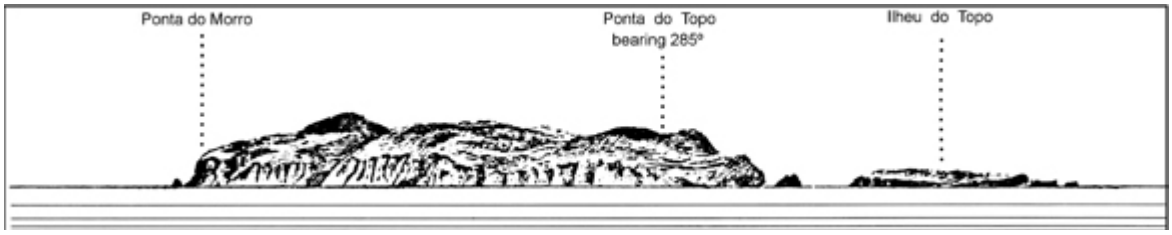
The coast of the island is generally rugged, wild, inaccessible, and without shelter. There are no good anchorages for large vessels, but there are several coves where small craft may find sheltered anchorage.

Ponta do Sao Mateus (38°25'N., 28°27'W.) is a low point surmounted by five hillocks. A light is shown from a tower, 13m high, standing on the point. A landing place is situated at the W side of the small town of Soa Mateus, which stands in a small cove close W of the point.

The low coast at the W end of the island trends WNW for 3.2 miles from this point to Ponta Espartel (Ponta Hospital), then nearly 5 miles N to Ponta do Arieiro. A cove, with a landing place for local fishing vessels, lies 2.3 miles N of Ponta Espartel and its entrance is indicated by a lighted range.

Ilheus da Madelena (38°32'N., 28°33'W.), comprised of two islets, lies 0.5 mile offshore, 0.7 mile NW of Ponta do Arieiro. The N islet is 72m high and conical. The S islet is flat-topped with a round opening in its W part. A rocky spit extends about 500m W from Ponta do Arieiro and there are depths of 6m in the narrow fairway which lies between its extremity and the rocks fringing Ilheus da Madalena. A boat landing is situated at the head of a small inlet, 0.7 mile SE of Ilheus da Madelena. The entrance is indicated by a lighted range when conditions for entry are favorable.

7.11 Madalena (38°32'N., 28°32'W.), the principal town of the island, stands at the head of a small inlet and is fronted by a harbor which is mostly used by inter-island traffic and fishing vessels. The harbor is protected by a breakwater, on the N side, and a spit, which extends 0.2 mile W from Ponta do Arieiro, on the S side. It should be approached from N of Ilheus da Madelena. The harbor can be contacted by VHF and a lighted range indicates the entrance. Anchorage may be obtained, in a depth of 29m, fine sand, about 0.7 mile S of Ilheus da Madalena.



Sao Jorge Island

Ponta Baixo Grande is located 1.5 miles NE of Madalena. Several landing places are situated between this point and the E extremity of the island. Most of the projecting points along the N coast of the island are low and fringed with rocks, but rise rapidly towards the interior.

Porto Cacharro, a boat landing, is situated within a small bay, with a village, 2.8 miles E of Ponta Baixo Grande.

Porto do Cais do Pico (38°32'N., 28°19'W.), a small harbor, lies 6.3 miles ESE of Porto Cacharro. It is formed by a breakwater which extends 250m ESE from the shore at the N side of a shallow bay. A landing place is situated at the head of this bay. Vessels up to 180m in length and 6m draft can be accommodated alongside a berth at the inner side of the breakwater.

A light is shown from a hut, 5m high, standing at the E side of the bay. A conspicuous factory and a chimney stand 0.2 mile NNW of the light structure. Pilotage is compulsory within an area with a radius of 2 miles centered on the breakwater light. The pilot boards 0.5 mile E of the breakwater. The harbor can be contacted on VHF channel 14 or 16. Anchorage may be obtained, in a depth of 55m, sand and crushed rock, close ESE of the breakwater head.

A landing place will also be found in a small inlet close W of Ponta de San Antonio, 1.1 miles NW of Cais do Pico.

Ponta Misterio, the most prominent point of the N coast, is located 3.7 miles SE of Cais do Pico. It is 18m high and fronted by caves. The coast to the E of this point is higher and more cliffy then that to the W.

7.12 Ponta da Ilha (38°25'N., 28°02'W.), the E extremity of the island, is low, sloping, and fringed by foul ground. A

light is shown from a prominent tower with a dwelling, 19m high, standing on the point. A prominent church stands at the village of Piedade, 1.5 miles NW of the point.

Calheta de Nesquim is located 2.5 miles WSW of Ponta da Ilha and two small coves, where landing is possible, lie between. The coast between Calheta de Nesquim and Ponta Negras, 3.5 miles W, is bordered by overhanging cliffs.

Ponta da Queimada, the S extremity of the island, is located 4.3 miles WSW of Ponta Negras. It is formed by a blunt promontory, with reefs near the base, surmounted by a small conical hill with a fort standing on it.

Lajes (Lajes do Pico) (38°24'N., 28°16'W.) (World Port Index No. 38083) is situated at the head of a lagoon, about 1 mile NW of Ponta da Queimada. The small town is fronted by a quay which is used by local small craft. Numerous dangers lie in the approaches to the lagoon and the entrance, which has a depth of 1.1m, is indicated by a lighted range. Anchorage can be obtained, in a depth of 29m, sand, close NW of the entrance. It is reported that a conspicuous television mast stands 1 mile NE of the town.

Ponta Sao Joao, located 5.2 miles W of Lajes, is formed by low cliffs and surmounted by two extinct craters. A landing place is situated at the small town of Sao Joao, 1.2 miles E of the point. Ponta de Sao Mateus, previously described in paragraph 7.10, is located 3.8 miles W of Ponta Sao Joao.

7.13 Sao Jorge Island (38°40'N., 28°05'W.) is separated from Pico Island by a clear passage, nearly 10 miles wide. It has a range of volcanic mountains which extend along the spine. Pico da Esperanca, the summit of the island, is 1,054m high and stands near the center. The coasts are mostly precipitous with high cliffs.

Ponta do Topo (38°33'N., 27°46'W.), the E extremity of the island, can be identified by Ilheu do Topo, 18m high, lying close E of it. This islet is fringed by rocks and the passage lying between it and the island is foul. A light is shown from a tower with a dwelling, 16m high, standing on Ponta do Topo. The prominent village of Topo is situated close SW of the point. Between Ponta do Topo and Ponta dos Monteiros, 3.8 miles WSW, the coast is sheer.

Calheta (38°22'N., 28°02'W.), a small cove, is located 9.5 miles NW of Ponta dos Monteiros. A landing place, marked by a light, is situated at the head of this cove. Ponta Queimada, marked by a light, is located 9.6 miles NW of Calheta and Morro Grande, a bold and blackish headland, is located 1.5 miles NW it.

Velas (38°40'N., 28°12'W.), the principal town of Sao Jorge, is situated on the W side of the bay which is entered between Ponta Queimada and Morro Grande. A quay, 270m long, is situated close SE of the town and has alongside depths ranging from 2.6m at its root to 6.5m near its head.

The coast extending WNW from Morro Grande continues to be formed by cliffs which are dominated by high and sharp peaks.

Ponta dos Rosais (38°45'N., 28°19'W.) (Ponta da Terra), the W extremity of the island, is located 6.2 miles NW of Morro Grande. It is narrow and moderately high. A light is shown from a tower, with a dwelling, 28m high, standing on the point.

Several rocks lie off this point including two stacks, each 71m high. A patch, with a depth of 15m, is reported to lie about 2.5 miles WNW of the point.

Ponta do Norte Grande, a rocky projection on the N shore of the island, is located 13 miles SE of Ponta dos Rosais. The coast between is composed of barren and rugged cliffs. A light is shown from a tower, 6m high, standing on Ponta do Norte Grande.

Ponta Caldeira, located 6.7 miles SE of Ponta do Norte Grande, is fringed by shoals which break up to 0.5 mile offshore. A prominent town stands close above this point. Ponta do Topo, formed by high and steep cliffs, is located 9.5 miles SE of Ponta Caldeira.

Caution.—Due to landslides in the vicinity of several points, the depths close offshore are unreliable.

7.14 Graciosa Island (39°01'N., 28°00'W.), the most fertile of the archipelago, is separated from San Jorge Island by a clear channel 20 miles wide.

This island is very mountainous, particularly in the S part, where a volcanic crater with three peaks dominates the SE extremity of the island. Pico do Coirao, the highest of these peaks, rises to a height of 402m and stands on the SE side of the crater.

Groups of mountains also dominate the S and NE coasts of the island. These groups are separated by deep valleys and when seen from a distance, particularly from SW, give the impression of separate islands.

Ponta da Carapacho (Restinga) (39°01'N., 27°57'W.), the SE extremity of the island, is low but rises a short distance inland. This point is fringed by a reef and a rock, with a depth of 4.3m, lies close S of it. A light is shown from a tower, with a dwelling, 14m high, standing on the point.

Ilheu de Baixo, 72m high, lies 0.5 mile SE of Ponta da Carapacho. A small islet, fronted by rocks, lies close off the NE side of Ilheu Baixo.

Ponta do Sul, a high bluff, forms the S extremity of the island and is located 1 mile WSW of Ponta da Carapacho. Ponta Folga (Enxudreiro) is located 1.2 miles WNW of Ponta do Sul and the village of Folga is situated at the head of a bay, close NW of it. Anchorage can be taken, in depths of 24 to 38m, fine sand, off the shore of this bay, depending upon the size of vessel.

Ponta Branca, fronted by an above-water rock, is located 2 miles WNW of Ponta Folga. The coast between is formed by cliffs which decrease in height. Ponta Alfonso do Porto, the W extremity of the island, is located 3.2 miles NW of Ponta Branca. A small bay, entered close S of this point, is surrounded by cliffs and has a good landing place situated on its S side. Its N side is fringed with rocks.

7.15 Ponta Barca (39°06'N., 28°03'W.), high and black, is located 2 miles NNE of Ponta Alfonso do Porto and is the NW extremity of the island. A light is shown from a prominent tower, with a dwelling, 23m high, standing on the point.

A steep-to rock, with a depth of 5.2m, lies about 1.3 miles NE of the light.

From Ponta Barca, the coast trends ESE for 2.3 miles to Ponta Ferreira and is fronted by several rocks. Foul ground extends up to 0.3 mile N of Ponta Ferreira.

Santa Cruz (39°05'N., 28°00'W.), the principal town on the

island, is situated at the head of a small bay lying on the W side of Ponta Ferreira. A light is shown from a hut, 6m high, standing in the W part of the town and a prominent windmill is situated 0.3 mile SE of it. Three prominent churches stand on the crest of a dark-colored hill, 128m high, which stands close SE of the town. An aeronautical radiobeacon is situated 0.5 mile SW of the town.

The town is fronted by a quay, 35m long, with depths of 1 to 4m alongside. Anchorage can be obtained, in a depth of 27m, sand and shell, about 0.2 mile from the head of the bay. Local knowledge is required as the bay is fringed by rocks.

Ponta do Quitadoiro, located 1.2 miles SE of Ponta Ferreira, is formed by a prominent high cliff. A conspicuous hill, 213m high, overlooks this point. From this point to Ponta Frei Joao, 0.7 mile SE, the coast is low and fringed with rocks. A conspicuous chimney stands close SW of Ponta Frei Joao and windmills stand SE and S of it.

Ilheu da Praia, fringed by rocks, lies 0.9 mile E of Ponta Frei Joao. This islet, 51m high at the N end, is covered with grass and has a clump of trees in its center. A shoal, with a least depth of 7m, lies 0.3 mile NE of it.

Vila da Praia (39°03'N., 27°58'W.), a small harbor, is situated in a shallow bay which is entered S of Ponta Frei Joao. It is protected by Ilheu da Praia and a breakwater which extends 300m ESE from a point on the shore, 0.2 mile S of Ponta Frei Joao. A lighted range leads between the breakwaters into the port. The S side of the harbor is encumbered by numerous rocks. A berth, situated on the S side of the breakwater, is 190m long and has a depth of 5m alongside the outer 140m. Local knowledge is required. Anchorage can be obtained, in a depth of 13m, sand and good holding ground, about 250m ESE of the head of the breakwater. A dangerous wreck is reported to lie about 0.3 mile ESE of the head of the breakwater.

Between Vila de Praia and Ponta da Carapacho (Restinga), 2.5 miles SSE, the coast is sheer with sharply rising ground behind it.

7.16 Terceira Island (38°43'N., 27°10'W.), located 20 miles ENE of the SE extremity of Sao Jorge Island, is the principal island of the archipelago. The residences of the Governor General and other civil and military authorities are situated

Terceira Light and breakwater

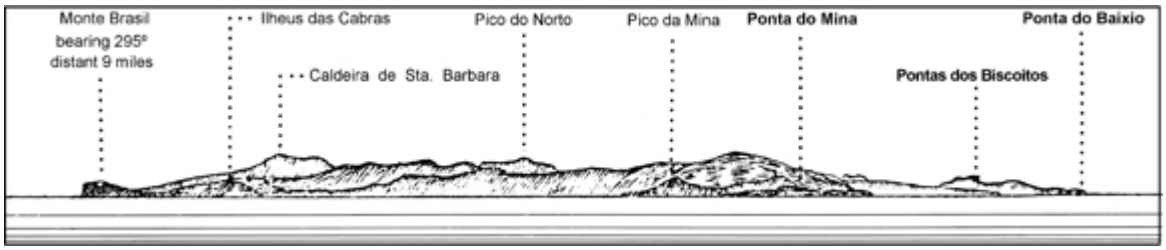
The interior of the island is generally mountainous. Caldeira de Santa Barbara, the highest summit, rises to a height of 1,021m and dominates the W end.

Ponta da Serreta (38°46'N., 27°23'W.), the W extremity of the island, is a rocky projection partially covered with lava. A light is shown from a tower, with a dwelling, 15m high, standing on the point and is obscured from some directions.

Caution.—An area with a radius of 3 miles, lying centered on a point about 5 miles W of Ponta da Serreta is subject to intense seismic activity, accompanied by emissions of solid materials and gases.

7.17 Roches Serreta, consisting of two patches with depths of 8.7m and 9.4m, lies about 2 miles NW of the light. This danger is steep-to and there is deep water between it and the island.

Ponta do Cavalo is located 4 miles ENE of Ponta da Serreta and the coast between is formed of moderately high cliffs. Pico de Pinto, 153m high, stands 0.7 mile E of Ponta do Cavalo. This conical hill is conspicuous and its outer portion has been washed away by the sea. A prominent white monument stands on the summit.



Terceira Island

Ponta dos Biscoitos, from which a light is shown, is located 2 miles E of Ponta do Cavalo. A landing place is situated at the head of a small cove which is entered close W of the point.

From Ponta dos Biscoitos, the coast trends E for 7.5 miles to Ponta Espartal (Ponta Hospital) and is composed of cliffy bays. It then trends SE for 2.5 miles and SSE for 1.8 miles to Ponta (Ma Merenda) do Facho, which is high and steep.

Ilheu (Carneiros) do Norte lies 0.5 mile offshore, 1.7 miles E of Ponta Espartal. This small islet is steep-to and a deep channel lies between it and the island.

An aeronautical radiobeacon is situated 0.5 mile W of Ponta Espartal (Ponta Hospital). An aeronautical light is situated near

an airbase control tower, 2.1 miles NW of Ponta do Facho.

Caution.—It is reported that aircraft may occasionally jettison external loads within 5 miles of a position lying 10 miles N of Ponta Espartal.

7.18 Praia da Vitoria (38°43'N., 27°03'W.) (World Port Index No. 38095), a supply harbor for the airbase, is situated within a bay entered between Ponta do Facho and Ponta do Baixio, 2 miles S. The town stands at the NW side of the bay and Lajes airbase is situated 2 miles NW of it. The harbor also has facilities for fishing vessels.

Praia da Vitoria Home Page

http://www.aptg.pt

Tides—Currents.—Tides rise 1.7m at springs and 1.3m at neaps.

Depths—Limitations.—The harbor is protected on the E side by two breakwaters which form an entrance, 0.3 mile wide. The N breakwater extends 0.3 mile S from Ponta do Espirito Santo, which is located 0.5 mile SSW of Ponta do Facho. The S breakwater extends 0.6 mile N from Ponta da Santa Catarina, which is located 1.2 miles S of Ponta do Facho.

An oil pier, consisting of a central loading platform and dolphins, is situated 70m W of the N breakwater. It can accommodate tankers up to 200m in length and 10.7m draft.

A general cargo and bulk berth is situated in the S part of the harbor. It is 150m long, with a depth of 10m alongside.

A container berth is situated in the S part of the harbor. It is 350m long, with a depth of 11.8m alongside. Vessels up to 250m in length and 12m draft can be handled.

Aspect.—Lights are shown from the heads of the breakwaters. A ruined fort is situated on Ponta da Santa Catarina. A conspicuous church, with two conical towers, stands in the town.

The white sector of Praia da Victoria Light (260°-270°) is used for entering the harbor.

Pilotage.—Pilotage is compulsory within the port limits and within an area with a radius of 2 miles centered on Molhe South Light. Pilots can be contacted on VHF channel 11, 14, or 16 and board about 1.5 miles E of the entrance. Vessels should send an ETA 24 hours in advance of arrival.

Anchorage.—Small vessels may anchor within the harbor as directed by the pilot; a good berth, in a depth of 12m, lies about 280m W of the head of the N breakwater. Anchorage can be obtained, in depths of 22 to 60m, outside the harbor; a good berth, in a depth of 28m, lies about 0.4 mile SE of the head of the S breakwater.

Caution.—Vessels should keep about 1 mile offshore between Ponta do Facho and the N breakwater.

Severe E gales occasionally create major surge conditions inside the harbor, especially during the winter months.

7.19 Porto Novo (38°41'N., 27°03'W.), a landing place, is situated within a small cove lying 2.5 miles SW of Ponta do Baixio. It can be identified by Pico da Cruz, a 218m high hill, standing 0.5 mile W of it. A light is shown from a point about 0.5 mile NE of the cove.

Ponta da Mina, the SE extremity of the island, is located 1.7 miles S of Porto Novo. This point rises steeply to a height of 148m, about 0.5 mile WNW of its extremity. Ilheu da Mina lies on the seaward end of a reef which extends 0.5 mile NE of the point.

Ponta das Contendas Light is shown from a tower, with a dwelling, 13m high, standing 0.3 mile W of Ponta da Mina.

Porto Judeu, a landing place, is situated within a small cove which is entered 2 miles W of Ponta da Mina. A light is shown from the head of the cove.

Ilheus das Cabras (38°38'N., 27°09'W.), consisting of two steep-to islets, lies 0.7 mile offshore, 3.1 miles W of Ponta da Mina. The E islet is 146m high and appears wedge-shaped when viewed from the E or W.

Fradinhos is located 2 miles SE of Ilheus das Cabras and consists of two rocks, 9m high, which lie on the NW edge of a steep-to shoal with a depth of 3.9m. Pedro Nova, a steep-to shoal with a least depth of 45m, lies 1.5 miles E of Fradinhos.

Monte Brasil, a peninsula, projects 1 mile S from the coast, 7 miles W of Ponta da Mina. It rises to a height of 205m and is a very conspicuous landmark. Ponta do Farol, from which a light is shown, is the E extremity of this peninsula. The SE and SW shores of the peninsula are steep-to and fronted by cliffs, 90m high. A prominent monument stands near the N summit of this peninsula.

7.20 Porto de Angra do Heroismo (38°39'N., 27°13'W.) (World Port Index No. 38090) is situated within a bay lying on the NE side of Monte Brasil. The bay is entered between Ponta do Farol and Ponta do Castelinho, 0.5 mile NE. The town is the capital of the island and the location of the residence of the Governor General of the Arquipelago dos Acores. It is the main harbor of the island; however, cargo trade has declined since the development of commercial berths at Praia da Vitoria.

Port of Angra Do Heroismo Home Page

http://www.aptg.pt

Winds—Weather.—The bay is exposed to S and E winds and heavy swells set around Monte Brasil with the former. Vessels are generally safe here from June to September when fine weather generally prevails. In other months, a constant watch of the weather should be kept so that a vessel can put to sea at the first sign of any deterioration.

Tides—Currents.—Tides rise 1.6m at springs and 1.3m at neaps.

Depths—Limitations.—Cargo is generally handled by lighters at the anchorage.

The main berthing facilities are formed by a pier which extends W from Ponta do Castelinho. A quay, situated on its W side, is 82m long and has a depth of 8m alongside. Another quay, situated on its NW side, is 130m long and has depths of 3 to 5m alongside. There are facilities for LPG and bulk vessels. Vessels up to 110m in length and 6.1m draft can be handled alongside.

Aspect.—Monte Brasil, previously described in paragraph 7.19, is an excellent mark. A very conspicuous yellow monument stands on a hill, 0.5 mile NNW of Ponta do Castelinho and a radio mast stands 0.5 mile NNW of it. A

Port of Angra do Heroismo

prominent church, with two towers, stands close to the shore, at the head of the bay; a fort stands on Ponta do Castelinho. A light is shown from a factory building situated 0.5 mile NE of Ponta do Castelinho, and a lighted range indicates the entrance fairway.

Pilotage.—Pilotage is compulsory within the port limits and within an area with a radius of 2 miles centered on Monte Brasil Light. Pilots can be contacted on VHF channels 11, 14, or 16 and board about 1 mile SSE of the harbor entrance. Vessels should send an ETA 24 hours prior to arrival. This station provides pilot services for Praia da Vitoria.

Signals.—When the state of wind and sea is such that it would not be prudent to anchor in Porto de Angra do Heroismo, a large red and white pendant is displayed at Ponta do Farol, the SE extremity of Monte Brasil.

Anchorage.—Large vessels may anchor, in a depth of 35m, about 0.3 mile SSE of Ponta do Castelinho, but the holding ground is poor. Vessels carrying dangerous cargo or undergoing quarantine should anchor in an area lying 0.4 mile E of the above berth.

Caution.—Local magnetic anomalies have been reported in the vicinity of Porto de Angra do Heroismo.

7.21 Ponta de Sao Mateus (38°39'N., 27°17'W.) is located 2.7 miles W of Monte Brasil. The coast between is low and fringed by rocks. The small town of Sao Mateus is situated within a cove which is entered 0.5 mile ENE of the point. A light is shown from the W entrance point and a prominent church, with two towers, stands in the town. A small pier and a landing place front the town and are used by fishing vessels. Another landing place is situated at Porto do Negrito, which lies in a small cove close W of the point.

Ponta das Cinco is located 3.1 miles NW of Ponta de Sao Mateus. A light is shown from the point and it is surmounted by a chapel. A small quay and a landing place are situated at Cinco Riberas, at the E side of the point.

Between Ponta das Cino and Ponta da Serreta, 5.5 miles NNW, the coast is fronted by cliffs and fringed by rock.

Caution.—Banco Dom Joao de Castro, with a least depth of 6.7m, lies about 33 miles SE of the SE extremity of Terceira Island. A depth of 27m was reported (1959) to lie in an approximate position about 11 miles NE of this bank.

Seismic activity has been reported (1997) in the vicinity of the bank. Depths may be significantly less than charted.

Southeast Group

7.22 Sao Miguel Island (37°46'N., 25°24'W.) is separated from Terceira Island by a channel that is 75 miles wide and very deep. This island, the largest and one of the most important of the entire archipelago, is mountainous and of the volcanic origin.

The E part of the island is the highest, with Pico da Vara, its summit, rising to a height of 1,104m, 4 miles W of the E extremity. Serra de Agua de Pau, another prominent mountain 948m high, stands near the middle of the island. Caleira das Sete Cidades, with an extensive crater containing a lake, stands in the W part of the island. Pico das Eguas, 873m high, is the highest peak in the W part of the island and stands close SE of the crater.

These mountains are frequently obscured by cloud. Occasionally, the lower land is covered with haze and Sao Miguel Island appears as two islands when seen from a distance.

The greater part of the N side of the island slopes gradually to the sea, but the other sides of the island are precipitous. The depths on the bank on which the island lies are in many places irregular, especially off the NE and NW ends of the island.

Caution.—When navigating along the coasts of this island, vessels should keep at least 1 mile offshore and remain in depths greater than 35m.

Submarines exercise frequently in the waters lying S of this island.

7.23 Ponta da Ribeira (37°51'N., 25°09'W.), 76m high, is the NE extremity of the island. It is bordered by cliffs and fringed with rocks.

Between Ponta da Ribeira and Ponta Ajuda, 8 miles W, torrents flow through several ravines to the sea and numerous rocks and reefs lie close inshore. Ponta Ajuda is a low and steep-to point behind which the land rises rapidly. A town in which stands a prominent church, with a tower, is situated on the W side of this point.

A shoal, with a depth of 19m, is reported (1992) to lie about 1 mile ENE of this point.

Ponta do Cintrao (37°51'N., 25°29'W.), located 8.3 miles W of Ponta Ajuda, projects 1.5 miles from the general line of the coast and consists of a bold headland, faced by cliffs. A light is shown from a tower, with a dwelling, 14m high, standing on the point.

Between Ponta Ajuda and Ponta do Cintrao, the most prominent points are Ponta da Maia, located 3.7 miles WSW of Ponta Ajuda, and Ponta Formosa, located 2.8 miles ESE of Ponta Cintraoa.

Ponta da Maria is a double point with a remarkable narrow ledge of rocks extending a short distance from its NW extremity. A shallow shoal lies 0.6 mile NNW of the point. A landing place is situated on its E side. Ponta Formosa is a rugged point fringed by rocks. Temporary anchorage can be obtained, in a depth of 31m, sand, off a small bay about 0.6 mile ENE of the point.

Ponta da Ribeirinha, narrow and cliffy, lies close W of Ponta do Cintrao and is fringed by above-water rocks. Ribeira Grande, a town, is situated on rising ground, 1.5 miles SW of the point. A conspicuous conical hill, 187m high, stands close E of it.

Temporary anchorage may be obtained, in a depth of 64m, about 1.5 miles N of the town.

Rabo de Piexe, a small town, stands at the head of a cove which is entered 3 miles W of Ribeira Grande. A light is shown from a church tower, 28m high, standing close E of the head of the cove. Anchorage may be obtained, in a depth of 35m, about 0.4 mile N of the town.

Morro de Capelas, located 5 miles WNW of Rabo de Piexe, is a small peninsula, 105m high, faced with perpendicular cliffs which have been undermined by the sea. A light is shown from a landing place situated in a cove, which is entered close W of the peninsula. Anchorage may be obtained, in a depth of 35m, about 0.5 mile N of the light.

Ponta da Bretanha, the N extremity of Sao Miguel Island, is located 6 miles NW of Morro de Capelas. It is 116m high, faced by cliffs, and fronted by rocks. A landing place, marked by a light, is situated at a town which stands in a cove entered 1.5 miles ESE of the point.

Ponta dos Mosteiros, low and fringed by rocks, is located 1.7 miles WSW of Ponta da Bretanha. A light is shown from a column, 4m high, standing on this point. Ilheu dos Mosteiros, a dark and cliffy islet, lies 0.4 mile offshore, 0.7 mile SW of the point.

Ponta da Ferraria (37°52'N., 25°51'W.), the W extremity of the island, is located 2.7 miles SW of Ponta dos Mosteiros and is low, dark, and rugged. A light is shown from a tower, with a dwelling, 18m high, standing on the point.

Depths of 22m and 33m (existence doubtful) are reported to lie about 1.2 miles WNW and 2.5 miles NW, respectively, of this point.

Ponta Delgada (37°44'N., 25°41'W.), the SW extremity of the island, is located 11.5 miles SE of Ponta da Ferraria. The coast between consists mostly of a continuous line of cliffs.

Santa Clara light is shown from a framework tower, 8m high, standing on the point and a tank farm is situated above it. An aeronautical light is situated at an airport control tower standing 1.2 miles WNW of the point.

The village of Relva is situated 2.5 miles WNW of Ponta Delgada. A prominent church, which resembles a light tower, stands in the village and a windmill is situated close W of it.

7.24 Porto de Ponta Delgada (37°44'N., 25°40'W.) (World Port Index No. 38100), a port of refuge, lies close E of Ponta Delgada. The city is built on a plain which extends between Ponta Delgada and Ponta do Rosto do Cao, 2.3 miles ENE. It is the principal city of San Miguel and the commercial capital of the Arquipelago dos Acores.

Porto de Ponta Delgada Home Page

http://www.aspm.pt

Winds—Weather.—From December through March, S gales affect port operations. With gales from the SE, swells may cause vessel entry and departure to be delayed. With gales from the S and SW, seas frequently break over the breakwater.

Fog is rare, generally occurring only in May and June.

Tides—Currents.—Tidal currents off the harbor entrance set E on the flood and W on the ebb, at a rate seldom exceeding 1 knot, although a rate of 2 knots has been reported (1999).

Porto de Ponta Delgada

Porto de Ponta Delgada and marina

Depths—Limitations.—The harbor is enclosed between a seawall, which fronts the town, and a large breakwater which extends 0.8 mile E from a point on the shore, 0.5 mile E of Ponta Delgada.

A basin, for the use of recreational craft, is situated in the NE part of the harbor.

The main commercial berths lie along the inner side of the breakwater. The E berth is 617m long and has depth of 11m alongside; the central berth is 207m long and has a depth of 10m alongside; and the W berth is 326m long and has a depth of 6m alongside.

There are facilities for general cargo, container, ro-ro, tanker, and LPG vessels. A cruise ship terminal has been completed. Generally, vessels up to 250m in length and 11m draft can be accommodated.

Aspect.—Conspicuous landmarks in the city include Forte de Sao Braz, situated at the W end of the harbor; Sao Matriz Cathedral, with a lighted clock tower, situated 0.3 mile NE of the fort; Solmar, a high-rise building, standing 350m E of the cathedral; and the prison, a large white building, standing 0.6 mile ENE of the cathedral.

Prominent landmarks include a factory, with a tall chimney, situated 0.5 mile NE of the breakwater head; a radio mast, 116m high, standing 0.3 mile NNW of the cathedral; and a chimney, standing 0.3 mile W of the fort.

Lighted ranges indicate the approach and the entrance to the harbor and may best be seen on the chart. The dangers lying on the N side of the harbor are marked by a lighted buoy moored about 0.3 mile WNW of the breakwater head.

Pilotage.—Pilotage is compulsory within the port limits and in area with a radius of 2 miles centered on the breakwater light for all vessels except national warships, local vessels, tugs used in the harbor, local dredges, local fishing vessels, and pleasure craft. Vessels should send an ETA at least 48 hours in advance and a confirmation at least 2 hours before arrival. Pilots may be contacted on VHF channel 14 or 16 and generally board about 1 mile SE of the breakwater.

Anchorage.—Anchorage may be obtained in two designated anchorage areas, the limits of which may best be seen on the chart.

Anchorage is prohibited inside of the breakwater.

Caution.—Local magnetic anomalies exist in the vicinity of Ponta Delgada.

It is reported that both ranges are difficult to identify in daylight.

7.25 Ponta da Galera (37°42'N., 25°31'W.), the S extremity of Sao Miguel, is located 8.5 miles ESE of Ponta Delgada. The coast between is mostly composed of reddish cliffs with a narrow beach at their base. The point is steep, rugged, and fringed by above and below-water rocks.

The town of Lagoa stands along the shore of a bay, which lies 4 miles NW of Ponta da Galera. A landing place, marked by a light, is situated here. A prominent factory chimney and a conspicuous white silo stand in the W side of the town.

Roida da Praia, located 2.1 miles ENE of Ponta Galera, consists of a ridge of reddish-colored high cliffs. Shoals and rocks extend up to 0.4 mile S of this point. Ponta de Sao Pedro, fringed by rocks, is located 1.1 miles E of Roida da Praia.

Ilheu da Vila, 63m high, lies 0.4 mile S of Ponta de Sao Pedro. This conspicuous islet is formed by an extinct volcano.

Vila Franca do Campo (37°42'N., 25°26'W.), an important town, stands on the brow of the cliffs located between Ponta de Sao Pedro and Ponta da Terejoula, 1 mile E. A small craft basin and a landing place front the town and are marked by a light. Anchorage may be obtained, in a depth of 26m, sand, about 0.7 mile E of Ilheu da Vila.

7.26 Ponta da Garca (37°43'N., 25°22'W.) is located 3 miles E of Vila Franca do Campo. This point is high, steep, and backed by reddish cliffs above which stands a small town. A prominent church, with a tower, stands isolated on the point. A light is shown from a tower, with a dwelling, 14m high, standing on the point.

Ponta do Faial, high and steep, is located 8.3 miles E of Ponta da Garca. The coast between forms a wide bight which recedes about 1 mile. A light is shown from the village of Povoacao, which is situated in the E part of this bight, 2 miles W of Ponta do Faial. A prominent church stands in the village; anchorage may be taken, in a depth of 22m, about 0.5 mile S of it.

Ponta da Retorta, the SE extremity of Sao Miguel Island, is located 1.7 miles ENE of Ponta do Faial. It is high, steep, and fronted by rocks. Agua Retorta, a prominent 674m high hill, stands 0.8 mile NNW of the point.

Ponta do Arnel (37°49'N., 25°08'W.), located 5.3 miles N of Ponta Retorta, is cliffy and bordered by a wide stony beach. A light is shown from a tower, with a dwelling, 15m high, standing on the point.

Ponta da Marqueza, 122m high, and Ponta do Lombo Gordo, 489m high, are located 1 mile and 2.8 miles S, respectively, of Ponta do Arnel. Both of these points consist of steep cliffs and are very prominent.

Ponta da Ribeiro is located 1.8 miles NNW of Ponta do Arnel. The coast between is indented by a conspicuous ravine through which a current runs.

7.27 Ilheus das Formigas (37°16'N., 24°46'W.) lie 35 miles SSE of the SE extremity of Sao Miguel Island and consist of a group of black rocks which stand near the NW edge of a steep-to bank. This bank is composed principally of rock, with frequent patches of white sand, broken shell, and branch coral. The highest rock stands at the N end of the group and attains a height of 11m. A rock at the S end of the group attains a height of 9m. The general outline of the group presents the appearance of a few hummocks.

A light is shown from a tower, 19m high, standing near the S end of the group.

Recife do Dollabarat, a shoal with several rocky heads, lies about 3 miles SE of the S extremity of Ilheus das Formigas and has a least depth of 3.3m.

Caution.—When the sea is calm, this shoal constitutes a great danger to navigation as its presence is not indicated by breakers.

A marine reserve and fishing prohibited area, the limits of which are shown on the chart, has been established in the vicinity of Ilheus das Formigas and Recife do Dollabarat.

7.28 Santa Maria Island (36°58'N., 25°06'W.), the SE island of the archipelago, lies 20 miles SW of Ilheus das Formigas. It is the least volcanic of all the islands in the archipelago and is very fertile. A range of mountains rises abruptly from the SE extremity of the island and terminates at the N extremity. Pico Alto, the highest of this range, stands 4.8 miles NW of the SE extremity of the island. It is a double-peaked mountain, 591m high. The land on the W side of this range falls suddenly and continues flat to the W extremity of the island, where it terminates in cliffs, up to 30m high. When seen from the N or S, the W part of this island appears as a long, low point.

Ponta do Castelo (36°55'N., 25°01'W.), the SE extremity of the island, is high, surmounted by a detached peak, and fronted by sunken rocks. A light (Goncalo Velho) is shown from a tower, with a dwelling, 14m high, standing on the point.

From Ponta do Castelo, the coast trends NNW for 4 miles to Baia de Sao Lourenco. It rises boldly from the sea and is clear of dangers, except for a low above-water rock which lies 0.3 mile offshore, about 1 mile N of Ponta do Castelo.

Baia de Sao Lourenco (36°59'N., 25°03'W.) is entered between Ponta Negra and Ponta dos Matos, 0.7 mile NNE. It has a mostly rocky shore with sandy beaches. Ponta Negra is a high and bold point with Ilheu de Sao Lourenco, a high islet, lying close off it. Ponta dos Matos is faced with low cliffs and fringed by rocks. A shoal, with a depth of 17m (sounding doubtful), was reported to lie about 1 mile ESE of this point.

A town is situated at the head of the bay, 1 mile inland, and numerous houses stand along the shore. A landing place is situated in the N part of the bay. A light is shown from the S part of the bay and the entrance channel is marked by lighted ranges.

Temporary anchorage may be obtained, in depths of 24 to 27m, in the middle of the bay.

7.29 Ponta do Norte (37°01'N., 25°04'W.), the NE extremity of the island, is located 1.2 miles NNW of Ponta dos Matos. It is formed by rather low rocks, backed by high land, and is fringed by a reef and several rocks. A light is shown from a column, 4m high, standing on the point. A radio mast, 38m high, stands 0.3 mile SE of the light structure.

Ilheu de Lagoinhas, 76m high, lies 0.3 mile offshore, about 1.5 miles WNW of Ponta do Norte. The passage lying between this islet and the main island is encumbered with rocks. The islet is prominent, bordered by inaccessible cliffs, and depths of less than 10m are reported to lie within 0.3 mile of it. Baixa de Fora, a shoal with a depth of 10.4m, lies 0.8 mile NNW of the islet.

From Ponta do Norte, the coast, consisting of rocky points separated by small bays, trends in a general W direction for 4.2 miles to Ponta dos Frades. This latter point is 46m high and has the appearance of an island when viewed from the E or W.

Ponta do Lobaio (36°59'N., 25°11'W.), the NW extremity of the island, is located 1.8 miles SW of Ponta dos Frades. It is low and surrounded by rocks. Ilheu do Mar da Barca, 14m high, lies 0.3 mile SW of the point.

An aeronautical radiobeacon is situated in the vicinity of this point.

The coast trends 0.8 mile SSW from Ponta do Lobaio and rises slightly to form Ponta do Rachado, the W extremity of the island.

An aeronautical light is shown from an airport control tower standing 1.2 miles SE of Ponta do Rachado.

Ilheu da Vila, 58m high and sheer, lies 200m offshore, 2.8 miles S of Ponta do Rachado. The coast between consists of an almost unbroken line of cliffs. This prominent islet is separated from the main island by a narrow boat passage which has a depth of 4.3m, but is much encumbered by rocks.

Ponta do Malmerendo (37°48'N., 25°13'W.), marked by a light, is located 0.8 mile E of Ilheu da Vila. This point is formed by a cliffy bluff and several storage tanks stand in its vicinity. A patch, with a depth of 15.6m, lies about 0.9 mile SSW of it.

Caution.—An underwater obstruction lies in a depth of 61m, about 6.7 miles WNW of Ilheu da Vila (position approximate).

7.30 Vila do Porto (36°56'N., 25°09'W.) (World Port Index No. 38110), a small harbor, lies in a bay which is entered between Ponta do Malmerendo and Ponta do Marvao, 0.8 mile E.

Tides—Currents.—Tides rise 1.7m at springs and 1.3m at neaps.

Depths—Limitations.—A breakwater extends E from the W shore of the bay. A quay situated on its inner side is 200m long and has depths of 5 to 7m alongside.

Vila do Porto Home Page

http://www.aspm.pt

Aspect.—The shores of the bay are fronted by cliffs and the head and the E shore are fringed with rocks. A light is shown from a tower, 14m high, standing on the head of the breakwater. The town stands above a sandy beach at the head, and the main airport of the archipelago is situated adjacent to the bay.

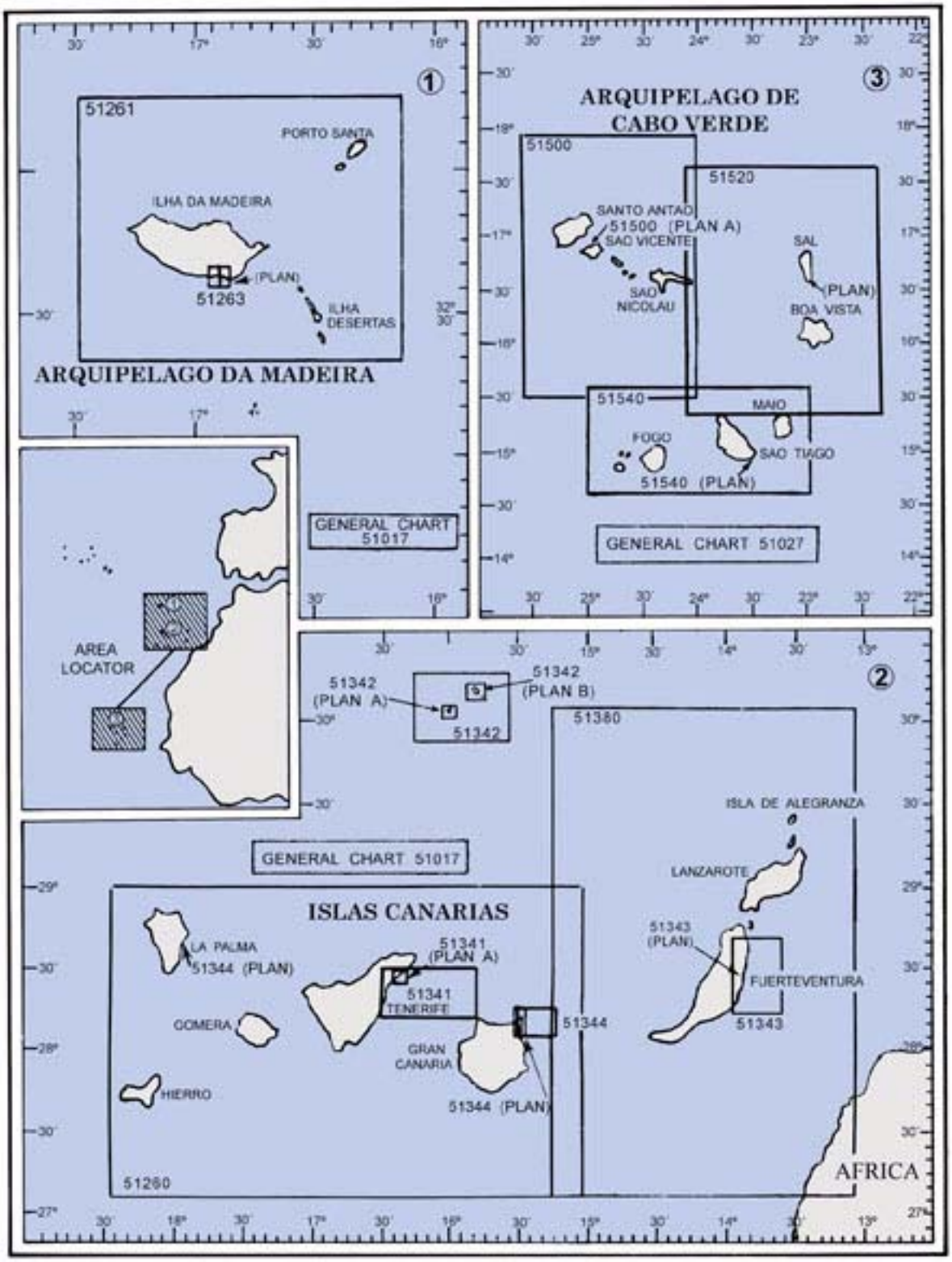
Pilotage.—Pilotage is compulsory within port limits and within an area with a radius of 2 miles centered on the breakwater light. Pilot services should be requested at least 72 hours in advance. Pilots can be contacted on VHF channel 11 or 16 and generally board about 1.5 miles S of the breakwater.

Anchorage.—Only small vessels anchor off the bay, as it is open and completely exposed to winds from the SE to SW. The best berth is in a depth of 30m, about 0.3 mile SSW of the breakwater head.

7.31 Baia de Praia (36°56'N., 25°06'W.) lies E of Vila do Porto and is entered between Ponta do Marvao and Ponta Malbusca, 3.5 miles ESE. This bay is fringed by rocks and inaccessible except at its head, where there is a sandy beach above which stands the town of Praia. Landing places are situated along the beach and anchorage can be obtained in the middle of the bay.

Ponta Malbusca is a high point which is dominated by a prominent brown-colored hill, 207m high. Pedrinha, a pinnacle rock over which the sea seldom breaks, lies at the E side of the bay, 1.2 miles WNW of this point.

Between Ponta Malbusca and Ponta do Castelo, 2.5 miles E, the coast consists of cliffs and is fronted by rocks which extend up to 0.3 mile seaward.



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

SECTOR **8** — CHART INFORMATION

SECTOR 8

THE ARQUIPELAGO DA MADEIRA, THE ISLAS CANARIAS, AND THE ARQUIPELAGO DE CABO VERDE

Plan.—This sector describes the islands lying off the W coast of Africa. It commences with the Arquipelago da Madeira, including the Ilhas Selvagens. It then describes the Islas Canarias and the Arquipelago de Cabo Verde. The general descriptive sequence of each group is from the W to E.

The Arquipelago da Madeira

8.1 The Arquipelago da Madeira, also known as the Madeira Islands, lies 345 miles off the coast of Morocco, between the parallels of 32°23'N and 33°08'N, and the meridians of 16°16'W and 17°16'W. The group, an autonomous region of Portugal, consists of the main island of Madeira, the island of Porto Santo, and the three islands which form the Ilhas Desertas.

There are no well-sheltered harbors in these islands, the anchorages being on the open coast. The most important harbors include Funchal, on the S side of Ilha da Madeira, and Baia de Porto Santo, on the S side of Ilha de Porto Santo. The former is the capital of the group and the residence of the civil and military authorities.

The general appearance of these islands is exceedingly picturesque, with elevated peaks separated by large ravines. It may be generally stated that the S coasts of the islands have a gradual slope from the interior to the sea and that the N and W coasts are, with few exceptions, high and bold.

Tides—Currents.—The islands lie in the flow of the SW Canary Current. The current splits at Ilha de Porto Santo and a secondary flow passes N of this island and then along the N shore of Ilha da Madeira. This secondary flow then turns S and E around the W and S shores of Ilha da Madeira until it meets the main SW flow off Punta da Cruz (32°38'N., 16°57'W.). An eddy that sometimes forms here extends up to 4 miles offshore.

Caution.—Submarines, both submerged and surfaced, frequently exercise in the vicinity of these islands.

Ilha da Madeira

8.2 **Ilha da Madeira** (32°45'N., 17°00'W.), the largest and most important island of the Arquipelago da Madeira, is traversed by a range of mountains which extend from the E to W. Pico Ruivo de Santana, the summit of the island, is located about 2 miles NE of the islands geographical center and rises to a height of 1,861m. This mountain slopes gradually to the sea in a N and NE direction, but on the SW side it falls abruptly. The W end of the island is high, steep, and cliffy, while the E end is low and has a narrow peninsula which extends 4 miles from the coast.

Ponta do Pargo (32°49'N., 17°16'W.), the W extremity of Ilha da Madeira, consists of bold and rocky cliffs which rise steeply from the sea to a height of 283m. A light is shown from a prominent tower, with a dwelling, 14m high, standing on the point and a prominent round-topped hill, 421m high, rises 0.5 mile E of it.

Baixa de Sao Pedro, a rocky patch with a least depth of 16.5m, lies about 1 mile WNW of the point and should be avoided by large vessels, especially in periods of heavy swell.

The coast between Ponta do Pargo and Ponta do Tristao, 5 miles NE, is high and formed of steep cliffs. Rocks, submerged and awash, fringe the shore up to 0.2 mile seaward in places. These cliffs are broken by several prominent mountain torrents, waterfalls, and deep ravines. Above the cliffs, the land rises to a ridge of mountains which stands about 2 miles E of the coast. Several of the peaks along this ridge are over 1,200m high.

Ponta do Tristao, 326m high, is the N extremity of the island. It consists of a bold bluff fronted by rocks. A prominent church stands about 0.7 mile S of this point.

Ilheu Mole (32°52'N., 17°10'W.) lies 1.5 miles ESE of Ponta do Tristao. The coast between is formed by very high rocks fronted by several detached rocks. It is 62m high, yellowish in color with a black lava base, and is connected to the shore by a line of rocks. A light is shown from the highest part of Ilheu Mole and a town is situated on the mainland close SW of it.

Baixas da Moniz, lying 0.5 mile offshore and about 1 mile NW of Ilheu Mole, consists of a cluster of flat rocks up to 3.7m high, with deep water all around.

Vessels can take anchorage, sheltered from SW winds, in a depth of 25m, about 0.3 mile SE of the summit Ilheu Mole, or, in a depth of 37m, clay and coral, about 0.5 mile ESE of the summit.

Ponta Delgada is located 9 miles ESE of Ilheu Mole. The coast between consists of a long bight formed by steep cliffs and fringed by several dangerous rocks. The point consists of a comparatively low projection which is fringed by rocks and has a town standing on its NE side.

During strong N winds, this entire section of coast is pounded by heavy rollers; the sea breaks along the shore and on the outer rocks.

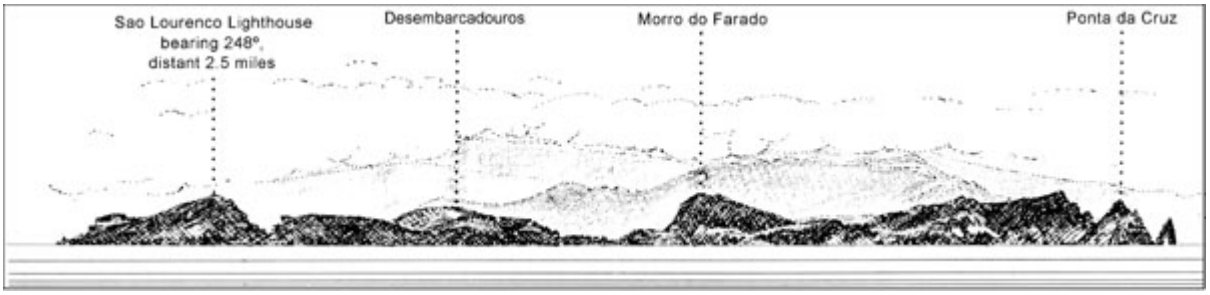
Pico do Arco de Sao Jorge, 826m high, stands 0.7 mile inland, 2 miles ESE of Ponta Delgada. It is very prominent and has a remarkable sharp peak.

8.3 **Ponta de Sao Jorge** (32°50'N., 16°54'W.), located 4.3 miles E of Ponta Delgada, is a bold and rocky bluff, 213m high. The perpendicular cliffs on both sides of this bluff are dark reddish in color and are fringed by a narrow shingle beach. Several large rocks lie about 1 mile SE of the point.

A light is shown from a round tower, with a dwelling, 14m high, standing close within the point.

Ponta do Clerigo is located 3 miles SE of Ponta de Sao Jorge. The coast between is high, cliffy, and fronted by rocks. Pedrina do Daniel, with a depth of 7.8m, lies about 0.4 mile offshore, 0.9 mile NW of Ponta do Clerigo. A detached patch, with a depth of 48m, lies 2 miles NNW of Ponta do Clerigo.

Baia do Faial is entered between Ponta do Clerigo and Ponta do Serro do Guindaste, 0.9 mile SE. This small bay is only



Ilha da Madeira—E extremity

available to boats with local knowledge. It provides a distinctive break in the line of coastal cliffs.

Ilheu do Guindaste, 22m high, lies 0.3 mile NE of Ponta do Serro do Guindaste. This islet is black, cone-shaped, and has an archway through it. The summit is reported to be white from guano.

Porto da Cruz, a small bay, is entered 1.7 miles SE of Ponta do Serro do Guindaste and provides good shelter in SW winds. Its shores are rocky and generally dangerous, except for a landing place situated at the town which stands under the lee of Ponta do Sombreiro, the N entrance point. Ilheu de Porto da Cruz, 46m high, is the largest of a chain of islets and rocks which extend 0.3 mile NE from Ponta do Sombreiro. Baxia de Fora, a reef which dries 1.8m, lies at the outer end of the chain.

Baixa do Porto do Cruz, a rocky shoal with a least depth of 8m, lies 0.7 mile ENE of Ilheu de Porto da Cruz and should be avoided by all vessels in a heavy sea.

Baixa dos Porcos, a rock with a depth of 4.9m, lies in the E part of this bay, about 0.3 mile off the S entrance point.

The land on each side of the bay is high and cliffy; a conspicuous mountain, 590m high with a double peak, stands 0.8 mile W of the town.

Vessels can take anchorage, in a depth of 24m, good holding ground, about 0.5 mile E of Ilheu de Porto da Cruz. Small vessels can anchor, in a depth of 20m, about 0.3 mile ESE of the same islet.

Ponta do Espigao Amarelo is located 2 miles ESE of Porto da Cruz. The cliffs are inaccessible in the vicinity of this point and the land rises to a height of 746m close within the coast.

8.4 **Ilheu de Fora** (32°44'N., 16°39'W.), located 7 miles ESE of Ponta do Espigao Amarelo, forms the E extremity of Ilha da Madeira. This islet, 107m high, lies at the outer end of a narrow and irregular rocky peninsula, known as Ponta de Sao Lourenco, which extends 4 miles E from the main coast.

Sao Lourenco Light is shown from a tower, with a dwelling, 10m high, at a height of 103m, standing on Ponta de Barlavento, the E extremity of the islet.

Several rocks lie off the SE side of this islet and vessels are advised to stay at least 1 mile from it.

An aeronautical radiobeacon is situated on the N side of the peninsula, 3 miles WNW of Ilheu de Fora.

Ensenada de Machico, a small bay, lies on the S coast of Ilha da Madeira, 5.5 miles WSW of Ilheu de Fora. A prominent fort stands on the N entrance point of this bay.

Ponta de Santa Catarina (32°42'N., 16°46'W.), located 6.3 miles WSW of Ilhe de Fora, lies 1.5 miles SW of Ensenada de Machico. The point is rounded with low cliffs and a prominent steep rock, 11m high, stands close off it.

An airport is situated close inland of this point; an aeronautical light is shown from its vicinity.

The town of Santa Cruz stands on the N shore of a bay, which is entered close SW of the point. Small vessels can obtain anchorage, in a depth of 57m, about 0.4 mile SE of the town.

Porto Novo, a small shingle bay, lies 2.6 miles SW of Ponta de Santa Catarina. A prominent white building with a chimney stands on the shore of this bay.

Ponta do Garajau (32°38'N., 16°51'W.), located 5.2 miles SW of Ponta de Santa Catarina, is a bold and rocky headland, which is faced by perpendicular reddish-yellow colored cliffs. A narrow hilly ridge stands above the cliffs and is surmounted by a conspicuous statue of Christ. Several prominent radio masts are situated 0.5 mile NW of this point.

Caution.—A submarine cable extends seaward from the vicinity of Port Novo, about 2.7 miles NE of Ponta do Garajau.

Funchal (32°38'N., 16°54'W.)

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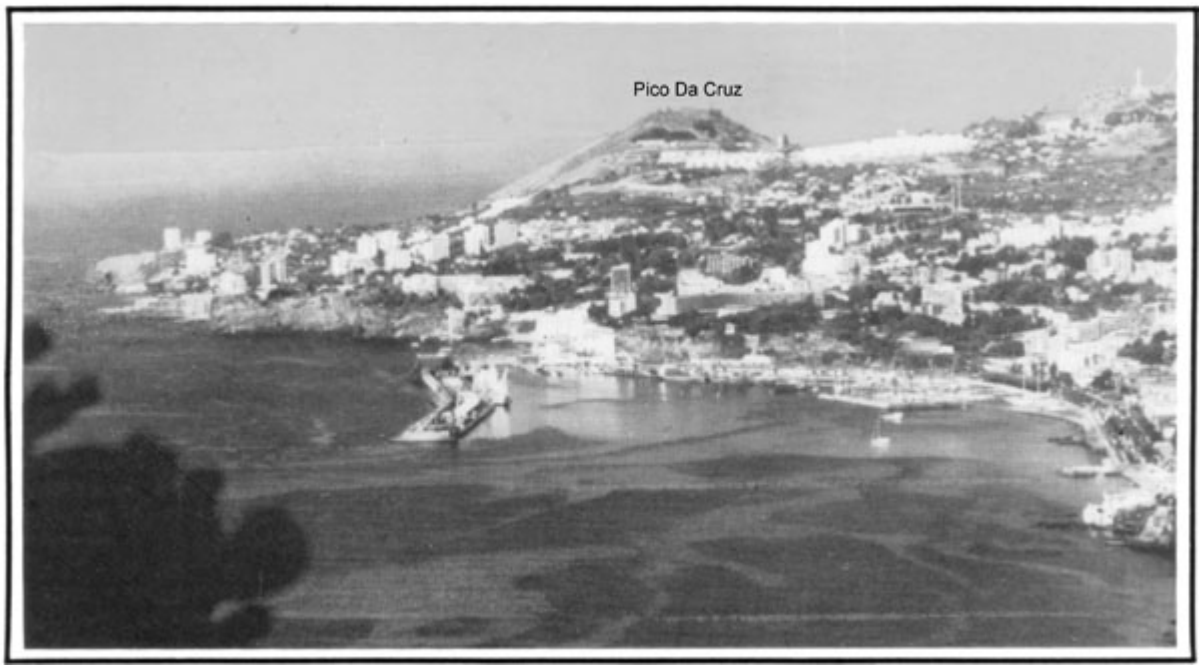
8.5 Porto do Funchal is situated in the bay lying between Ponta do Garajau and Ponta da Cruz, 5 miles W. It is protected from N winds by a series of rocky cliffs which border the shore. Praia Formosa, an open bay, entered 0.5 mile NW of Ponta da Cruz, is the site of the offshore oil terminal.

Winds—Weather.—Winds from the NE predominate throughout the year, although S and SW winds are fairly frequent in the afternoon. In summer, the fresh NE winds are cut off by Ponta do Garajau and the port area is calm or nearly so. In winter, strong SW winds occasionally bring on thick weather, but gales are not frequent even in December, the most likely month. Fog in the vicinity of the port may occur with SW winds in winter, but the frequency is low and visibility usually only partially limited.

Temperatures vary from a mean high of 30°C in August to a mean low of 10°C in January.

Tides—Currents.—Tides rise 2.4m at springs and 1.9m at neaps.

The flood tidal currents run ENE at up to 1.3 knots during



Porto do Funchal from E

springs and 0.5 knot during neaps. The ebb tidal currents run SSW at about the same rates.

Depths—Limitations.—Pontinha, situated 1.5 miles ENE of Ponta da Cruz, is an artificial embankment which extends SSE from the shore at the W end of the harbor. A breakwater extends 0.5 mile E from the S end of Pontinha and Berths 1, 2, and 3 are situated along its inner side.

Berth 1 is 200m, long with depths of 6 to 8.5m alongside; Berth 2 is 425m long, with a depth of 11m alongside; and Berth 3, at the outer end, is 347m long, with a depth of 11m alongside.

Berth 4, situated at the W end of the harbor, is 80m long; it has a depth of 2m alongside and is used by fishing vessels.

Berth 5, situated on the N side of the harbor, is 95m long; it has a depth of 6m alongside and is mostly used by local vessels.

Berth 6, situated close NE of Berth 5, is 260m long with a depth of 8m alongside.

General cargo, container, bulk, and passenger vessels up to 302m in length and 11m draft can be accommodated alongside in the harbor.

An extensive marina, situated at the N side of the harbor, can accommodate yachts and pleasure craft up to 15m in length in depths of 3 to 4m.

The offshore tanker terminal at Praia Formosa consists of several mooring buoys surrounding the seaward end of a submarine pipeline which extends N and NE to the shore. It lies in a depth of 13m, about 0.5 mile WNW of Ponta da Cruz, and can accommodate tankers up to 275m in length and 11m draft.

A jetty projects from the shore at Praia da Vitoria, 0.7 mile NW of Praia Formosa, into depths of 7 to 8m; its head is flanked by several mooring buoys and a dolphin.

A facility for discharging cement has been constructed at Vitoria. Navigation is prohibited in the vicinity of the terminal.

Aspect.—From a distance seaward, Pico Ruivo de Santana, previously described in paragraph 8.2, is a very good landmark. Pico da Ponta da Cruz, 261m high, stands 0.8 mile NNE of Ponta da Cruz and is a good landmark from closer in.

The church, situated at Nostra Senhora do Monte, 2 miles N of the harbor, and the statue of Christ, standing on Ponta do Garajau, are also both very conspicuous when approaching the port. The town, with its white and yellow buildings, is situated on the hillsides above the harbor and is usually easy to identify.

Conspicuous landmarks include a high chimney standing 0.3 mile S of Forte de Pico and the church at Socorro, close N of Forte de San Tiago, which is white and has a prominent globe-shaped dome.

Prominent landmarks include Forte de Nostra Santa da Conceicao, standing on the breakwater; Forte de Pico, surmounted by a radio mast, standing on a rocky eminence, 0.6 mile N of the root of the breakwater; Forte de Santiago, standing close to the shore, 0.5 mile NE of the breakwater head; and a chimney standing at a factory, 0.3 mile W of Forte de San Tiago.

Other landmarks reported to be prominent include the Hotel Savoy, standing 0.2 mile NW of the root of the breakwater, which is painted white, but is partly obscured by the Casino Royale; the Sheraton Hotel, a ten-story building, standing 0.2 mile W of the root of the breakwater; and Reid's Hotel, a large yellow six-story building with a red roof, standing 0.3 mile SW of the Hotel Savoy.

A light is shown from a column, 5m high, standing at the head of the breakwater.

Pilotage.—Pilotage is compulsory for vessels of 200 gross tons and over and is available 24 hours. Pilots can be contacted

on VHF channel 14, 16, or 68 and board 1 mile SE of the breakwater head. Vessels should send their ETA 24 hours in advance. The pilot will generally indicate the anchorage berth for an approaching vessel.

Anchorage.—Anchorage may be obtained in four areas, best seen on the chart, designated A, B, C, and D. Area C is the anchorage used for quarantine and dangerous cargo.

Positioning of vessels within these areas is usually under the control of the harbor authorities and pilots. There are no limitations on size for vessels anchoring off the port.

Caution.—Anchorage prohibited areas, the limits of which are shown on the chart, lie close E of the harbor entrance, 1.2 miles E of the breakwater head, in the vicinity of the offshore oil terminal, and in the vicinity of several submarine cables which extend seaward from a point on the shore 0.6 mile E of Ponta da Cruz.

Several abandoned submarine cables lie S of those anchorage areas situated E of the breakwater head, but only exist in depths over 80m.

Prohibited areas, the limits of which are shown on the chart, lie in the vicinity of the offshore tanker terminal and the jetty at Praia da Vitoria.

During winter, vessels may have to shift anchorage or put to sea on the approach of a SW gale.

Local magnetic anomalies may be encountered off Porto do Funchal.

8.6 Camara de Lobos (32°39'N., 16°59'W.), a small bay, is entered 2 miles NW of Ponta da Cruz and forms an excellent harbor for fishing boats. A quay, marked by a light at the S end, is situated on the W side of the bay, and small craft can anchor, with good shelter, near the head.

Cabo Girao, 575m high, is located 2 miles W of Camara de Lobos. This cape rises in a conspicuous sheer cliff and forms a very good landmark, especially from the E or W. A conspicuous grove of pine trees stands on the high land above this cliff.

Ponta da Ribeira Brava, marked by a light, is located 2.7 miles WNW of Cabo Girao. A small village is situated near a stream, close W of the point.

Ponta do Sol, located 2 miles WNW of Ponta da Ribeira Brava, is a rocky bluff which rises from the sea in steps. A fairly steep cliff rises from the sea 0.7 mile E of the point. It is somewhat higher than the point and can easily be mistaken for it on some bearings.

Ponta da Gale, located 5 miles NW of Ponta do Sol, is formed by flat rocks which consist of black basalt. A large prominent building stands on the rocks above a cliff, close E of the point.

The prominent cascade of Ribeira Funda is located 0.8 mile NW of Ponta da Gale.

Ponta do Jardim do Mar is located 1.5 miles NW of Ponta da Gale and a small village, with a prominent chapel, stands on its summit.

8.7 Paul do Mar (32°45'N., 17°13'W.), a small town, stands along the shore, 1.3 miles NW of Ponta do Jardim do Mar. The land rises rapidly behind the town, but the beach area extends NW for nearly 1 mile before the cliffs again close to the sea. A light is shown from a column on a building, 12m high, at the E end of the town.

Baixas dos Carricos, consisting of several dangerous submerged rocks, extends up to 0.5 mile offshore, 0.7 mile WNW of the light.

Ponta da Faja da Ovelha, located 1.7 miles NW of Paul do Mar, is formed by steep cliffs and is fronted by rocks. A prominent chapel stands high above these cliffs.

Ponta do Pargo, previously described in paragraph 8.2, is located 2.5 miles NNW of Ponta da Faja da Ovelha.

Ilha de Porto Santo

8.8 Ilha de Porto Santo (33°05'N., 16°20'W.), the NE island of the Arquipelago da Madeira, is high and mountainous in its NE part, considerably hilly at its SW end, and generally flat in its central portion. Pico do Facho, 516m high, is the summit of the island and rises 1.5 miles S of Ponta da Cruz, the N extremity of the island. It is reported (1993) that a radio mast stands on this summit.

In general, the N and W coasts of the island are faced with bold, high, and rocky cliffs. They are inaccessible from the sea and are fronted by numerous rocks. However, the SE coast slopes and terminates in a long, white sandy beach for nearly its full length. The entire island is nearly devoid of trees and an international airport is situated on the flat land near the central plateau.

Ponta da Cruz (33°06'N., 16°19'W.), the N extremity of the island, is formed by a narrow point which terminates in cliffs, 50m high. A crescent-shaped rock fronts the point and Islote dos Barbeiros, a small islet, lies close NNW of it.

Ponta de Nordeste, located 1.5 miles ESE of Ponta da Cruz, is the NE extremity of the island. It consists of a bold promontory formed by a series of cliffs. The land SW of the point rises steeply to Pico Branco, 450m high, which stands 0.5 mile inland. This peak is an excellent landmark when viewed from the NW or SE. The coast between Ponta de Nordeste and Ponta da Cruz is formed by bold cliffs which are fronted by numerous submerged rocks.

Ponta dos Ferreiro, a steep point, is located 1.5 miles SSE of Ponta de Nordeste. Baixa do Cotrim, a small above-water rock, lies close SE of this point.

Ponta do Incao, the SE extremity of the island, is located 2.5 miles S of Ponta de Nordeste. It terminates in a low rocky spur which is closely backed by Pico de Baixo, a steep and cliffy hill, which rises to a height of 211m.

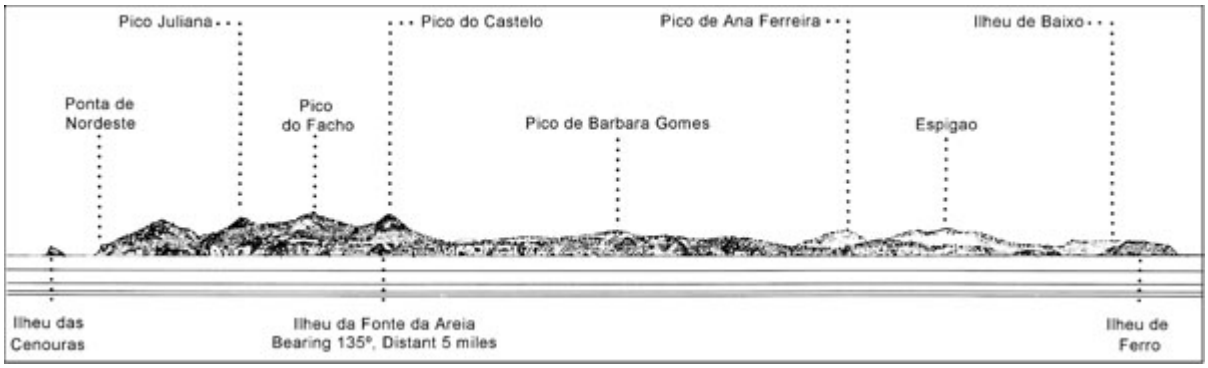
Ilheu de Cima (33°03'N., 16°17'W.) is separated from Ponta do Incao by a narrow and foul channel. The island, 121m high, is bare, nearly flat, and steep-to on its seaward sides.

A light is shown from a prominent tower, with a dwelling, 15m high, standing on the NE part of the island. An aeronautical radiobeacon is situated at the light.

A depth of 14.5m has been reported to lie about 0.3 mile S of the light.

Ponta da Calheta, the S extremity of the island, is located 5.2 miles WNW of Ilheu de Cima. Pico do Ana Ferreira, 283m high, stands 1.2 miles NNE of this point and has a remarkable summit which resembles a column.

Ilheu de Baixo is separated from Ponta da Calheta by a foul channel, 0.2 mile wide, which is used by boats in good weather. This small island is bordered by high, rocky cliffs and is steep-to except at its N end. Limestone abounds on this island



Ilha de Porto Santo from NW

and barges are sometimes seen loading it at a cove which lies along the W side. A shoal patch, with a depth of 7.7m, lies about 0.7 mile NE of the S extremity of this island.

8.9 Baia de Porto Santo (33°03'N., 16°20'W.) (World Port Index No. 38135) lies between Ilheu de Cima and Ilheu de Baixo, 6 miles SW, and provides fair shelter in moderate weather. The town of Porto Santo, formerly known as Vila Baleira, stands near the middle of the bay and is the capital of the island. Porto Santo, a small harbor, is situated 1.7 miles WNW of Ilheu de Cima.

Baia de Porto Santo

Tides—Currents.—Tides rise 2.5m at springs and 1.9m at neaps.

Depths—Limitations.—The main facilities include a quay, on the N side of the South Mole, which is 300m long and has depths of 6.1 to 7.8m alongside, and a secondary quay, on the E side of the North Mole, which is 200m long, with depths of 2.7 to 4.5m alongside. The cement berth, located close N of the elbow of the South Mole, consists of two mooring dolphins, with alongside depths of 6.1 to 6.7m.

A marina is situated in the NW part of the harbor and a short pier extends from a point on the shore, 1 mile W of the harbor entrance. A submarine pipeline extends 0.5 mile S from a point on the shore of the bay, 0.4 mile W of the harbor entrance.

Another submarine oil pipeline extends 0.3 mile SSE from the S side of the S breakwater. Several mooring buoys lie off its seaward end and form an offshore terminal berth.

Pilotage.—Pilotage is available. The harbor may be contacted on VHF channel 14, 16, 29, or 68. Pilots are provided from Funchal and require advance notice. Vessels should send an ETA 24 hours in advance.

Aspect.—The harbor is protected by two breakwaters, from which lights are shown.

Several prominent oil tanks stand in the vicinity of the root of the submarine oil pipeline which extends S from the shore of the bay. A prominent television mast stands 0.4 mile N of the root of the W breakwater.

An aeronautical radiobeacon is situated in the vicinity of the airport, 2 miles W of the harbor.

Anchorage.—Designated anchorage areas lie within the bay and the local authorities should be contacted. Large vessels should anchor, in a depth of 35m, about 1 mile S of the town. Care is necessary when anchoring as the depths fall off rapidly to over 200m, about 1.5 miles S of the town.

8.10 Ponta da Canavieira (33°02'N., 16°24'W.), located 1.3 miles NW of Ponta da Calheta, is the W extremity of Ilha de Porto Santo. The point is much lower than the adjacent cliffs which rise to a height of 270m.

Ilheu de Ferro (33°02'N., 16°25'W.) is separated from Ponta da Canavieira by a channel, 300m wide. It has a coastline of rocky and inaccessible cliffs and rises to a height of 115m. The W coast is steep-to and depths of over 100m lie only 0.7 mile offshore.

A light is shown from a tower, with a dwelling, 14m high, standing on the summit of this island.

The coast from Ponta da Canavieira trends 6 miles NE to Ponta da Cruz, which has been previously described in paragraph 8.8. It is faced by cliffs and fronted by rocky ledges which extend up to 0.3 mile offshore.

Caution.—Baixo de NW (Noroeste), with a least depth of 8m, lies near the N end of a bank, with depths of 31 to 50m,

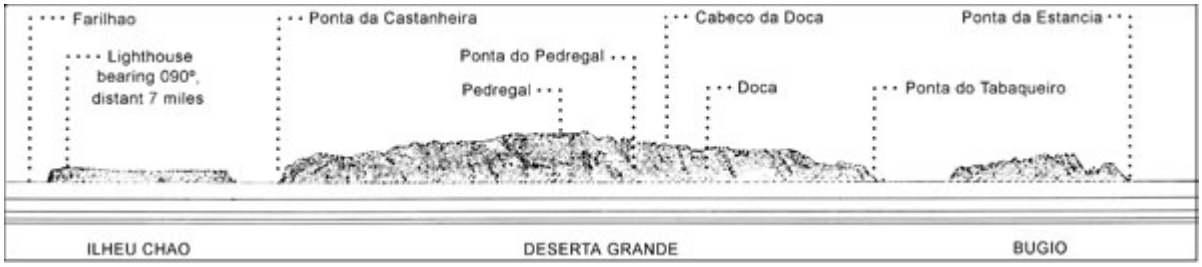
which extends 6.5 miles NW of Ponta da Cruz. This steep-to shoal has been reported to break heavily in bad weather.

Ilheu da Fonte da Areia, 79m high, lies 2.5 miles W of Punta da Cruz. This islet consists of a black-colored basaltic structure.

Baixo de NE (Nordeste), with a least depth of 22m, lies 2.5 miles NE of Ponta da Cruz and breaks occasionally.

Ilheu de Fora, 98m high, is located 2.3 miles ENE of Ponta da Cruz and is the northernmost of three islets which lie off the NE end of Ilha de Porto Santo. It is thickly wooded, with a peak at the center.

Baixo do Meio lies 0.7 mile S of Ilheu de Fora. This small islet is 12m high and consists of a group of rocks with a few trees on them. Ilheu das Cenouras, 109m high, lies 0.7 mile S of Baixo do Meio. It is composed of rocky cliffs covered with trees. These islets are separated from one another and from Ilha small vessels with local knowledge.



The Ilhas Deseertas

Ilha Selvagem Pequena

The Ilhas Desertas

8.11 The **Ilhas Desertas** (32°33'N., 16°31'W.) are a group of three islands, the N extremity of which lies 10 miles SE of the E end of Ilha da Madeira. These islands, which are composed of basalt and other volcanic rocks, extend over a total length of 12 miles, rise to a maximum height of 478m, and are generally steep-to.

There are no permanent inhabitants on the islands, but there are goats, rabbits, and numerous puffins. It has been reported that the islands are part of a protected nature reserve and navigation is prohibited within the 100m depth contour surrounding them.

Ilheu Chao (32°35'N., 16°33'W.), the N island, is bare, table-topped, and bordered by high rocky cliffs.

La Testa, the N extremity of the island, consists of a bold bluff, 98m high. It is fronted by rocks, some awash, which extend up to 0.2 mile seaward.

A light is shown from a tower, with a dwelling, 14m high, standing on the edge of this bluff.

Farilhao, 49m high, is a remarkable column of basalt which stands close N of La Testa.

The S end of this island terminates in a narrow point from which rocks extend to Ilha Deserta Grande, leaving only a narrow boat passage.

8.12 **Ilha Deserta Grande** (32°32'N., 16°31'W.) is the largest and highest of the Ilhas Desertas. A double ridge of hills, with an extensive valley between them, extends N to the N extremity of the island from a hill, 442m high, which stands close N of the center of the island.

The summit of the island, 478m high, stands near the center and a continuous ridge of rocky hills extends S from it to the S extremity of the island.

The general character of the E coast is that of a rugged, broken, and irregular line of cliffs with occasional landslips. The W coast consists of high, broken cliffs with occasional large fragments at their bases.

Ponta do Pedregal, the W extremity of the island, is fringed with reef and rocks.

Ponta do Tabaqueiro, the S extremity of the island, is formed by the S limit of a rocky ridge. An islet lies close W of this point; a rock, awash, lies close off its W side.

Ilha Bugio (32°26'N., 16°29'W.), the S island of the Ilhas Desertas, is 348m high and surmounted by a sharp, rocky ridge of hills which extends over the entire length. It is separated

from Ilha Deserta Grande by a deep and clear passage, 0.7 mile wide. It was reported (1986) that a depth of 14m (existence doubtful) lies in the middle of this passage.

A gap located near the center of Ilha Bugio gives it the appearance of being two separate islands when seen from a distance.

A light is shown from a prominent tower, 8m high, standing close within Ponta da Agulha, the S extremity of the island.

The Ilhas Selvagens

8.13 The **Ilhas Selvagens** (Salvage Islands) (30°09'N., 15°52'W.) lie 155 miles S of Ilha da Madeira and consist of two small but distinct groups of islands and rocks which are separated by a deep channel, 8.5 miles wide.

The NE group is composed of Ilha Selvagem Grande and two off-lying rocky islets. The SW group is composed of Ilha Selvagem Pequena and Ilheu de Fora, together with several rocky islets and reefs.

The islands are privately owned and permission for landing, which is rarely granted on this bird sanctuary, must be obtained through the Portugese Embassy in Madeira. It has been reported that these islands are part of a protected nature reserve and navigation is prohibited within the 200m depth contour surrounding them.

Ilha Selvagem Grande (30°09'N., 15°52'W.), the largest of the Ilhas Selvagens, is volcanic in origin and consists of basalt, lava, and breccia.

The two most conspicuous peaks are Pico da Atalaia, 153m high, standing in the SW part of the island, and Pico dos Tornozelos, 135m high, standing at the E side of the island. It is reported that three upright stones stand on the highest point of Pico dos Tornozelos and resemble human figures when seen from a distance.

A light is shown from a tower, 10m high, standing on the summit of Pico da Atalaia.

The island is bordered by steep or perpendicular cliffs, 38 to 122m high, which are practically sheer to the water's edge except on the S coast where, although higher, they have a more gradual slope. On approaching the coast, the island appears at a distance to be completely barren, but on closer presentation, it seems to be lightly covered with vegetation in places.

Ponta da Atalaia, the SW extremity of Ilha Selvagem Grande, is fringed by a reef which is reported to break in bad weather. The W side of the island is mostly bordered by reefs and Ilheu Preto, 12m high, lies on a coastal reef about 100m offshore, 0.3 mile SSW of Ponta do Risco, the NW extremity of the island.

Enseada das Cagarras, a small bay, is entered close ESE of Ponta da Atalaia and has a landing place at its head.

Pico do Inferno, a cliff summit, stands on the S coast of the island, 0.6 mile ESE of Ponta da Atalaia. It is 106m high, rises almost perpendicular, and is very prominent from seaward.

Anchorage.—During NE winds, fair anchorage may be obtained in two positions off the S coast of Ilha Selvagem Grande. The E berth lies in a depth of 20m, coral and shells, about 0.3 mile S of Pico do Inferno. The W berth lies in a depth of 27m, about 0.4 mile SW of Ponta da Atalaia.

Small vessels with local knowledge can also take anchorage, in a depth of 13m, in the middle of the entrance to Ensenada das Cagarras.

Caution.—Numerous dangers, many of which are steep-to, lie within the vicinity of Ilha Selvagem Grande. Caution is necessary when approaching the island, especially from the NE, as dangerous shoals lie up to 1.5 miles seaward in that direction. The S side of the island is clear to within a distance of about 0.5 mile.

Baixa de Sao Joao, with a least depth of 2.4m, lies about 1.3 miles NNE of Ponta do Corgo da Areia, the N extremity of Ilha Selvagem Grande. This shoal is most dangerous because it is very steep-to and does not break except in bad weather.

Baixa do Nordeste, with a least depth of 5.8m, and Baixa da Ponta Espinha, awash, lie about 1.2 miles ENE and 0.5 mile E, respectively, of Ponta do Corgo da Areia. Only small vessels, with local knowledge, should attempt to pass between these dangers.

Palheiro de Terra, 23m high, and Palheiro do Mar, 12m high, are two rocky islets fringed by rocks and reefs, which lie 0.5 mile NW and 0.8 mile WNW, respectively, of Ponta do Risco. Baixa do Norte, a rock with a depth of 1.6m, lies 0.2 mile N of Palheiro do Terra and breaks.

Baixa de Noroeste, with a depth of 2.7m, lies about 0.5 mile WSW of Ponta do Risco and is steep-to and dangerous.

Baixa de Oeste, awash, lies 0.8 mile W of Ponta da Atalaia and is steep-to on the NE side.

Baixa da Joana, with a depth of less than 1.8m, lies about 0.5 mile SE of Ponta da Atalaia. This shoal breaks heavily in S winds and depths of 7 to 11m lie up to 0.4 mile W of it.

8.14 **Ilha Selvagem Pequena** (30°02'N., 16°01'W.), also known as Great Piton Island, lies 10 miles SW of Ilha Selvagem Grande. It has a low rocky coast which is faced, in many places, with steep beaches of pebbles or gravel. The interior consists mostly of sand hills slightly covered with vegetation.

Pico do Veado, 49m high, stands at the N end of the island. The summit is conical and from all directions it is the most conspicuous feature of this group. A light is shown from a column, 1m high, standing on this summit.

Baixa Comprida, awash, and a rocky shoal, with a depth of 9m, lie about 1 mile SSW and 1.2 miles NE, respectively, of Pico do Veado. The former rock is the S danger of the group.

On the reefs, which extend from the island, are a number of rocky islets, up to 9m high, which are considered to be points. Ponta de Leste, a small islet, lies 0.7 mile ESE of Pico do Veado and is considered to be the E extremity of the island. Ponta do Oeste, another small islet, lies 0.4 mile W of Pico do Veado and is considered to be the W extremity.

Ilheu Pequeno, Ilheu do Sul, and Ilheu Grande are three low islets which lie up to 0.5 mile SW of the SW side of the island.

Fairly sheltered anchorage can be taken, in a depth of 30m, coral and shell, about 0.6 mile SSE of Pico do Veado.

Ilheu de Fora (30°02'N., 16°03'W.) lies 1 mile W of Ilha Selvagem Pequena. Canal da Selvagem Pequena, 0.5 mile wide, passes between these two islands and has depths of 9 to 11m. Ilheu de Fora has a sandy undulating surface and is mostly surrounded by reefs and rocks. A small rocky summit, 17m high, stands at its NW end and is quite prominent.

Restinga do Ilheu de Fora, which extends about 2 miles N of the island, is formed by a chain of small islets, rocks, reefs, and shoals. Ilheu Alto and Ilheu Comprido, both 7m high, lie 0.4 mile and 0.8 mile, respectively, N of Ilheu de Fora and are the

highest islets of the chain. The others are 2 to 4m high. A shoal, with a depth of 10.5m, lies about 0.8 mile NE of the N end of the chain. During heavy weather, the sea breaks over all these dangers. Vessels can obtain anchorage, in a depth of 38m, about 0.7 mile SW of the W summit of Ilhue de Fora.

These islands are uninhabited. Landing is difficult especially during the NE trades when the S shore can sometimes only be approached at LW.

Seamounts

8.15 A chain of seamounts extends from the Arquipelago da Madeira in a NE direction towards Cabo de Sao Vicente. Recent examinations have indicated that shoal water of varying degrees exists in their vicinity. Although most vessels will find little difficulty in transiting this area, large deep-draft vessels are advised to exercise caution.

Seine Seamount (33°45'N., 14°22'W.) lies about 110 miles ENE of Ilha de Porto Santo. It is several miles in extent and has a least known depth of 86m.

Ampere Seamount (35°00'N., 12°48'W.), with a least known depth of 40m, lies about 210 miles NE of Ilha de Porto Santo and should be avoided by large vessels. This seamount is fairly extensive and appears to have two peaks NW and SE of each other.

Gettysburg Seamount (36°30'N., 11°35'W.) lies about 318 miles NE of Ilha de Porto Santo. It is reported to be about 5 miles in extent and has a least known depth of 20.5m (1983).

Ormonde Seamount, with a least depth of 27.5m, lies about 26 miles ENE of Gettysburg Seamount.

Several other seamounts and shallow depths have been reported in these areas, but the existence of some of them is doubtful. The latest charts and Notice to Mariners should be consulted.

The Islas Canarias

8.16 The Islas Canarias, also known as the Canary Islands, are a province of Spain. They form an archipelago which consists of seven principal islands and extends in an E-W direction for over 240 miles. The E island of the archipelago is located approximately 55 miles WNW of Cabo Juby, the NW extremity of Africa; a clear channel lies between.

Isla de Tenerife and Isla de Gran Canaria are considered to be the most important of these islands and provide the main seaports, an international airport, and the largest tourist trade.

The islands are generally high with lofty volcanic peaks, some of which attain heights great enough to be snow covered for a considerable part of the year.

La Palma, the NW island, rises to Caldera de Taburiente, the famous crater. It is the biggest crater in the world, measuring approximately 9,000m in diameter and having a maximum depth of 707m.

Pico de Teide, the highest mountain in the archipelago, rises to a height of 3,718m near the middle of Isla de Tenerife and presents an imposing appearance in clear weather.

The coasts of these islands are mostly cliffy and are only occasionally broken by bays or sandy beaches. They afford little shelter in strong winds except at Santa Cruz de Tenerife, Santa Cruz de la Palma, and Puerto de la Luz (Las Palmas) at Isla de Gran Canaria. All of the channels between the islands are safe and clear.

Generally, the lee side of these islands offers calms which extend 15 to 30 miles offshore; however, in bad weather, local squalls may be experienced which come on with little warning.

Caution.—IMO-approved Traffic Separation Schemes, best seen on the chart, have been established between Tenerife and Grand Canaria, as well as E of Grand Canaria.

To avoid risk of pollution and damage to the environment several areas have been designated as Areas to be Avoided by all vessels of greater than 500 grt and those vessels carrying dangerous bulk cargo.

Local magnetic anomalies have been reported in the vicinity of the archipelago.

Isla de La Palma

8.17 **Isla de La Palma** (28°40'N., 17°52'W.), the NW island of the Islas Canarias, is very high and is shaped like a wedge with its base at the N end.

Two mountain ranges rise in the N part of the island. One of these extends SSW to the W coast and the other traverses the island, from N to S, and forms a narrow ridge which terminates at the S extremity of the island in several conical volcanic peaks. The main crest in the N part of the island terminates in three lofty peaks which stand near Caldera de Taburiente, previously described above in paragraph 8.16. Roque de los Muchachos, 2,423m high, is the highest. The mountains are usually capped with snow and their sides are well-wooded.

The coasts of La Palma are generally safe to approach as the few rocks, which lie off the points, are located mostly near the shore. The N and NW coasts are formed by high cliffs and the E and SW coasts consist of several bluffs with beaches between them.

La Palma is reported to be more subject to W winds and rain than any other island in the archipelago; in addition, it is frequently enveloped in fog.

Cautions.—A biosphere reserve has been established off Isla de La Palma. To prevent the risks of pollution and environmental damage in this highly sensitive sea area, all tankers and ships over 500 grt carrying oil or dangerous bulk cargo should avoid this area, which is best seen on the chart.

Punta de Fuencaliente (28°27'N., 17°50'W.), the S extremity of the island, is rocky and steep-to. Monte del Viento, a prominent hill, rises near the coast, 1.5 miles NNE of the point. It is 237m high and a pillar stands on the summit. Volcan San Antonio, 656m high, stands 1.7 miles NNW of the point and is the most prominent feature in the S part of the island. It has a truncated cone of volcanic ash and a pillar surmounts the summit.

A light is shown from a tower, with a dwelling, 24m high, standing on Punta de Fuencaliente.

8.18 **Santa Cruz de la Palma** (28°40'N., 17°45'W.) (World Port Index No. 38150), a small port, lies in a bay, 14.5 miles NNE of Punta de Fuencaliente. This bay is entered between Punta de San Carlos and Punta Santa Catalina, 1.5 miles N.

Santa Cruz de la Palma

Tides—Currents.—Tides rise 2.2m at springs and 1.7m at neaps.

Depth—Limitations.—The harbor is formed by a breakwater which extends about 800m SSE from a point fronting the town, 0.5 mile SW of Punta Santa Catalina. There are berths alongside the inner side of this breakwater with depths of 8m at its center and 20m at its outer extremity. Muelle de Ribera, in the N part of the harbor, has 337m of total berthing space with a depth of 6m alongside. There are facilities for container, ro-ro, and tanker vessels. It is reported (1992) that vessels up to 33,800 dwt, 199m in length, and 8.5m draft have been accommodated.

Aspect.—When approaching the port, the first landmarks to be seen are Risco de la Concepcion, a 354m high hill standing at the head of the bay, and the buildings of the town situated on the N shore.

An airport is situated close inland of Punta Ganado, 2.3 miles S of Punta de San Carlos, and a conspicuous radio mast stands close SW of the point.

The military barracks stand close W of Ponta de San Carlos and are prominent. Several oil tanks stand 0.4 mile NW of Punta de San Carlos and are conspicuous. A conspicuous hotel is reported to stand close NNW of these tanks.

A light is shown from a structure, 12m high, standing on the head of the breakwater.

Pilotage.—Pilotage is compulsory for vessels of 500 grt and over. Pilots may be contacted on VHF channel 6 or 16 and board in position 28°40.2'N, 17°45.8'W. Vessels should send an ETA 48 hours and 24 hours in advance of arrival.

Anchorage.—Vessels may anchor, in a depth of 30m, about 0.3 mile SSE of the head of the breakwater. This roadstead is sheltered from winds from the S through W to N.

Caution.—A considerable surge is occasionally experienced when sea conditions off the NW extremity of the island induce heavy swells to sweep into the harbor from the SE.

El Caldereto, a sudden W wind of hurricane force, occurs occasionally during periods of calms when winds veer from SW to NW. A particularly overcast NW sky can signal its approach.

An area, within which submarine obstructions exist, lies along the shore of in the SW part of the harbor and may best be seen on the chart.

8.19 Punta Cumplida (28°50'N., 17°47'W.), the NE extremity of the island, is located 10 miles N of Santa Cruz de la Palma. It is steep-to and five high hills, which are conspicuous from N, stand above the point.

A light is shown from a tower with a dwelling, 34m high, standing on the point.

Punta Gaviota, a small promontory, is located 1.5 miles WNW of Punta Cumplida. Rocas Topaciegos, a group of drying rocks, lies 200m offshore, about 0.7 mile W of this point.

Punta del Mudo, the N extremity of the island, is located 7.2 miles W of Punta Cumplida and El Roque lies close NW of it. This point is formed by an isolated ridge which rises to a height of about 500m. Roca Manga, a small islet, lies close to the shore, 1.1 miles ESE of Punta del Mudo.

Roca de Santo Domingo, 37m high, lies 100m off a point, 2.7 miles SW of Punta del Mudo. Two other rocks, slightly lower, lie within the bight entered close E of this rock.

Punta Gorda, the W extremity of the island, is located 6.4 miles SW of Punta del Mudo and consists of sheer cliffs, 320m high. Punta de las Llanadas is located 1.7 miles S of Punta Gorda and is fronted by foul ground which extends up to 0.3 mile offshore. The coast between is fringed by rocks.

Tazacorte (28°38'N., 17°56'W.), a small town, stands on a rocky plateau, 9 miles SSE of Punta Gorda. It is fronted by a small fishing harbor, protected by two breakwaters, and can be easily recognized from seaward as it is situated on the S side of a deep ravine, known as Barranco de las Angustias.

The best anchorage berth on the N and W sides of the island lies off Tazacorte. Anchorage may be obtained, in a depth of 30m, sand, about 0.5 mile from the shore, WNW of the town; it has good holding ground but is completely open to W winds.

Rocas Gabaseras, three above-water rocks, lie on a reef which extends 0.3 mile offshore, 0.4 mile S of Tazacorte.

Punta de El Grajado, a rocky promontory, is located 3 miles SSE of Tazacorte. Rocas del Becerro lie close off this point.

Punta de Lava, located 0.6 mile NW of Punta de El Grajado and marked by a light, is a prominent headland which was formed by lava from an eruption in 1949.

Puerto Naos, a small fishing village, is situated at the head of a bay which is entered close SSE of Punta de El Grajado. From here, the coast trends 9.5 miles SSE to Punta de Fuencaliente.

Isla de Hierro

8.20 Isla de Hierro (27°45'N., 18°00'W.), the SW island of the Islas Canarias, lies 37 miles S of Isla de La Palma. It is the smallest of the seven principal islands which form the archipelago.

The shores of the island are almost inaccessible and a well-wooded plateau, rising to a height of 1,501m, is located in the middle. Valverde, the capital of the island, stands on a plain, 1.5 miles from the coast in the NE part of the island. It is surrounded by high peaks.

Caution.—A biosphere reserve has been established off Isla de Hierro. To prevent the risks of pollution and environmental damage in this highly sensitive sea area, all tankers and ships over 500 gross tons carrying oil or dangerous bulk cargo should avoid the area which is best seen on the chart.

Puerto de la Estaca (Hierro) (27°47'N., 17°54'W.), a small town, is situated at the N end of a sandy bight, 1.5 miles SSW

of Punta Caleta, the E extremity of the island. A prominent islet lies close off the N entrance point of the bight and Roca Anegada, with a depth of 1.4m, lies about 0.4 mile E of it.

A pier, about 200m long, extends S from the town. It has depths of 10m alongside the seaward end and 4m near the root. Anchorage can be taken, in a depth of 9m, at the head of the bight and close offshore; however, caution is necessary as the depths increase rapidly to seaward.

Range lights lead into the harbor.

Punta Restinga (27°38'N., 17°59'W.), the S extremity of Hierro, is high and inaccessible. A small fishing harbor, protected by a breakwater, is situated near the point.

A depth of 5.4m is reported to lie about 1.5 miles SW of the point.

Punta Orchilla (27°43'N., 18°09'W.), the W extremity of the island, is located 10.8 miles NW of Punta Restinga. A light is shown from a tower, with a dwelling, 25m high, standing on the SE part of the point.

Between Punta Orchilla and Punta de la Dehesa, 4 miles NNE, the coast is high and cliffy. Roca del Bajo, above-water, lies about 0.3 mile offshore, midway between these two points. Roca del Bulto, surrounded by a reef, lies about 0.2 mile NNE of Roca del Bajo.

El Golfo, a bight on the NW side of the island, lies between Punta de la Dehesa and Punta de Salmor, 8.5 miles NE. The shore of this bight is formed by a continuous line of high cliffs with numerous rocks, above and below-water, at the base. Roques de Salmor, a group of small islets, extends up to 0.7 mile W of Punta de Salmor and are fringed by foul ground.

Punta del Norte, the N extremity of Hierro, is located 4.2 miles ENE of Roques de Salmor and 4.1 miles NNW of Puerto de la Estaca. It is high, rocky, inaccessible, and fronted by numerous rocks.

Isla de La Gomera

8.21 Isla de La Gomera (28°06'N., 17°14'W.) lies 34 miles NE of Isla de Hierro and 31 miles SE of Isla de La Palma. This island is circular; its coast consists of rugged, perpendicular cliffs with a few sandy beaches.

Near the coast, the mountains rise to heights of about 600m; however, near the center of the island, Alto Garajonay rises to a height of 1,487m above a plateau.

Punta del Organo (28°13'N., 17°15'W.), the N extremity of La Gomera, is high and steep-to. A deep ravine terminates at the shore, 1 mile SE of the point.

Fondeadero de Hermigua, lying 5 miles ESE of Punta del Organo, is approached between Punta de Agulo and Punta Gabina, 1.6 miles SE. This bight provides shelter from SE winds and vessels can anchor, in depths of 15 to 20m, sand, up to 0.5 mile off the beach at the head of the bight.

Punta Llano, located 10 miles SE of Punta del Organo, is low, sandy, and fronted by reefs.

Punta de San Cristobal (28°06'N., 17°06'W.), the E extremity of Isla de La Gomera, is located 1.9 miles S of Punta Llano and is steep-sided. A light is shown from a tower, 15m high, standing on the point.

Roca Bermeja (Avalo), awash at LW, lies about 0.3 mile offshore, 1 mile N of the point. The sea usually breaks over this rock which is the outermost danger off this part of the coast.

8.22 San Sebastian de la Gomera (28°05'N., 17°06'W.), a small town, is situated at the head of a bay, lying 0.7 mile SW of Punta de San Cristobal. The bay is entered between La Gila, a narrow and rocky point, 0.5 mile SW of Punta de San Cristobal, and Los Garanones, another rocky point, 0.5 mile SW. A white monument, 18m high, stands 0.3 mile W of Los Garanones and is conspicuous.

Depths in the approach decrease gradually toward the beach at the head of the bay. A mole, 225m long, extends SSW from near the N entrance point. It has a quay on the W side, with depths of 4 to 10m alongside, which is used by ferries and coasters. The entrance, which has depths of 13 to 27m, is indicated by a lighted range. Pilotage is compulsory for vessels of 500 gross tons and over. The pilots monitor VHF channel 16. Vessels should send an ETA 48 hours and 24 hours in advance of arrival. The pilot boards 1 mile E of the main breakwater light. Anchorage, with local knowledge, can be obtained within the bay, but vessels must stay clear of a ferry which swings upon entering.

Caution.—The range markers are located at the base of a cliff and are not very conspicuous; the lights are weak and are not easily seen against the background of other lights.

Punta Gorda, located 3.5 miles SW of Punta de San Cristobal, is formed by a prominent cliffy steep-to projection which falls to sandy beaches on each side.

The coast between this point and Cabo Gaviota, 1.8 miles SW, remains fairly steep-to, but several above-water rocks lie close offshore.

Punta del Espino (28°01'N., 17°12'W.), located 1.7 miles WSW of Cabo Gaviota, is formed by low cliffs and has a sandy bay on its E side. A shoal, with a depth of 4.6m, extends up to 200m seaward, close W of the point.

Playa de Santiago, a small town, is situated 0.5 mile NE of Punta del Espino. It is fronted by a small fishing harbor which is protected by a breakwater.

8.23 Punta Becerro (28°01'N., 17°15'W.), the S extremity of Isla de La Gomera, is formed by steep cliffs, 150m high. A prominent mountain, 761m high, stands 2.3 miles N of the point and a village is situated on its N slope. Small vessels can anchor, in depths of 13 to 20m, sand, in a small bay which is entered 0.6 mile ENE of the point.

The coast trends 4.7 miles WNW from Punta Becerro to Punta Iguala and remains high and cliffy. Several ravines penetrate this section of the coast and a few fishing stations are situated along the shore. Roca Iguala, which is prominent, lies close off Punta Iguala.

Punta Calera (28°06'N., 17°21'W.), the W extremity of Isla de La Gomera, is located 2.5 miles NW of Punta Iguala. It is low and rocky and dominated by Risco de la Calera, which rises to a height of 604m.

The town of Valle Gran Rey is situated close E of this point, at the termination of a large and deep ravine.

Fondeadero del Valle Gran Rey lies between Punta Calera and Punta Tringo, 1.2 mile SSE, and provides shelter from all E winds. Vessels with local knowledge can anchor, in depths of 10 to 20m, about 0.2 mile offshore, 0.6 mile SE of Punta Calera. A wharf used by boats is situated at the head of the bay and is protected by a breakwater.

The NW shore of La Gomera N of Punta Calera is high, rocky, sheer, and mostly inaccessible. Numerous rocks lie close offshore and in the vicinity of Punta del Peligro, the NW extremity of the island; several dangers lie up to 0.3 mile seaward. The coast continues ENE for 3.2 miles from Punta del Peligro to Punta del Organo and is sheer and inaccessible.

Isla de Tenerife

8.24 Isla de Tenerife (28°10'N., 16°36'W.) lies 15 miles E of Isla de La Gomera and is the largest and most important of the Islas Canarias. The central part of the island is traversed nearly the whole of its length by a high range of mountains that slope steeply towards the sea. Forests and brushwood cover parts of the higher ground and vegetation abounds in some of the valleys and slopes.

Pica de Teide and astronomical observatories

Pico de Teide, also known as the Peak of Tenerife, stands in the center of the island. This famous mountain rises to a height of 3,718m and is snow-capped for the greater part of the year. The cone of this mountain is very small in proportion. It is only 163m high and the crater at the top is only 39m deep.

Pico de Teide, distant 6 miles

The coasts of the island are mostly bold and steep-to; except for a few reefs extending from some points, all of the dangers are visible and lie close inshore. The SW side is formed of high cliffs, broken occasionally by the beds of mountain torrents; along the SE shore there are some small beaches.

Generally, when approaching the island from the N between April and October, the land can seldom be distinguished until within a distance of 20 miles. Beyond this distance, the island usually appears as a haze.

The months of January and February, when the sky is slightly clouded, are the most favorable months in which to identify Pico de Teide from extraordinary distances, especially just before or after rains.

Tides—Currents.—The current sets W, strongly at times, to the S of Tenerife. On the E coast, it usually sets S, but its direction and strength are subject to the influences of the wind. The average rate of the current is reported to be 0.8 knot.

Caution.—A marine reserve for cetacean breeding has been established off Isla de Tenerife. To prevent the risks of pollution and environmental damage in this highly sensitive sea area, all tankers and ships over 500 gross tons carrying oil or dangerous bulk cargo should avoid the area which is best seen on the chart.

An IMO-approved Traffic Separation Scheme has been established between Isla de Tenerife and Isla de Gran Canaria and may best be seen on the chart.

When rounding Punta de Teno, the W extremity of Tenerife, the Northeast Trade Wind will be encountered, usually with considerable force. Although violent and squally in the vicinity of this point, the wind usually moderates to the N of it.

Vessels approaching from the SW during the winter months are advised to keep to the SE side of the island.

8.25 Punta de Teno (28°20'N., 16°55'W.) the W extremity of Isla de Tenerife, is formed by a low peninsula. A heavy sea is usually encountered in the vicinity of the point.

A light is shown from a tower, 20m high, standing on the SW extremity of this point.

The land lying E of the point rises to a height of 500m within a distance of about 1 mile and gives the appearance of a steep drop to the sea when viewed from offshore. The coast SE of the point is formed by a remarkable steep cliff, 600m high, which is intersected by several ravines. The coast NE of the point is generally low and foul. However, at Punta de Tierra Mala, 2.3 miles ENE, a steep cliff rises from the sea to a height of 500m.

Punta de Buenavista, located 6 miles NE of Punta de Teno, is fairly low and is fronted by rocks and a reef. It can easily be identified by Montana Taco, 319m high, standing 1.3 miles SSW of it. The point is marked by a light.

Rada de Garachico, entered between Punta de Buenavista and Punta Riquer, 5 miles ESE, provides anchorage in good weather to vessels with local knowledge. The bottom in some places within this bight is rock and the area is completely open to the N which makes anchorage here uncertain even in good weather. El Roque, a large and steep-to rock, lies close off the town of Garachico, 1.5 miles W of Punta Riquer.

Punta de Don Pedro, located 13.5 miles ENE of Punta de Teno, is a rocky and much indented point with low cliffs. Baja de los Realejos, two pinnacle rocks with a depth of 3.7m, lie about 4 miles ENE of the point and are steep-to.

Vessels, with local knowledge, can obtain anchorage, in depths of 20 to 30m, rock and sand, NW or NE of Punta El Guindaste which is located 0.7 mile S of Baja de los Realejos. However, numerous rocks, above and below-water, lie off the point and a heavy swell sets into this area.

Puerto de la Cruz (28°25'N., 16°33'W.), a resort town, is situated 7 miles E of Punta de Don Pedro and can easily be identified by the numerous multistory buildings. It is approached between two rocky spits which extend up to 0.4 mile seaward and have depths of 0.6 to 3.8m at their outer ends. A small craft pier, protected by a breakwater, fronts the town, but a heavy swell frequently sets into the harbor and makes mooring difficult. Anchorage may be obtained, in a depth of 35m,

about 0.4 mile N of the breakwater. However, this anchorage, which lies close to the coastal bank, is dangerous in winter and not in general use throughout most of the year.

Punta del Viento is located 10 miles NE of Puerto de la Cruz. The coast between consists of a series of rocky bays formed by low to moderately high cliffs. Anchorage is not recommended within them or off them as the holding ground is poor and a heavy swell often sets towards the shore.

To the NE of Punta del Viento, the shore is fronted with rocks, difficult to approach, and intersected by several ravines.

Punta del Hidalgo, located 6 miles NE of Punta del Viento, is low, tree-covered, and fronted by foul ground. Depths of less than 10m lie up to 0.5 mile seaward of it and this point should be given a berth of at least 1 mile. The land rises steeply to heights of 500m or more about 1 mile SE of the point. The point is marked by a light.

8.26 Punta Tamadiste (28°35'N., 16°16'W.), located 3 miles E of Punta Hidalgo, is formed by a high, steep, triangular pillar of rock. It is the most prominent feature along this part of the coast. The shore to the E and W of this point is formed by dark-red cliffs which are fringed by rocks at their bases.

Baja de las Nieves, with a least depth of 6.3m, lies 0.7 mile offshore, about 2 miles E of Punta Tamadiste.

The coast from this point to the NE end of the island is formed by low crumbling cliffs, which are fronted by rocks and have small beaches intersecting them at intervals along the shoreline.

Roque de Dentro (28°35'N., 16°09'W.), located 6 miles ENE of Punta Tamadiste, is 109m high, yellow and conical, and joined to the main island by a reef. It is the N extremity of Isla de Tenerife.

Roques de Anaga (28°36'N., 16°09'W.), a group of black rocks, lie 0.5 mile N of Roque de Dentro. Roque de Fuera, the N rock of the group, is dark with two conical summits, 64m high. The group is separated from Roque de Dentro by a channel, 0.4 mile wide, which has depths of 19 to 23m. La Palometa, a rock just above water, lies about 0.2 mile W of Roque de Fuera.

Punta del Roque Bermejo (28°35'N., 16°08'W.), the NE extremity of Isla de Tenerife, is located 1.5 miles SE of Roques de Anaga. Roque Bermejo, 15m high, lies close off this point and is fronted by shoal water extending up to 0.2 mile seaward.

Anaga Light is shown from a prominent tower, with a dwelling, 12m high, standing on rising ground, 0.4 mile W of Punta del Roque Bermejo. It has been reported that due to its elevation, the light is sometimes obscured by mist even when there is no sign of fog at sea level.

8.27 Punta de Anaga (28°33'N., 16°07'W.), located 1.2 miles SSE of Punta del Roque Bermejo, is the E extremity of Isla de Tenerife. It is steep, inaccessible, and fringed by rocks. A prominent white chalk patch, known as La Mancha Blanca, is located close N of this point.

Bajo de la Mancha Blanca, a rocky shoal with a depth of less than 1.8m, lies 0.4 mile ENE of Punta de Anaga and breaks heavily in bad weather. Vessels are advised not to round Punta de Anaga at a distance of less than 2 miles.

Los Rodeos aeronautical light, which often can be seen at considerable distances, is shown from a steel tower standing at an elevation of 650m, about 11 miles WSW of Punta de Anaga.

Punta de Antequera, located 1.5 miles SSW of Punta de Anaga, is a steep projection, 213m high, which from the NE appears as an island.

Anchorage can be obtained in a small bay known as Ensenada de Zapata, under the lee of Punta de Antequera. There are depths of 15 to 16m, sand, about 0.3 mile from the shore. This roadstead is often frequented by small fishing vessels and the head of the bay provides a good landing place.

A naval signal station stands on the slope of a hill above Punta de Roquete, 1.3 miles SW of Punta de Antequera. The ruins of an old signal station are situated on the summit of the same hill.

Punta de los Organos, located 3 miles SW of Punta de Antequera, is low and flat. A large conspicuous block of apartment houses stands 0.7 mile NE of the point and the resort town of San Andres, with its black sandy beach, is situated 0.6 mile SW of it.

Santa Cruz de Tenerife (28°28'N., 16°14'W.)

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8.28 Ciudad de Santa Cruz stands on level ground, 9 miles SW of Punta de Anaga, and is backed by steep sloping mountains. The harbor, which fronts the city, consists of four main basins protected by breakwaters.

Puerto Caballo, lying on the S side of the city, has facilities for loading oil products from a refinery on the shore.

Winds—Weather.—Santa Cruz is open to winds from the ENE to SSW and a swell generally sets in due to the prevalence of E winds. During the winter months, strong S winds frequently occur and cause a heavy sea in the roadstead. Gales from the SE may occasionally occur between January and March, but they are infrequent.

During summer and much of the rest of the year, the winds are from the NE, but they are partially blocked or reduced by the interceding mountains.

Fog is of no great consequence; however, haze is common in summer and mist forms in the mountains during winter.

Tides—Currents.—Tides rise 2.2m at springs and 1.7m at neaps.

The tidal currents generally set NE on the flood and SW on the ebb; both attain rates of about 1 knot at springs.

Depths—Limitations.—Darsena Pesquera, the NE basin, is protected by Dique de Abrigo, a breakwater, which extends 0.5 mile SW. This basin has depths of 6.3 to 9.6m and is used by fishing vessels and yachts.

Darsena Este (formerly Nordeste), situated 0.7 mile SW of Darsena Pesquera, is protected by Dique del Este, a breakwater which extends about 0.7 mile in a general SW direction. There is 1,325m of total quayage on the inner side of this breakwater, with depths of 12 to 19.5m alongside. A container quay, situated at the head of this basin, is 435m long and has a depth of 10m alongside.

Darsena Sur (formerly Sudoeste), situated 0.7 mile SW of Darsena Este, is protected by Dique Muelle del Sur, a breakwater which extends 0.7 mile NE. There is 1,654m of total quayage on the inner side of this breakwater, with depths of 8 to 12m alongside. Muelle de Ribera, situated at the W side of this

basin, has 1,152m of total quayage, with depths of 7 to 10m alongside. Muelle Norte, situated at the NW side of this basin, is 103m long and has a depth of 8m alongside.

Darsena de los Llanos (formerly Nueva Darsena Sur), situated close S of Darsena Sur, is protected by the E breakwater which extends 0.8 mile SSW from the root of Dique Muelle del Sur. There is 1,426m of total quayage on the inner side of this breakwater, with depths of 8 to 12m alongside. A quay situated on the W side of the basin has 1,105m of total berthing space, with a depth of 8m alongside. A quay situated at the head of the basin is 150m long and has a depth of 8m alongside.

There are facilities for general cargo, tanker, bulk, container, passenger, and bunkering vessels within the basins. Vessels up to 300m in length and 18.3 draft can be handled.

Puerto Caballo (Puerto de la Hondura), the oil terminal, is situated 0.7 mile SW of the entrance to Darsena de Los Llanos. A jetty and a T-head pier, with dolphins, can handle vessels up to 45,000 dwt; these berths are mostly used for LPG vessels and tankers loading refined spirits. A buoy berth connected to a floating pipeline can accommodate tankers up to 240,000 dwt.

Aspect.—Several large buildings, some reaching heights of over 90m, stand in the city, but generally, it is formed of white flat-roofed houses which are situated right up the W slopes of the mountains.

The oil refinery situated S of the city has several prominent chimneys with gas flares which form excellent aids at night.

Tenerife airport aeronautical light, situated 3.5 miles WNW of the city, is also a good aid at night.

Other conspicuous landmarks include a tall and dark building, 96m high, standing 0.5 mile SW of the root of Dique Muelle del Sur; several radio masts, marked by obstruction lights, standing 1.5 miles NW of the root of Dique Muelle del Sur; and Cantera de la Jurada, a white quarry situated on the shore, 0.5 mile NW of the head of Dique del Este.

Prominent landmarks include the Church of La Conception, 53m high, standing 0.4 mile SW of the root Dique Muelle del Sur; the San Francisco Church, 50m high with a tower, standing 0.3 mile W of the root of Dique Muelle del Sur; and a crane reported to stand midway along the E breakwater of Darsena de Los Llanos.

Pilotage.—Pilotage is compulsory for vessels of 500 gross tons and over. Vessels should send an ETA message 48 hours and 24 hours in advance through Tenerife Radio (EAT). Pilots can be contacted on VHF channel 12, 14, or 16 and board up to 2 miles seaward of the head of Dique Muelle del Sur. During bad weather, the pilot launch may remain under the lee of Dique Muelle del Sur and direct vessels by radio.

Anchorage.—Vessels proceeding to anchorage are generally directed by VHF from the pilot station. The usual anchorage berths, in depths of 60 to 80m, sand, lie about 0.2 mile seaward of Dique Muelle del Sur.

Large tankers sometimes anchor, in depths of 60 to 75m, in an area lying about 0.7 mile ESE of the root of Dique del Este.

There are facilities for supplying bunkers to vessels at anchor.

Fishing vessels can obtain anchorage, in depths of 6 to 8m, within Darsena Pesquera.

Tankers may also anchor, in a depth of 37m, about 0.2 mile SE of the T-head pier at Puerto Caballo.

Caution.—An anchorage and fishing prohibited area, the limits of which are shown on the chart, extends seaward from the shore in the vicinity of the entrance to Darsena de Los Llanos.

A submarine pipeline extends 400m ENE from the root of Dique del Este.

It is reported (1992) that works are in progress in the W part of Darsena Este.

8.29 Punta de Guadamojete (28°24'N., 16°19'W.), formed by a cliffy projection, is located 4 miles SW of Puerto Caballo oil terminal. The coast between consists of steep-to cliffs, over 100m high. The point can be identified by a small banana plantation, surrounded by a white wall, situated fairly close within it. A small boat harbor, protected by a jetty, lies close W of the point.

Candelaria, a small town, is situated at the head of the bay formed between Punta del Guadamojete and Punta del Socorro, 5.2 miles SSW. It is fronted by a small yacht and fishing boat harbor which is protected by two breakwaters. Prominent chimneys stand close to the shore, 2 miles N of the harbor and a conspicuous clock tower stands in the town.

Caution.—Due to the existence of submarine cables, anchoring and fishing are prohibited in an area, the limits of which are shown on the chart, extending ESE from the vicinity of Candelaria.

A submarine cable extends seaward from a point on the shore, 1.2 miles N of Candelaria.

Punta del Socorro (28°19'N., 16°21'W.), a low headland, rises from the sea in a series of rocky steps to a conical peak known as Montana de Guimar. This peak is 276m high and stands 1 mile WNW of the headland. Beaches fringe both sides of the point and a small boat harbor is situated at Puerto de Guimar, on the S side. A rock, awash, lies close off the entrance to the harbor and local knowledge is recommended.

Punta Honduras is located 8 miles SSW of Punta del Socorro and a prominent hotel stands 2 miles N of it. Montana de Fasnia, with a prominent white hermitage surmounting its summit, stands 2 miles NNW of Punta Honduras.

8.30 Punta de Abona (28°09'N., 16°25'W.), located 10 miles SSW of Punta del Socorro, is not particularly high but consists of bold cliffs which constitute the most prominent feature along this section of the coast. A hospital and a church, with a high cross, are situated 0.5 mile WSW of the point.

A light is shown from a tower, 39m high, standing close SW of the point.

Montana Centinela, 269m high, rises 1.8 miles W of Punta de Abona and is a fairly good land mark when seen from a few miles offshore.

Bahia de Abona is entered between Punta de Abona and Punta del Ternero, 1 mile N, and provides good shelter in W winds. The village of El Poris de Abona stands in the NW corner of this bay and is fronted by a pier, 70m long, with a depth of 4m at its head.

Anchorage can be taken by ocean-going vessels, in a depth of 20m, sand and coral, just within the entrance points of the bay. Caution is advised as the depths increase to over 100m only 0.3 mile seaward of this berth. The bay is not safe in strong E winds.

Punta del Camello is located 5.5 miles SW of Punta de Abona. A rock, with a depth of 9.3m, lies about 0.4 mile ENE of this point and is the outermost danger along this part of the coast.

Montana Ifara, 303m high, rises 2 miles WNW of the point and has a conical prominent summit.

A steam generating plant stands on reclaimed land about 0.4 mile N of Punta del Camello. A conspicuous hotel stands 3 miles SW of Punta del Camello. A conspicuous bell tower stands 3.2 miles SW of Punta Abona.

Punta Roja, 171m high, is located 4 miles SW of Punta del Camello. It is reddish in color and surmounted by a white pillar. This point sometimes appears from a distance as a detached conical rock.

A small airport is situated 1.5 miles NW of Punta Roja. An aeronautical radiobeacon is situated in its vicinity; the control tower is reported to be very prominent.

An anchorage, used by tankers unloading fuel oil, lies 1 mile W of Punta Roja. A group of buoys moored at the anchorage mark the seaward end of a submarine pipeline which extends NNW to the shore.

Caution.—A submarine cable extends SW from a point on the shore, about 0.4 mile NW of Punta Roja. It is also reported that a small boat harbor has been built in this vicinity.

8.31 Punta Montana Amarilla (28°00'N., 16°39'W.) is located 4.7 miles WSW of Punta Roja. The coast between is low is broken only by several small, conical hills. A prominent hotel stands 0.5 mile W of the point. Montana La Centinela, surmounted by a cross, rises 4.5 miles N of the point.

Punta Rasca (28°00'N., 16°42'W.), located 7.8 miles WSW of Punta Roja, is the S extremity of Isla de Tenerife. This point is low but is backed by a hill, 152m high, standing 0.7 mile inland. A light is shown from a tower, 32m high, standing on the point.

The coast rises remarkably to a line of steep cliffs, 100m high, at a point about 2 miles NNW of the light.

Punta del Guincho (Camizo), located 4 miles NW of Punta Rasca, is low and shelving with saltpans on it. Depths of less than 9m extend up to 0.4 mile SW of this point.

Ensenada de los Cristianos, a small bay, is entered 1 mile SE of Punta del Guincho. The resort town of Los Cristianos, marked by several large buildings, stands at the head of this bay. A small harbor, protected by a breakwater, fronts the town and is used by coasters, ferries, yachts, and small craft. There is a quay, 230m long, with a depth of 6m alongside and facilities for fishing vessels. It is reported that vessels up to 5,700 dwt have been handled.

Anchorage may be taken, in a depth of 27m, sand and stone, near the head of the bay, about 0.5 mile S of the town. The berth is sheltered from all but SW winds and has good holding ground. Local knowledge is advised.

The coast from Punta del Guincho trends NW for 9 miles to Punta de San Juan and is generally low and sandy with several rocky patches which extend up to 0.4 mile offshore. A prominent mountain, 1,003m high, rises 3.7 miles NE of Punta del Guincho.

It is reported that a marina has been constructed at Puerto Colon, 1.8 miles N of Punta del Guincho.

Baja de Adeje consists of a group of rocks, some above-water, lying on a spit which extends 0.3 mile seaward from a point on the coast, 3 miles NW of Punta del Guincho.

The small fishing town of San Juan stands close E of Punta de San Juan and is marked by a chimney. Several prominent hotels stand along the coast in this vicinity.

A spit extends 0.5 mile seaward from a point on the coast, 1.2 miles NW of Punta de San Juan. It has depths of less than 10m and two rocks, awash, lie near the center.

The coast trends NNW for 4 miles from Punta de San Juan to La Punta and is formed by low cliffs fronted by above and below-water rocks.

8.32 Fondeadero de los Gigantes (28°16'N., 16°51'W.) is entered between La Punta and Punta de Tamaimo, 2 miles NW. This bay affords good shelter from winds from the NNW through E to SSE. During E winds, it is considered to be one of the best roadsteads and ocean-going vessels can seek shelter here.

Los Gigantes, a steep and prominent cliff, rises to a height of 500m on the N side of this bay, about 1 mile SE of Punta de Tamaimo.

Good anchorage can be taken, in depths of 20 to 30m, about 0.3 mile SSW of the steepest part of this cliff.

Punta de Tamaimo (28°17'N., 16°52'W.) consists of a steep cliff which rises to a height of 500m less than 0.2 mile inland. The coast extending NW to Punta de Teno, the W extremity of Tenerife, is formed by high, steep, and prominent cliffs which are intersected, at intervals, by deep ravines. This stretch of coast, 5.5 miles long, is barren and inaccessible except for occasional beaches situated at the base of the ravines.

Isla de Gran Canaria

8.33 Isla de Gran Canaria (28°00'N., 15°30'W.), lying 30 miles ESE of Isla de Tenerife, is important because of its resources, fisheries, and good harbor at Puerto de La Luz (Las Palmas). The island is the most fertile and has the best supply of water of all the islands in the Islas Canarias.

Gran Canaria is very mountainous. Los Pechos (Nieves), an irregular mass, stands near the center of the island and attains a maximum height of 1,949m. Roque Nublo, 1,700m high, rises 2 miles W of the above peak and from W, S, and NE appears as an isolated pillar of rock.

When seen from well offshore, the island appears high in the center with a broken slope on either side falling to the sea. Numerous secondary peaks and craters stand on the island; several mountain streams traverse the surface and flow into the sea. La Isleta, the peninsula forming the NE extremity of the island, appears as a detached conical islet when seen from the E or W.

An aeronautical light is shown from a radio mast, 55m high, standing at an elevation of 1,604m, 3 miles NNW of Los Pechos.

Caution.—A marine reserve for cetacean breeding has been established off Isla de Gran Canaria. To prevent the risks of pollution and environmental damage in this highly sensitive sea area, all tankers and ships over 500 gross tons carrying oil or dangerous bulk cargo should avoid the area which is best seen on the chart.

An IMO-approved Traffic Separation Scheme has been established between Isla de Tenerife and Isla de Gran Canaria and may best be seen on the chart.

An area used for the dumping of explosives (depth charges), with a radius of 3 miles, is centered about 13 miles E of the NE extremity of Isla de Gran Canaria and may best be seen on the chart.

8.34 Punta Sardina (28°10'N., 15°42'W.), the NW extremity of Gran Canaria, is low and rounded. A light is shown from a 24m high tower, with red bands, attached to a dwelling, on the NW side of the point.

Depths of less than 10m extend up to 0.2 mile NW of the point, and a rock, with a depth of 1.2m, lies about 0.2 mile offshore, 1 mile ENE of the point.

Rada de Sardina lies close S of Punta Sardina and is sheltered from N and E winds. Two small piers are situated at Puerto de Sardinas, on the N side of the head of this bay.

Punta Guanarteme, located 0.7 miles E of Punta Sardina, is bold and cliffy. Rada de Galdar is entered between this point and Punta de Ortiz, 2.5 miles W. This bay is occasionally used by coasters and fishing boats in good weather.

Pico Tamabada, 1,444m high, stands 7 miles S of the point and is square-shaped. Pico del Viento, 1,000m high, stands 5 miles SE of the point. Both of these mountains form good land marks from offshore. Pico de Galdar, 450m high, stands 1.3 miles S of Punta Guanarteme. Its summit is formed by a conspicuous cone and is an excellent landmark when approaching the coast.

Punta del Camello, low and cultivated, is located almost midway along the N coast of Gran Canaria. It is fronted by rocky shoals which extend up to 0.3 mile seaward. Monte Cardones, 280m high, and Montana de Arucas, 300m high, rise 1.8 miles SE and 2 miles S, respectively, of the point and serve to identify the area.

Bahia del Confital is entered between Punta del Camello and Punta del Confital, the W extremity of La Isleta, 4.5 miles E. This bay is exposed to the N swell and has a reef at the head. It is only suitable as a place of shelter for small craft with local knowledge.

Caution.—An area, in which anchoring and fishing are prohibited due to submarine cables, lies in the vicinity of Bahia del Confital and may best be seen on the chart.

8.35 La Isleta (28°10'N., 15°25'W.) is the peninsula which forms the NE extremity of Isla de Gran Canaria. It consists of three main peaks, each over 200m high, and is connected to Gran Canaria by a low and sandy isthmus which encompasses Puerto de la Luz. From the N and W, this peninsula appears as a detached island.

A light is shown from a tower, 9m high, standing at an elevation of 249m, on the N part of the peninsula. The light is conspicuous but may occasionally be shrouded in mist.

A lookout tower stands on the summit of a hill, about 0.8 mile S of the light.

Depths of less than 10m extend up to 0.4 mile N and 0.8 mile ENE of Punta de la Vieja, the N extremity of La Isleta. Several shoal patches, with depths of less than 1.8m, front the peninsula; it is recommended that vessels stay at least 2 miles from it.

Punta el Nido, the E extremity of La Isleta, is formed by a low projection. El Roque, 3m high, lies close SE of the point and is prominent. A wreck, with a depth of 9.6m, lies about 0.5 mile S of El Roque.

Caution.—A prohibited area, within which lies unmarked wrecks and hulks, extends up to 1.3 miles S of Punta el Nido and may best be seen on the chart.

Puerto de la Luz from S

Puerto de La Luz (Las Palmas) (28°09'N., 15°25'W.)

World Port Index No. 38170

8.36 Puerto de la Luz, situated within the bay formed S of La Isleta and on the E side of its connecting isthmus, is the port for the city of Las Palmas and is frequently known by the latter name. It consists of a major commercial harbor and a naval base.

Puerto de la Luz (Las Palmas) Home Page

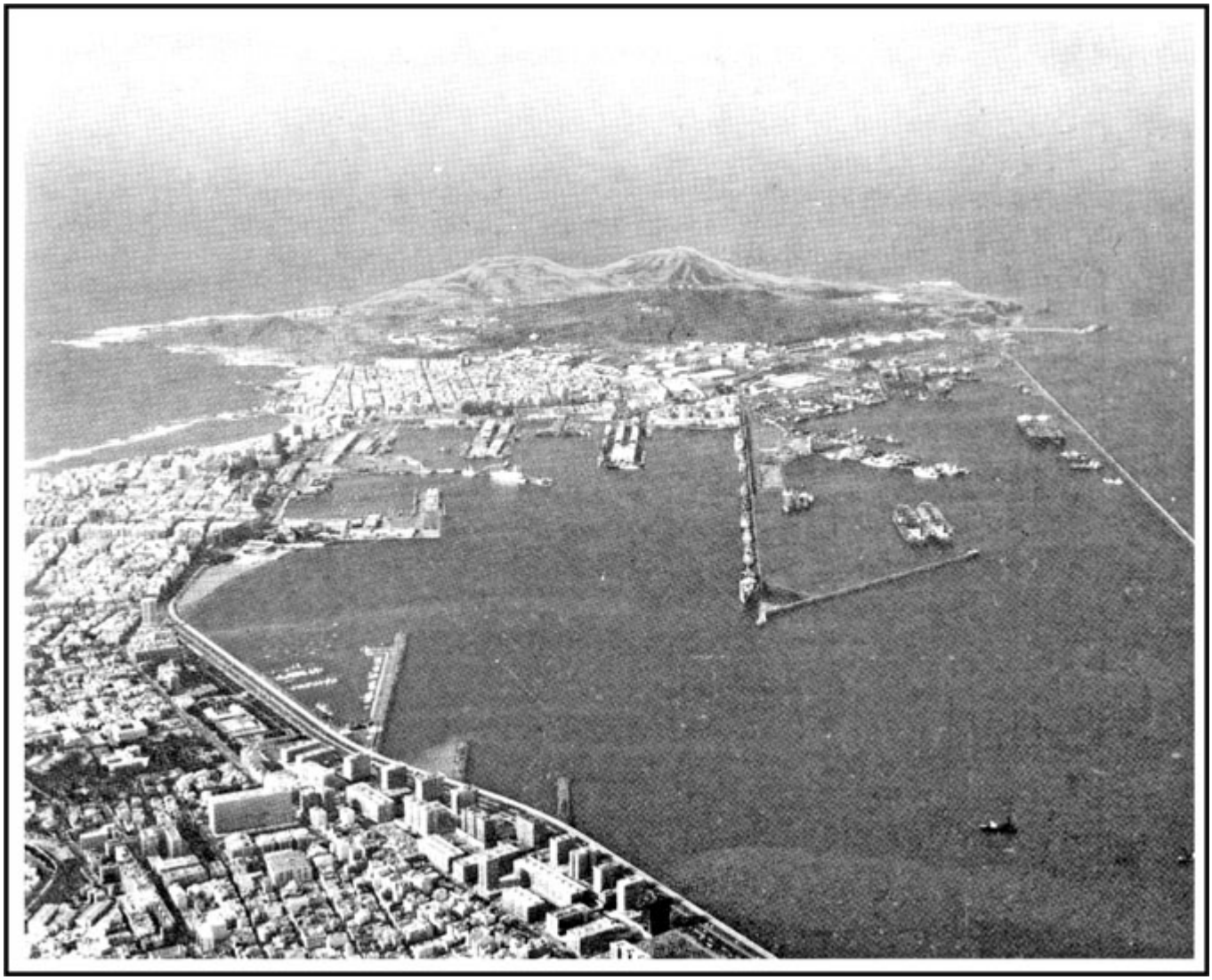
http://www.palmasport.es

Winds—Weather.—Winds from N predominate throughout the year and in general average at force 3. In winter, depressions to the N may shift the wind patterns to the NW or SW, but the port is also well-sheltered from these directions. In January, SE winds may occasionally occur and these cause an uncomfortable swell within the harbor.

Fog is rare, but haze, which can reduce visibility to 5 miles or less, has a moderate frequency. In general, visibility is usually better than 12 miles for 85 per cent of the time, with most limiting effects occurring between January and April.

Average temperatures at the port vary from a high of 29°C in August to a low of 14°C in January and February.

Tides—Currents.—Tides rise 2.5m at springs and 1.9m at neaps.



Puerto de la Luz from S

The tidal currents in the roadstead and harbor are slight, usually setting SW.

Depths—Limitations.—A breakwater pier, Dique Reina Sofia, extends 1.6 miles S from the SE coast of La Isleta. Another breakwater pier, Dique Leon y Castillo (formerly Dique del Generalisimo Franco), extends 1.1 miles S from a point, 0.9 mile SW of the root of Dique Reina Sofia.

The outer harbor is formed between these two breakwater piers. Contradique Exterior, an extension, extends 0.4 mile NE into the outer harbor from the head of Dique Leon y Castillo. Contradique Interior, another extension, extends 0.2 mile SE into the outer harbor from the E side of the root of Dique Leon y Castillo. Drydock and repair yards are situated at the head of this outer harbor.

A dolphin berth, 500m long, is situated at the inner side of Dique Leon y Castillo. It has a depth of 22m alongside and is used by large tankers under repair.

Muelle de Reparaciones, 550m long, extends N of the dolphin berth. It has depths of 8 to 14m alongside and is used for repairs.

Muelle de Adosado, 725m long, extends S of the dolphin berth. It has depths of 20 to 22m alongside and is used mostly for lay up.

Contradique Interior, also known as Quay EN3, is 440m long. It has depths of 13.6 to 13.9m alongside the NE side and a depth of 14.5m alongside the SW side.

Quay EN1, 520m long, and Quay EN2, 410m long, are situated at the NW side of the outer harbor and have depths of 12m alongside. They are mostly used by general cargo, ro-ro, bulk, and container vessels.

There are no restrictions for length or beam in the outer harbor and it is reported vessels up to 550,000 dwt and 22m draft have been accommodated.

The inner harbor lies W of Dique Leon y Castillo; its NW part is mostly used by fishing and coastal vessels.

Muelle de Santa Catalina, 400m long, is situated at the W

side. It has depths of 4 to 8m alongside and is mostly used by inter-island and mainland ro-ro ferries and a jetfoil service.

Muelle de la Luz, at the N end, has 1,200m of total quayage, including facilities for grain. Vessels up to 11m draft can be handled at the cargo berths; vessels up to 9.8m draft can be handled at the grain berths.

Muelle de Primo Rivera, which connects the roots of Muelle de la Luz and Dique Leon y Castillo, is 285m long and can handle vessels with drafts up to 11m.

Dique Leon y Castillo has about 2,000m of total quayage along the W side. It is used by passenger vessels and vessels bunkering with drafts of 11 to 12.6m; there are no restrictions on length or beam.

Vessels calling off the port for embarkation or disembarkation of personnel or supplies can be attended by launch or helicopter without entering. The helicopter usually meets vessels about 6 miles E of the harbor. Vessels should send an ETA and request for an off-port transfer at least 72 hours in advance with confirmations 48 hours, 24 hours, and 12 hours in advance.

Aspect.—The entire area to the W and S of the harbor has been built up and when approached at night, is ablaze with lights. Lights mark the heads of Dique Reina Sofia and Dique Leon y Castillo, but they have been reported difficult to identify against the background of the city lights.

A lighted range is situated at the head of the inner harbor and may best be seen on the chart. It has been reported (1998) that this range is difficult to identify in daylight.

Pilotage.—Pilotage is compulsory for vessels of 500 grt and over. Vessels should send an ETA message 72 hours, 48 hours, and 24 hours in advance. Pilots board 0.4 mile W of the head of Dique Reina Sofia and may be contacted on VHF channel 12.

Regulations.—The maximum draft allowed in the port is 20m; there are no length or beam restrictions. Vessels may berth and unberth at any time.

Vessels carrying dangerous cargo must apply, through their agent, 48 hours in advance (72 hours for explosives) for permission to enter the port, stating quantity, IMO class, UN number, port of origin, and destination of cargo. Vessels must contact the port at least 2 hours in advance on VHF channel 10 or 16. Tankers in ballast must declare whether gas-free or made inert.

There is a speed limit of 7 knots in the inner harbor.

Anchorage.—Puerto de la Luz has been divided into five anchorage zones, as follows:

1. North Roadstead Anchorage—Vessels of medium and large tonnage, vessels carrying dangerous cargo, and, under exceptional circumstances, vessels transferring fuel.
2. South Roadstead Anchorage—Small vessels.
3. East Outer Harbor Anchorage—Vessels having prior authorization.
4. Alcaravaneras Anchorage—Small vessels having prior authorization.
5. Emergency Anchorage—Vessels who are landing medical cases, stowaways, or crew changes and whose expected stay is of a short duration. Anchoring takes place with a pilot onboard.

Caution.—While alongside the berths, vessels may experience heavy swells which set into the harbor.

A prohibited anchorage area, the limits of which are shown on the chart, lies in the approach to the harbor.

8.37 Ciudad de las Palmas, the city, occupies the promontory standing 4 miles S of Punta el Nido. It stands on the slopes of Cordillera de San Francisco and can easily be identified by the numerous large buildings, the numerous white-roofed houses, and a conspicuous cathedral.

Caution.—Due to the existence of submarine cables, which extend E from the coast in the vicinity of the city, a prohibited anchorage and fishing area, the limits of which are shown on the chart, lies adjacent to the coast.

Punta Melenara (27°59'N., 15°22'W.), 68m high, is located 7 miles SSE of Las Palmas and is formed by a rocky knoll. A reef extends up to 0.3 mile E of the point and an above-water rock lies near its outer end. A conspicuous wreck lies on this reef, close NW of the above-water rock.

A light is shown from a tower, 17m high, standing on the point and a conspicuous chimney stands at a power station, 3.5 miles NW of it.

8.38 **Punta de la Salineta** (27°58'N., 15°23'W.) is located 1 mile SSW of Punta Melenara and is surmounted by three oil tanks. A conspicuous chimney stands close NW of the point.

Punta de la Salineta

Two submarine pipelines, marked by mooring buoys, extend 0.3 mile SSE from a point on the shore, 0.2 mile W of the pierhead. Tankers can secure at the seaward end of these pipelines, in a depth of 15m, and load liquid nitrogen products. Pilotage is compulsory and available at Puerto de la Luz.

A pier, with depths of 8.5 to 15m alongside, extends 145m SSE from a point on the shore, 300m SW of Punta de la Salineta. Vessels up to 150m in length can go alongside this pier to load ammonium sulfate. Anchorage, with good holding ground, may be taken, in 24 to 30m, sand, about 0.2 mile ESE of the pier head.

Punta de Gando, the E extremity of Gran Canaria, is located 3.5 miles S of Punta Melenara. It is formed by the SE end of a sheer, rocky peninsula which rises to a height of 103m. Roque de Gando, 22m high, lies about 0.2 mile off the NE coast of the peninsula. It is steep-to, dark, and somewhat conspicuous. A dark cliff, which rises straight from the sea, stands 2.3 miles NNW of the point and is also conspicuous.

Baja de Gando, with a least depth of 0.2m, lies 0.8 mile ENE of Punta de Gando. This reef, at nearly high water, has the appearance of a tide rip and much of the time does not break. Vessels rounding Punta de Gando are advised to stay at least 2 miles seaward of the peninsula.

An obstruction light is shown from the summit of Punta de Gando and an airport is situated 1.5 miles WNW of it. The con-

trol tower at the airport is reported to be conspicuous.

An exposed shipwreck is located in position 27°56.6'N, 15°22.2'W.

8.39 Punta Arinaga (27°53'N., 15°23'W.), located 4.5 miles SSW of Punta de Gando, is only moderately high and is fronted by a reef which extends SE from it. Roque de Arinaga, 7m high, lies at the outer end of this reef.

Maspalomas Light

A light is shown from a prominent tower attached to a dwelling, 14m high, standing on the point.

Monte de Arinaga, 198m high, rises to a conical summit, 0.5 mile NW of the point and is a good landmark from the NE; several obstruction lights are shown from the summit of this hill.

Punta Tenefe, located 4 miles SW of Punta Arinaga, is low and fringed by rocks. Barranco de Tirajana, a large and deep ravine, extends NW from the point into the higher elevations and is a good landmark from the SE.

Caution.—Due to the existence of submarine cables, a prohibited anchoring and fishing area, the limits of which are shown on the chart, extends seaward from a point on the coast, close SW of Punta Arinaga.

8.40 Punta de Maspalomas (27°44'N., 15°36'W.), the S extremity of Gran Canaria, is located 9.5 miles WSW of Punta Tenefe. It is formed by large heaps of white sand and is fronted on each side by coastal beaches. Numerous large hotels and apartment buildings stand in the vicinity of this point.

A light is shown from a conspicuous tower with a dwelling, 56m high, standing on the SW extremity of the point which is known as Morro de Colchas.

A spit, with depths of less than 20m, extends about 0.5 mile SW from Morro de Colchas. Bahia de Melonera is entered 1 mile NW of Morro de Colchas and a small boat harbor, protected by a breakwater, is situated at its head. Vessels can anchor, in a depth of 12m, within the bay, but during the month of August, frequent squalls from all directions have been experienced at this anchorage.

Punta Taozo is located 4 miles WNW of Punta de Maspalomas. This point is prominent and may be identified by a cement works standing on its summit and the town of Arguineguin which stands close NNE of it. A small boat harbor, protected by breakwaters, is reported to front the town.

A pier, 200m long, extends ESE from Punta Taozo and has depths of 8.5m alongside its outer end, reducing to 4m alongside at its root. Good anchorage, sheltered from N winds, may be obtained, in a depth of 14m, coral, about 0.3 mile W of the town of Arguineguin.

Punta Castillete is located 6.5 miles NW of Punta Taozo. The coast between is indented by numerous coves and small inlets which are all completely open to the SW. Several small tourist yacht harbors and marinas are situated within them.

Punta Castillete, marked by a light, is formed by steep cliffs; the town of Mogan is situated close E of it. The point can be identified by Cruz de Piedra, 183m high, standing 1 mile SE of it. This rocky hill is marked by a prominent white pillar situated on its summit. Anchorage, sheltered from N and E winds, can be taken, in a depth of 10m, sand and stone, about 0.3 mile SE of Punta del Castillete.

8.41 Cabo Descojonada (27°55'N., 15°50'W.), the W extremity of Gran Canaria, is located 6.8 miles NW of Punta Castillete. It is formed by high pyramidal cliffs which give an impressive appearance from seaward. The land backing the cape is rugged, mountainous, and rises to a height of 892m only 2 miles inland. The coast extending for 5 miles to the N and S of the point is steep and cliffy; the interior consists of a series of humped and conical peaks which gradually slope downward towards the S end of the island.

Cabo Colorado, located 3.5 miles N of Cabo Descojonada, is high and sheer. It can easily be identified by Montana Amurgar, 1,050m high, standing only 0.7 mile SE. This mountain has a prominent wide and flat summit. Roque Colorado, reddish in color, projects from a point on the coast, 0.7 mile NE of Cabo Colorado, and is a good landmark from seaward.

Punta de la Aldea, located 2.5 miles NNE of Cabo Colorado, is steep-to. Rada de la Aldea, lies close S of the point and provides anchorage, sheltered from N winds, in a depth of 15m, sand and rocks, about 0.2 mile offshore.

Punta de las Nieves (28°06'N., 15°43'W.) is located 8 miles NE of Punta de la Aldea. The coast between is mostly high, steep, rocky, and fringed by a few small beaches.

Puerto de las Nieves is situated close E of the point. A conspicuous church stands in the town; the prominent village of Agaeta is situated 0.7 mile E of it.

Roque de las Nieves, a prominent high rock, lies close to the shore, 0.2 mile E of the point. It is surmounted by a conspicuous cross.

A pier is situated on the S side of the point. It is reported to have a depth of 5m alongside the head and to be used by coasters. Anchorage can be taken, in a depth of 14m, sand, about 0.2 mile SSW of the pier, but the roadstead is completely open to the W.

The coast trends 3.5 miles N from Punta de las Nieves to Punta Sardina, previously described in paragraph 8.34. During the prevailing NE winds, strong squalls blow down the ravines along this section of the coast and small waterspouts are frequently formed.

Isla de Fuerteventura

8.42 Isla de Fuerteventura (28°30'N., 14°00'W.) extends 54 miles in a NE direction from its SW end, which is located 45 miles E of Isla de Gran Canaria. Like all of the islands in the archipelago, it is high and has several prominent mountain ranges. The coasts, though generally high and abrupt, are indented by numerous sandy beaches, coves, and small bays, though none of them afford good shelter.

The island is mostly barren and there is a scarcity of water. Villa de Puerto del Rosario, on the E side of the island, is the capital.

The N part of the island consists of a group of extinct volcanic mountains, the highest of which attains a height of 689m. Near the middle of the island, the mountains divide into two ranges which follow the coasts and then unite again farther SW where they fall abruptly to Matas Blancas, a low and sandy neck covered with white hummocks. The SW part of the island SW of Matas Blancas, forms a peninsula known as Jandia, which rises to a height of 807m at Pico de la Zarza and forms the summit of the island. Orejas de Asno (Asses Ears), 683m high, stands 2 miles WSW of Pico de la Zarza and forms a good landmark from the N and S.

From most directions, the peninsula of Jandia appears as an island lying off the main part of Fuerteventura.

8.43 Punta Gorda (28°43'N., 14°01'W.), the N extremity of the island, is low and foul ground extends up to about 0.4 mile N of it.

From this point the coast trends WSW for 7.5 miles to Punta Toston, and is low and fringed with rocks.

Punta Toston (28°45'N., 13°53'W.), the NW extremity of the island, is located 7.5 miles WSW of Punta Gorda. The coast between is low and fringed by rocks.

A light is shown from a tower, with a dwelling, 13m high, standing on this low point.

Arrecifes de Toston, a reef formed by submerged rocks, fronts the point and the shore immediately S of it. During SW winds, the sea breaks heavily on this danger. Due to depths of less than 40m lying NW of the point, deep-draft vessels should give Punta Toston a berth of at least 3 miles.

The coast then continues SSW for 28 miles to Punta Amanay and is mostly cliffy and inaccessible.

8.44 Punta de Pesebre (28°07'N., 14°29'W.) is located 18 miles SW of Punta Amanay. This point is low, fringed by reefs, and marked by a light. The coast extending E of the point is formed by a long sandy beach. The coast extending SW of the point is consists of flat stone beaches fronted by off-lying rocks.

Punta Jandia (28°04'N., 14°30'W.), the SW extremity of the island, is located 2.7 miles SSW of Punta de Pesebre. It is low, shelving, and fronted by rocks extending up to 0.7 mile seaward. Arrecife del Griego, the outermost of these rocks, dries, is steep-to, and lies SW of the point. Bahia de la Cruz, which affords anchorage, is entered close E of the point, but is open to the SE.

A light is shown from a tower with a dwelling, 19m high, standing on Punta Jandia.

An eddy current which sets N has been reported near the S end of the island. Due to this current forming whirlpools in the vicinity of Arrecife del Griego, vessels are advised to give Punta Jandia a berth of at least 2 miles.

Bajo de Amanay, an extensive bank with depths of 24 to 39m, lies centered 15 miles NW of Punta Jandia.

A bank, with a least depth of 22m, extends about 5 miles SSW from Punta Jandia.

El Banquete, a patch with a least depth of 31m, lies about 9 miles SW of Punta Jandia; depths of 46m have been reported up to 6 miles WNW of it.

Punta de Morro Jable, the S extremity of the island, is marked by a light and is located 10 miles E of Punta Jandia. This point is steep-to and a depth of 200m lies only about 1 mile S of it.

It was reported (1990) that extensive building had taken place in the vicinity of this low and sandy point.

A small fishing harbor is situated 1 mile W of the point. It is protected by a breakwater which extends 330m SW and then 425m W, and has depths of 7 to 11m alongside the inner side. A quay, 125m long, is situated at the head of the harbor and has a depth of 4m alongside.

Caution.—It is reported (1992) that a submarine cable extends seaward from a point on the coast, 0.9 mile NE of Punta de Morro Jable.

8.45 Puerto de Gran Tarajal (28°12'N., 14°01'W.), a small town, is situated 19 miles NE of Punta de Morro Jable. The coast between trends NE and ENE and several small fishing villages stand along the shore.

A pier, 235m long, extends S from the town. It has a depth of 10m alongside and is used by inter-island ferry vessels. Anchorage off the town is not recommended during winds from the E through S to SW.

Punta Lantailla (28°14'N., 13°57'W.), the SE extremity of the island, is located 4 miles ENE of Puerto de Gran Tarajal. A light is shown from a tower on a building, 12m high, standing on the point.

Punta del Muellito is located 9 miles NNE of Punta Lantailla and foul ground, with depths of less than 1.8m, extends up to about 0.3 mile SE of it. Salinas, a small inlet with depths of 1 to 3m, is entered close W of this point.

Ensenada de Fustes, a small inlet, is located 1.8 miles NNE of Punta del Muellito and a round castle, 6m high, stands on its NE shore. A shallow yacht harbor is situated at the W side of this inlet which affords shelter to small craft. Foul ground lies in the vicinity of the entrance and local knowledge is required.

8.46 Puerto del Rosario (28°30'N., 13°51'W.) (World Port Index No. 38180), a small harbor, formerly known as Puerto de Cabras, lies in an open bay, 6 miles N of Ensenada de Fustes.

The bay is well-sheltered from winds from the N through W to SW, and the town of Puerto del Rosario, the capital of the island, stands at its NW end.

Tides—Currents.—Tides rise 2.3m at springs and 1.6m at neaps.

Depths—Limitations.—A pier extends 620m S from the E end of the town. A quay, 200m long, at the inner end of this pier has depths of 6.2 to 9m alongside; a quay, 150m long, near the outer end has depths of 9 to 12m alongside. There are facilities for ro-ro vessels and a basin, used by fishing vessels, lies W of the pier. It is reported that vessels up to 200m in length and 9m draft can be accommodated.

Puerto del Rosario

Aspect.—A light marks the head of the pier. An aeronautical radiobeacon is situated near an airport, 2.7 miles SSW of the pier. A light is shown from Punta Gavioto, about 1 mile NE of the head of the pier. Two peaks, which form the S termination of the plateau extending from Mount Muda, stand 6 miles NW of the town and are good landmarks from seaward. The village of Casillas del Angel is situated 5.5 miles W of the harbor and is prominent.

Pilotage.—Pilotage is compulsory for vessels of 500 gross tons and over. Vessels should send an ETA 72 hours, 48 hours, and 24 hours prior to arrival. Pilots can be contacted on VHF channel 12 or 16. The pilot should be contacted 2 hours prior to arrival and boards off the harbor entrance.

Anchorage.—Anchorage may be obtained as convenient within the bay, clear of the prohibited areas. A good berth is in depths of 14 to 18m, sand and shells, about 0.3 mile SE of the pier head.

Caution.—Due to the existence of submarine cables, anchoring and fishing prohibited areas, the limits of which are shown on the chart, lie in the S approaches to the port.

8.47 Punta del Corralejo (28°45'N., 13°52'W.) is located 15 miles N of Puerto del Rosario. The coast between is fringed with rocks but has no remarkable features.

The village of Corralejo stands 0.3 mile S of the point; two large, conspicuous buildings stand on the coast, 2 miles SE of it. A jetty and a small boat harbor, used by ferries, is situated on the SE side of the point.

The coast trends 1.5 miles NW from Punta del Corralejo to Punta Gorda, previously described in paragraph 8.43.

Isla Lobos (28°45'N., 13°49'W.), 108m high, lies 1 mile off the NE extremity of Fuerteventura, 3 miles E of Punta Gorda. The shores of this small island are mostly abrupt and fronted by sunken rocks, but a sandy beach lies on its E side. A reef extends 0.3 mile seaward from Punta Martino, the N extremity of the island. A narrow channel separates Isla Lobos from the main island. The fairway has a least depth of 6.7m but is bordered by shoal water on either side. A small wharf is reported to be situated at the S end of the island.

A light, known as Cerro Martino, is shown from a tower with a dwelling, 6m high, standing on the summit of a hill, near Punta Martino.

Good anchorage, sheltered from the NE trade wind, may be obtained, in a depth of 11m, under the lee of Isla Lobos, close SSW of its SE extremity.

Estrecho de la Bocayna (28°49'N., 13°52'W.) lies between Isla de Fuerteventura and Isla de Lanzarote. This channel has a navigable width of 3 miles between the shoal waters extending N from Isla Lobos and S from Punta Papagayo, the S extremity of Isla de Lanzarote. Although the approaches to the channel are deep, a steep-to ridge, 3.5 miles wide, lies across its narrowest part and has a least charted depth of 21m. The bottom consists of sand, shell, and coral.

Caution.—A local magnetic anomaly has been observed E of the channel.

A submarine power cable extends across the channel and may best be seen on the chart.

Ferries frequently run between the N coast of Isla de Fuerteventura and the S coast of Isla de Lanzarote.

Isla de Lanzarote

8.48 Isla de Lanzarote (29°00'N., 13°40'W.), located close N of Isla de Fuerteventura, is a popular tourist resort. It is traversed throughout its entire length by a range of high mountains. Monte Corona, an extinct volcano 609m high, stands at the N end of this range and is prominent. Pena del Chache, 670m high, stands 4.5 miles SSW of Monte Corona and is the highest peak on the island. A series of conspicuous perpendicular cliffs extend NNE from this peak, close to the coast. For a distance of 10 miles SW of Pena del Chache, a sandy desert extends to the volcanic peaks and craters which occupy the S part of the island. Some of these extinct volcanoes are surrounded by beds of lava and scoria.

Monte de la Hacha Grande, 561m high, and Monte Blanca, 596m high, stand 3 miles N and 11 miles NE, respectively, of the S extremity of the island.

Caution.—A biosphere reserve has been established off Isla de Lanzarote. To prevent the risks of pollution and environmental damage in this highly sensitive sea area, all tankers and ships over 500 gross tons carrying oil or dangerous bulk cargo should avoid the area which is best seen on the chart.

Punta Papagayo (28°50'N., 13°46'W.), the S extremity of Isla de Lanzarote, is a comparatively low bluff of a dark-red color. A reef extends about 200m S of the point and terminates in a rock, awash.

Punta Pechiguera (28°51'N., 13°52'W.) is located 4.5 miles WNW of Punta Papagayo. Monte Roja, 194m high, rises 1.2 miles NE of the point. This conspicuous hill is reported to appear as a wedge-shaped island from a distance. A light is shown from a tower, at an elevation of 54m, standing near the old light structure

A prominent castle stands on a projection, 1.5 miles NW of Punta Papagayo.

Playa Blanca lies at the head of a bight, 2.3 miles E of Punta Pechiguera. It is fronted by a small boat harbor which is used by ferries, fishing vessels, and yachts. Anchorage, sheltered from N winds, may be obtained, in depths of 15 to 17m, off the harbor.

Punta Penedo is located 22 miles NE of Punta Pechiguera. The coast between affords no shelter and should be approached with caution. La Isleta, an islet, lies 3 miles WSW of Punta Penedo. It is fronted by cliffs and is connected to the main island by two road causeways.

Rada de Penedo, 4 miles wide, is entered close N of Punta Penedo. This bay is exposed to NW winds and is seldom used. Its shores consist of sandy beaches fringed by rocks on which the sea breaks. Los Bajos, a drying reef, lies 0.5 mile offshore, in the middle of the bay.

8.49 Punta Fariones (29°15'N., 13°28'W.), the N extremity of Isla de Lanzarote, is located 9.5 miles NE of Punta Penedo. It is low, rocky, and fronted by a reef on the N side on which two remarkable rocks lie.

Between this point and Punta del Palo, 3.2 miles SE, the coast is fringed with foul ground which extends up to 0.4 mile offshore. Punta Usaje, located 2 mile S of Punta del Palo, is a low sandy projection which can easily be identified by the whiteness of its upper part. Several prominent buildings stand near this point.

Villa de Arrieta is situated 2 miles SW of Punta Usaje and is fronted by a small jetty. Rada de Arrieta affords temporary anchorage, in depths of 20 to 27m, about 0.8 mile offshore, SE of the village. Morro Jabali, a small conical hill, stands near the shore, 1 mile S of the village and is prominent.

Cabo Ancones, the SE extremity of Isla de Lanzarote, is located 8.3 miles SSW of Punta Usaje. It is reported that several conspicuous hotels stand 1.2 miles SW of this point.

8.50 Puerto de Arrecife (28°57'N., 13°33'W.) (World Port Index No. 38190) is situated on the SE side of the island and provides excellent shelter. It is the home port of a large fishing fleet and consists of Puerto de Arrecife, the local harbor; Puerto de Naos, the fishing harbor; and Puerto de los Marmoles, the commercial harbor.

Winds—Weather.—Winds from the NW through NE predominate throughout the year, both in the morning and midday. The average strength of these winds may reach Force 5 nearly half the time, but in general, the port is protected from the trade winds.

In winter, the prevailing winds are likely to be interrupted by a depression lying N of the islands. Such a disturbance usually causes winds from the S and SW and vessels may find it necessary to vacate the port and seek shelter at Las Palmas until conditions at Lanzarote improve.

Tides—Currents.—Tides rise 2.6m at springs and 2m at neaps.

Depths—Limitations.—At Puerto de Arrecife, Muelle Viejo, 200m long, is the main quay. Vessels up to 70m in length and 6.1m draft can be accommodated alongside. Longer vessels can be handled, but the stern must overhang the pier head as depths decrease rapidly towards the inner part of this quay. In addition, the town is fronted by several berths for small craft.

At Puerto de Naos, the entrance channel has been dredged to a depth of 5m and is marked by lighted buoys. Muelle Pesquero, used by fishing vessels, is 330m long. In addition, a quay, 165m long, is used by trawlers.

At Puerto de los Marmoles, the main commercial pier is 1,000m long, with depths of 2 to 9m alongside. It is used by ocean-going tankers and cargo vessels. In addition, there are berths for ro-ro vessels which are 120m and 150m long, with depths of 6m and 9m, respectively, alongside.

Aspect.—The town itself is a good landmark, with the Grand Hotel, tall and conspicuous, standing near the waterfront. A tank farm situated NE of Puerto de los Marmoles can be identified from some distance offshore. A conspicuous high-rise hotel is reported to stand 0.5 mile WSW of Puerto de Naos.

Pilotage.—Pilotage is compulsory for all vessels of 500 gross tons and over. Local knowledge is recommended for small craft. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance. Pilots board about 0.5 mile SSW of Muelle Los Marmoles and may be contacted on VHF channel 12 or 16.

Anchorage.—Vessels waiting to enter Puerto de Arrecife can anchor, in depths of 30 to 40m, sand, about 0.2 mile WSW of the head of Muelle Viejo.

Caution.—Depths in the approaches to the port are deep, but the entire harbor area is surrounded by reefs and shoals; no attempt should be made to enter without local knowledge or a pilot.

The lights on the heads of the breakwaters are reported to be difficult to identify against the lights of the town.

8.51 Punta Lima (28°56'N., 13°37'W.) is located 3.5 miles WSW of Arrecife and is fronted by a reef which extends up to 0.4 mile E.

An offshore tanker berth, consisting of mooring buoys, lies about 1 mile ENE of this point and is used by tanker vessels supplying fuel to the airport.

An aeronautical radiobeacon is situated near an airport, 1.3 miles N of Punta Lima.

Caution.—Due to the existence of submarine cables, anchoring and fishing prohibited areas, the limits of which are shown on the chart, extend from the coast between Arrecife and Punta Lima.

8.52 Punta Tinosa (28°55'N., 13°40'W.), rocky and fringed by reefs, is located 3 miles WSW of Punta Lima. Bajo del Burro, awash, lies 0.2 mile offshore, 0.5 mile E of this point.

The prominent village of Tinosa (Carmen) stands on a hillock near a beach, 0.5 mile NW of Punta Tinosa. When approaching from the S, vessels should not confuse the white houses situated in this village with those at Arrecife.

A prominent hotel is reported to stand above a beach, 0.5 mile E of Punta Tinosa.

It is reported (1993) that a small yacht harbor has been constructed about 2 miles W of Punta Tinosa.

Punta Gorda is located 5 miles SW of Punta Tinosa. Bahia de Avila, entered close N of this point, affords temporary anchorage, in depths of 13 to 30m. This roadstead is sheltered from winds from the W through N to NE, but is dangerous during winds from other directions.

The coast trends 3 miles SW from Punta Gorda to Punta Papagayo, previously described in paragraph 8.48, and is clear of dangers.

Isla Graciosa

8.53 Isla Graciosa (29°15'N., 13°30'W.) is located close NW of the N end of Isla de Lanzarote and has several prominent peaks. Monte Pedro Barbo, 266m high, stands in the central part of the island and is the highest. The N and W sides of the island are fringed with sunken rocks and are difficult of access, but a landing place is situated in a small bay on the E side.

Estrecho del Rio, the passage leading between the N end of Isla de Lanzarote and Isla Graciosa, is 0.6 mile wide at its narrowest part. It has a least depth of 6.8m, but is limited by shoals, with depths of 3 to 4.5m, which lie along both sides.

Isla de Montana Clara (29°18'N., 13°32'W.), 256m high, lies 1 mile NW of Isla Graciosa and is separated from it by a clear channel with a least depth of 13m. The N end of the island is cliffy and bold and the S end is low and shelving. Foul ground extends up to 0.2 mile seaward of the S and SE shores.

El Roquete, 40m high, lies 0.4 mile off the N side of Isla Montana Clara and foul ground extends WSW from it.

Caution.—A submarine power cable lies across the narrowest part of Estrecho del Rio; anchorage is prohibited in its vicinity.

Isla de Alegranza

8.54 Isla de Alegranza (29°24'N., 13°30'W.), the N island of the Islas Canarias, is located 4.5 miles N of Isla de Montana Clara. It is dominated by Monte Caldera, an extinct volcano which rises to a height of 289m in the SW part.

Three prominent peaks also stand in the SE part of the island and are known collectively as Montes Lobos; the highest of these rises to a height of 221m.

The W side of the island is composed of steep-to precipitous cliffs, 200m high. The remainder of the coast is lower and fronted by submerged rocks. The best landing place is situated on a small sandy beach, near a large cavern, on the S side of the island. It is protected by a few rocks which form a natural breakwater.

A light is shown from a prominent tower with a dwelling, 15m high, standing on Punta Delgada, the E extremity of the island.

Off-lying Dangers

8.55 Roca del Este (29°16'N., 13°20'W.), located 7 miles E of the E extremity of Isla Graciosa, is a barren rock with a craggy summit, 59m high. It is steep-to except on the SE side which is fronted by submerged rocks. A rock, which dries, lies about 0.2 mile ENE of Roca del Este.

Concepcion Bank (29°58'N., 12°42'W.) lies centered about 55 miles NE of Isla de Alegranza and has a reported depth of 44m.

Dacia Seamount (31°09'N., 13°38'W.) lies about 105 miles N of Isla de Alegranza and in the track of vessels plying between the Islas Canarias and the Strait of Gibraltar. It has a least charted depth of 76m (1989).

The Arquipelago de Cabo Verde

8.56 The Arquipelago de Cabo Verde (Cape Verde Islands) is separated from the coast of Africa by a passage about 320 miles wide. The S extremity of the archipelago, which consists of ten islands and two groups of islets, lies on nearly the same latitude as Cap Vert (Cape Verde) (14°43'N., 17°30'W.).

Full independence was granted from Portugal in 1975 to Ilha the Arquipelago de Cabo Verde.

With reference to the NE trade winds, which predominate, the archipelago is divided into two sections. The windward section includes Ilha de Santo Antao, Ilha de Sao Vicente, Ilha de Santa Luzia, Ilheu de Sao Nicolau, Ilha do Sal, Ilha do Boa Vista, Ilheu Branco, and Ilheu Raso. The leeward section includes the islands of Ilha de Maio, Ilha de Sao Tiago, Ilha do Fogo, Ilha Brava, and the Ilheus do Rombo.

The islands are of volcanic origin and lie in a horseshoe pattern with the opening towards the W. None of the craters, except one on Ilha do Fogo in 1951, have been active since the discovery of the islands. Some earth tremors, although slight, have been reported in the vicinity of the Ilha do Fogo and Ilha Brava.

The two principal harbors in the archipelago are Porto Grande, on Ilha de Sao Vicente, and Porto da Praia, on Ilha de Sao Tiago.

Caution.—The haze over the whole archipelago is often so thick that the surf may be sighted before the land.

Ilha de Santo Antao

8.57 Ilha de Santo Antao (17°05'N., 25°10'W.), the NW island of the archipelago, is very high and visible for a great distance in clear weather, but its summit is generally clouded.

The island, particularly from the W, has the appearance of being a collection of high mountains. In fact, the central part of the island is traversed by a range which extends from the E extremity towards the W extremity, but turns abruptly S before reaching the latter.

Tope de Coroa, 1,979m high, is the summit of the island and stands at the W end of the above range.

The coasts of the island are bold, and in places are fringed by rocks and shoals. Vessels should stay at least 0.5 mile from the shore and 1 mile from Ponta do Sol, the N extremity of the island, and Ponta da Salina, on the SW coast, in order to clear these dangers.

8.58 Ponta do Sol (17°12'N., 25°06'W.), the N extremity of Ilha de Santo Antao, is a low sandy promontory. Reefs, which always break, extend up to 0.2 mile seaward of it.

A light is shown from a mast, 10m high, standing on the E side of the point.

Baixo do Cavalo and Baixo Amarelo, two spits with depths

of less than 20m, extend up to 0.6 mile NW and 0.4 mile N, respectively, of the point and heavy seas break over their outer ends.

The town of Vila Maria Pia (Ponta do Sol) stands on the W side of the promontory. A conspicuous customs house stands in the N part of the town and a prominent hospital stands in the S part of the town. Two prominent cemeteries are situated 0.3 mile SSW of the light structure, near the base of the rising cliffs.

Good anchorage can be obtained, in a depth of 25m, fine sand and crushed shell, within a bight about 0.4 mile SW of the point.

Ponta de Mangrade (17°03'N., 25°22'W.), the W extremity of Ilha de Santo Antao, is located 18 miles SW of Ponta do Sol. The coast between rises fairly steeply to the mountains which form the main range. Numerous small villages are scattered on the slopes of these mountains.

The point is low, rocky, and dominated by Morro de Mangrade, 108m high, standing close to the coast.

A light is shown from a column, 3m high, standing on the point.

Banco do Noroeste (17°15'N., 25°29'W.) lies about 14 miles NNW of Ponta de Mangrade and has a least depth of 30.1m (1992). A bank, with a least depth of 31m, lies 7 miles WSW of Banco do Noroeste.

8.59 Ponta da Peca (16°55'N., 25°18'W.), the SW extremity of Ilha de Santo Antao, is located 9.5 miles SSE of Ponta Mangrade. The coast between is steep, mostly inaccessible, and indented by a few small bays which are only frequented by small vessels with local knowledge.

Baia do Tarrafal is entered 3 miles NNW of Ponta da Peca and can be recognized by the mouth of Ribeira do Tarrafal, which flows into its head. A town is situated at the mouth of the river and forms an excellent landmark as the buildings and green vegetation are visible from a considerable distance seaward. The mouth and valley of this river are the only exceptions to the general appearance of this coast, which is rugged, bare, and desolate.

A prominent water reservoir, resembling a rectangular building, overlooks the better-looking houses which stand on the S bank of the river. A tunny factory and a ruined pier are also situated in this vicinity. Small vessels, with local knowledge, can obtain anchorage, in a depth of 37m, about 250m SW of the ruined pier. Care is necessary as depths of 200m lie only about 0.5 mile offshore. The bay is sheltered from winds from the NNE through E to SSE. Swells from the NW and N occur intermittently between November and April and, at times, break heavily on the beach.

The S coast of the island is very high with slopes descending steeply to the shore. The SE part of it rises gradually to the main mountain range. A depth of 25m was reported (1980) to lie 2.5 miles off the S coast, about 7.5 miles ESE of Ponta da Peca.

8.60 Porto Novo (Porto dos Carvoeiros) (17°01'N., 25°04'W.) is situated 15.3 mile ENE of Punta da Peca. This small harbor can be easily recognized by the houses of the town, which backs the waterfront, and by Morro de Breja, 254m high, standing 1 mile WNW of it. In addition, a prominent bridge, with four arches, spans the river which runs through the town.

A pier, 201m long and quayed on both sides, extends SSW from the W side of the town. It is reported that this pier has a depth of 7m alongside the outer end and has been used by vessels up to 5,000 tons. Anchorage can be taken, in a depth of 12m, good holding ground, about 200m S of the pier head, or in a depth of 20m, about 400m S of the pier head.

Ponta da Tumba (17°07'N., 24°58'W.) is located 8 miles NE of Porto Novo.

Fontes Pereiro de Melo Light is shown from a tower attached to a dwelling, 16m high, standing 0.2 mile W of the point.

Ilheu Lombo de Boi, steep-sided and rocky, lies 0.2 mile NNW of the point. A rocky spit, with rocks awash, extends about 200m N of this conspicuous islet and usually breaks.

The coast trends 4.5 miles NW then 4.5 miles WNW from Ponta da Tumbato to Ponta do Sol, which has been previously described in paragraph 8.58. It is mostly high and rocky except in the vicinity of a village which stands at the mouth of a ravine, 1.7 miles ESE of Ponta do Sol.

Ilha de Sao Vicente

8.61 Ilha de Sao Vicente (16°50'N., 25°00'W.) is separated from Ilha de Santo Antao by Canal de Sao Vicente (Canal Sao Vicente), a deep channel, about 7 miles wide. The island consists of a mass of high volcanic mountains. A valley, which extends from the SW part of Porto Grande to the E side of the island, divides this mass into two ranges.

Monte Verde (16°52'N., 24°56'W.), 750m high, is the summit of the island. This mountain stands in the middle of the NE range, and its peak, a conspicuous spur, is frequently obscured by clouds.

A radiobeacon is situated on the peak of Monte Verde.

The coasts of the island are generally high and abrupt; deep water lies close to most of the shores. The island is barren except for some green tamarisk. The climate is said to be healthful; however, water is scarce and there is little cultivation.

8.62 Ponta do Calhau (16°52'N., 24°52'W.), the E extremity of Isla de Sao Vicente, is steep-to and dominated by Monte Calhau, 140m high, standing 0.4 mile SW. This hill, with two summits, is dark and contrasts with the light color of the surrounding land. It may appear as an islet when viewed from the NNW or SSE.

Ponta Viana, located 1.5 miles S of Ponta do Calhau, is fronted by a spit which extends up to 0.5 mile seaward. It is reported that a strong current in this vicinity often sets towards the spit.

Ponta de Santa Luzia (Saragaca), the SE extremity of Isla de Sao Vicente, is located 1.2 miles SSW of Ponta Viana. Monte Viana, an ancient crater with white spots on its slopes, rises steeply inland from the flat area lying between Ponta Viana and Ponta de Santa Luzia. This crater, 162m high, has an almost horizontal crest.

A steep-sided promontory, 0.7 mile wide, forms the S extremity of Isla de Sao Vicente. Ponta da Calheta Grande, the E end of this promontory, is located 6.7 miles WSW of Ponta de Santa Luzia. A small village stands behind a sandy beach at the head of a bay which is entered close E of the point. Ponta Lombinho, a

sheer and steep-to point, forms the W end of the promontory and rises to Monte Caralena, 497m high, 0.4 mile N.

8.63 Ponta Machado (16°49'N., 25°05'W.), the SW extremity of Isla de Sao Vicente, is located 6.5 miles WNW of Ponta Lombinho and dominated by Monte Ribeirinha, 225m high.

Dona Amelia Light is shown from a tower, with a dwelling, 14m high, standing on the point.

Baia de Sao Pedro is entered between Ponta Machado and Ponta do Guincho, 1.7 miles SE. A sandy beach is located at the head of this bay, and a village, with a prominent church, is situated at its W end.

Anchorage.—Anchorage can be obtained in the center of Baia de Sao Pedro, in 10 to 15m, good holding ground and protected from NW through NE to SE. Caution is necessary as NE winds may funnel through the wide valley and the swells may work in from the E.

An airfield, with a conspicuous terminal building and control tower, is situated 1.5 miles NW of Ponta Machado.

Ponta Joao Albacora is located 4 miles NE of Ponta Machado. The coast between is indented by several small bays and fringed by rocks. Monte Fateixa, 571m high with a well-defined summit, rises 1.8 miles S of the point.

Ponta do Morro Branco, the W entrance point of Porto Grande, is located 1.5 miles ENE of Ponta Joao Albacora. Prominent radio masts stand 3 miles SE and 2.5 miles SSE of this point.

Ilheu dos Passaros (16°55'N., 25°01'W.), rocky and steep-to, lies in the approach to Porto Grande, 1.7 miles NNE of Ponta do Morro Branco. This islet, which appears conical from the N or S, may be passed on either side.

Dom Luis Light is shown from a pyramid, 5m high, standing on the summit of the islet. Buildings, connected to the light structure by a white wall with steps leading to the summit, are prominent.

Porto Grande (Mindelo) (16°53'N., 25°00'W.)

World Port Index No. 45880

8.64 Porto Grande, entered between Ponta do Morro Branco and Ponta Joao Ribera, 2 miles NE, is the principal port in the Arquipelago de Cabo Verde. The city of Mindelo stands on the E side of the harbor and is the capital of the island.

Porto Grande Home Page

http://www.enapor.cv

Winds—Weather.—The harbor is sheltered from all winds except those from NW, which are rare. The predominant NE wind, when fresh, produces gusts in the bay; however, within the protection of the breakwater, the wind is felt, but there are no seas.

Swells from the NW may occur intermittently from November to April. They round Ilha de Santo Antao and approach the harbor from the W.

Tides—Currents.—Tides rise 1.2m at springs and 1m at neaps.

The tidal currents in the bay are weak.

Depths—Limitations.—A breakwater, 450m long, extends W from the E side of the bay. Molhe 2, quayed on each side, extends 350m SW from the seaward end of the breakwater. Molhe 1 extends 200m SSW from a point along the breakwater, about 350m W of the root.

Porto Grande—Berth Information

Berth	Length	Depth	Remarks
1	310m	11.5m	Open to the sea. use is subject to wind and swell conditions
2	310m	11.5m	
3	215m	9.5m	Container berth
4	215m	9.5m	Container berth
5	90m	8.5m	
6	122m	6.5m	
7	61m	4.5m	
8	107m	3.5m	
9	40m	3.5m	
10	100m	4.5m	
11	100m	5.5m	
A	120m	4.0m	
B	50m	4.0m	
C	65m	4.0m	

Generally, vessels up to 305m in length and 11m draft can be accommodated alongside. It has been reported (2008) that alongside depths are shallower than charted.

An offshore oil terminal berth, consisting of several mooring buoys, is situated about 0.6 mile WSW of the head of Molhe 2. A submarine pipeline extends SSE from the berth to the S shore of the bay. The berth can accommodate tankers up to 53,000 dwt, 236m in length, and 11m draft.

There is a repair yard and a new pier which can handle vessels up to 6,000 dwt, including fishing and oil exploration craft.

Aspect.—Ilheu dos Passaros was previously described in paragraph 8.63.

The land behind the NE and E parts of the bay is composed of a series of brown and barren ridges, and dominated by Monte Vigia, 302m high. The S part of the bay is low, sandy, and backed by isolated dunes. The land rises inland W of this low shore to a mountainous crest which terminates seaward at Morro Branco.

Conspicuous landmarks include Fortim d'El-Rei, a prison standing on a hill close E of the root of the breakwater; several silos standing close NW of the prison; and a group of oil tanks standing on the S shore of the bay.

A lighted range, shown occasionally, aids in the approach to the offshore oil berth. The range marks have been reported (1990, 2008) difficult to identify.

Pilotage.—Pilotage is compulsory for all vessels entering

Porto Grande (Mindelo)

the harbor, anchoring or berthing. It has been reported (2008) that pilotage is not required for anchoring in the harbor.

Vessels should send an ETA at least 48 hours in advance through Sao Vincent (4DA). Pilots should be contacted on VHF channel 16, 2 hours before arrival and will board about 0.8 mile SW of Ilheu dos Passardos Light.

Anchorage.—Anchorage may be obtained, in a depth of 20m, about 1.3 miles ENE of Ponta do Morro Branco, or in a depth of 22m, about 0.5 mile ENE of Ponta do Morro Branco. The holding grounds are good, but vessels should be prepared for violent squalls during NE winds. There are no restrictions on size for vessels anchoring here.

A quarantine anchorage, with a depth of 18m, lies 1 mile ESE of Ponta do Morro Branco.

Caution.—A dangerous wreck lies about 0.5 mile SSW of Ponta Joao Ribera.

A wreck, with a depth of 2.7m, lies about 0.3 mile S of the head of Molhe 2.

A bank, with depths of less than 5m, fronts the city and several mooring buoys are situated on its W side.

Several stranded wrecks are reported to lie along the SE shore of the bay and a ruined pier fronts the S part of the city.

Sharks frequent the bay and boat sailing is considered to be dangerous due to the heavy squalls off the high land.

8.65 Ponta da Coluna (16°55'N., 25°00'W.), located 0.6 mile NE of Ponta Joao Ribeiro, is high and steep. A conspicuous rock, resembling a column, lies at its extremity.

Baia de Salamanza is entered between Ponta Joao d'Evora, located 1.7 miles ENE of Ponta da Coluna, and Ponta da Doca, 1.8 miles E. A village, with a prominent church, is situated at the head of this bay, behind a steep-to beach.

Ponta da Doca is formed by the W end of a broad promontory. Morro Salamanza, 84m high, stands 1 mile S of the point.

Ponta do Recanto da Prainha (16°55'N., 24°56'W.), the N extremity of the island, is located 0.7 mile E of Ponta da Doca. It is formed by the N end of the broad promontory and is fronted by rocks.

Baia do Norte is entered between Ponta do Marigoa, located 1.2 miles SE of Ponta do Recanto da Prainha, and Ponta do Calhau, 3.5 miles SE. Baia das Gatas, a small inlet, lies on the NW side of this bay, 0.7 mile SSW of Ponta do Marigoa. It has a depth of 2.7m in the entrance.

Ilha de Santa Luzia

8.66 Canal de Santa Luzia, 4.5 miles wide, separates **Ilha de Santa Luzia** (16°47'N., 24°46'W.) from Ilha de Sao Vicente and has general depths of at least 20m. With a fresh wind and the tidal current setting to windward, there is an appearance of shoal water in this channel. The tidal currents set NE and SW and are strong; rates of up to 3.6 knots have been observed.

Ilha de Santa Luzia is high in its NW and central parts. Monte Topona, 395m high, is the summit of the island and rises near the center. Monte Agua Doce, 315m high, stands in the NW part and is conspicuous.

The E part of the island is low except for Monte Creoulo, 85m high, standing near the E extremity. There are no permanent inhabitants on the island, but it is reported that fishermen, with local knowledge, visit here from Ilha de Sao Vicente.

Ponta dos Piquinhos (16°48'N., 24°47'W.), the N extremity of the island, is low, rocky, and fronted by above-water rocks.

Ponta da Praia, located 1.6 miles SSW of Punta dos Piquinhos, is low, rocky, and steep-to. It is easily recognized as it borders the NW side of Praia do Palmo a Tostao, a large beach of white sand which extends 1.5 miles ESE.

Ilheuzinho (Guisinho), 12m high, is located 0.4 mile off the SE end of the beach. A shallow rock lies close NW of this pinnacled islet.

Anchorage can be obtained, in a depth of 15m, crushed shell and sand, about 0.2 mile offshore, 0.3 mile NW of Ilheuzinho. Another good berth is in a depth of 18m, fine sand and crushed shell, about 0.5 offshore, 0.5 mile SE of Ilheuzinho.

The S coast of the island should be given a berth of at least 2 miles due to the presence of rocks and shoal water.

Ponta Mae Grande, the E extremity of the island, is located 6.5 miles SE of Ponta dos Piquinhos. It is low and fronted by rocks. Ponta Salina do Crioulo, located 0.6 mile NNW of Ponta Mae Grande, may easily be identified by several prominent white patches on its face.

Ilheu Branco

8.67 A channel, 4 miles wide, lies between Ilha de Santa Luzia and **Ilheu Branco** (16°40'N., 24°41'W.). Vessels should navigate in its middle part in order to avoid the shoal depths lying off the S coast of Ilha de Santa Luzia and extending NNW of Ilheu Branco.

The tidal currents in this channel are often strong and produce rough seas when they set against fresh winds.

Ilheu Branco is high and almost inaccessible except in very good weather. Topa da Berta, 327m high, stands near the center of the island and is the summit, but this mountain is not prominent. The steep slopes on the NE and SW coasts of the island are marked by large light spots. These are formed by the accumulation of sand and are visible from a great distance.

Ponta Delgada, the low SE extremity of the island, is located 1 mile SE of Topa da Berta and a reef extends E from it. Ponta dos Papagaios de Riba, the NE extremity of the island, terminates in a prominent cliff, 1 mile NW of Topa da Berta.

Ilheu Raso (Ilheu Razo)

8.68 A channel, 3.2 miles wide, lies between Ilheu Branco and **Ilheu Raso** (Ilheu Razo)(16°37'N., 24°35'W.). Vessels, in order to avoid depths of less than 20m, should give Ilheu Branco a berth of 1.5 miles and Ilheu Raso a berth of 1 mile.

The tidal currents in this channel are often strong and produce rough seas when they set against fresh winds.

Ilheu Raso consists of a wide plain bordered by cliffs and is almost inaccessible. A number of small hills rise in the center of the island. Monte da Ribeira Ladrao, 164m high, stands near the NE coast and is the summit. Ponta Salina, the N extremity of the island, is low and fringed with rocks. Ponta da Esmargalsinho, the steep-to SE extremity, is located 1.5 miles SSE of Ponta Salina.

Ilha de Sao Nicolau

8.69 **Ilha de Sao Nicolau** (16°37'N., 24°20'W.), separated from Ilheu Raso by a deep and clear channel, 8.5 miles wide, is very mountainous. Monte Gordo, 1,304m high, stands in the W part and is the summit of the island. Monte Bissau, 614m high, stands near the middle of the island and is conspicuous due to its conical shape; however, this peak is often covered by cloud. The long peninsula which forms the E part of the island is composed of a mountain range, 600 to 700m high.

Ponta Calheta (Ponta Leste) (16°34'N., 24°01'W.), the E extremity of the island, is dominated by Monte Vermelho, 445m high, standing 3 miles WNW. A light is shown from a column, 3m high, standing close to the point.

The N coast of the island is inhospitable, and appears mountainous, wild, and bare. This coast is exposed to the predominant NE weather. Generally, vessels should keep a distance of 1 mile from the coast due to foul ground and rocks.

Ponta Espechim, located 20.5 miles WNW of Ponta Calheta, is the N extremity of Ilha de Sao Nicolau. It is formed by a cliffy promontory and surmounted by Monte Cachacinho, 676m high, which is conspicuous. Due to foul ground, vessels should keep at least 1.5 miles from this point.

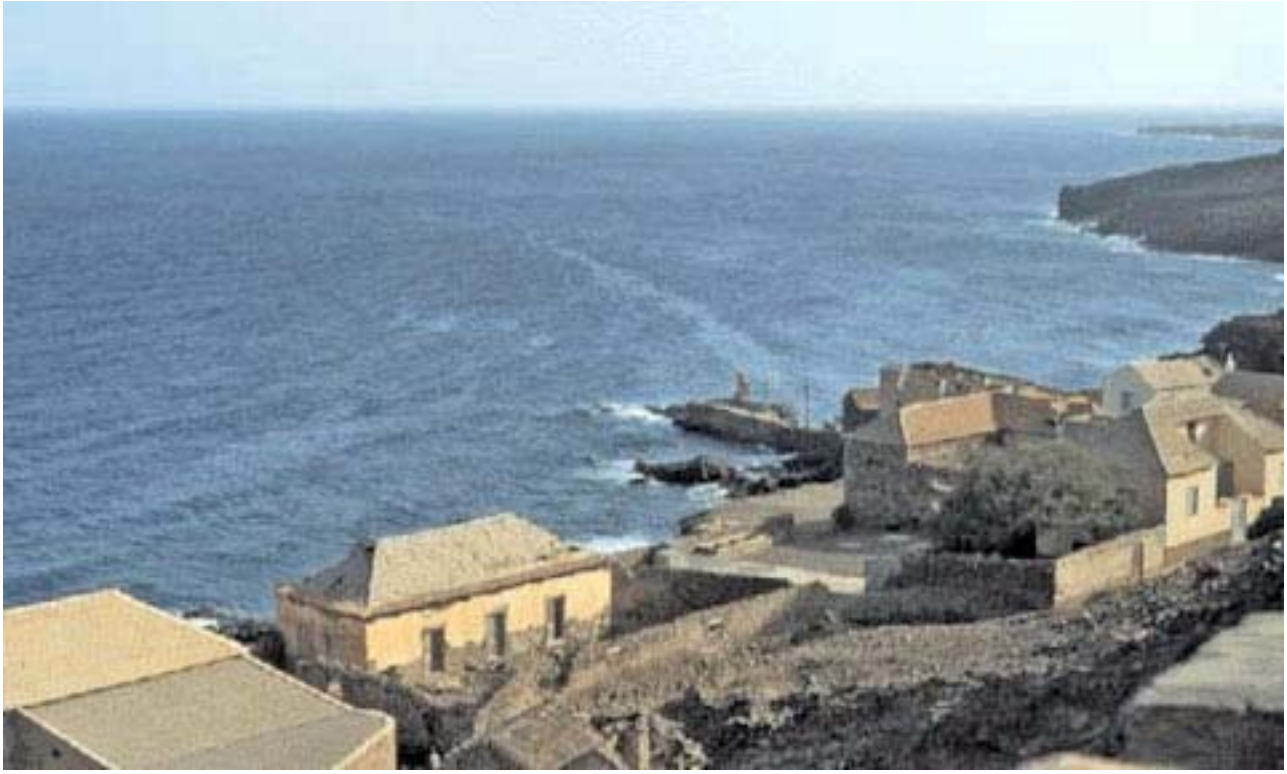
Ponta do Morro, located 4 miles WSW of Ponta Espechim, is dominated by Monte Praia Branca, 436m high, standing S of it. Ponta do Galao, located 1 mile SW of Ponta do Morro, is composed of prominent vertical cliffs formed by landslides.

Ponta do Barril is located 2.8 miles S of Ponta do Galeao. A light is shown from a tower attached to a dwelling, 9m high, standing on the point.

Baia do Tarrafal (16°34'N., 24°22'W.), entered 3 miles SE of Ponta do Barril, is free from dangers and has depths of 10m lying up to about 200m from its shores. A small town stands on a point, at the head of the bay. A conspicuous white house stands 0.5 mile NNW of this point and a prominent church stands 0.2 mile E of it. A small quay is situated on the NE side of the point. Anchorage can be obtained, in a depth of 20m, about 0.3 mile NW of the town, but heavy squalls sometimes blow down the ravines on the N side of the bay.

8.70 **Ponta da Vermelharia** (16°29'N., 24°19'W.), the S extremity of Ilha de Sao Nicolau, is cliffy and formed by the S end of a small peninsula.

Preguica (16°34'N., 24°17'W.), a small port, is situated 5 miles NNE of Ponta da Vermelharia. It is entered between Ponta do Topo and Ponta do Bodegal, 0.7 mile NE, and sheltered from winds from the WSW through N to NE.



Preguica

The town of Preguica appears conspicuous along this barren stretch of coast. A prominent white house stands in the N and highest part of the town; the ruins of a fort are situated close E of it, at the top of a cliff. Porto Velho Light is shown from a column, 6m high, standing about 0.3 mile W of Ponta do Bodegal. An airfield is situated 1.7 miles NNW of the town.

A stone quay and a short mole front the town and are used by coasters. Anchorage can be obtained, in a depth 27m, fine sand and crushed shell, about 0.2 mile offshore, SSE of the light. Small vessels can anchor closer in. Local knowledge is advised. The roadstead is only suitable for vessels of not more than 100m in length and for only one vessel at a time.

Ilha do Sal

8.71 Ilha do Sal (16°49'N., 22°55'W.), the NE island of the Arquipelago de Cabo Verde, consists mainly of a flat terrain with isolated peaks. The S part of the island is very low and terminates in a dangerous spit. The main harbors are Santa Maria, Pedra Lume, and Palmeira.

The principal peaks include Monte Grande, 407m high, standing near the NE extremity of the island; Monte Rocha da Salina, 299m high, standing 2.2 miles S of Monte Grande; and Morro Leste, 263m high, standing near the NW extremity of the island.

An airport is situated near the center of the island and an aeronautical light is shown occasionally from its vicinity. The control tower is conspicuous and visible from seaward, except when obscured by mountains.

An aeronautical radiobeacon, with prominent masts, is situated on Monte Rabo de Junco. This prominent hill, 164m high, stands near the head of Baia da Mordeira.

8.72 Ponta Norte (16°51'N., 22°56'W.), the N extremity of the island, is low, rocky, and fronted by submerged rocks. A disused light tower stands 0.5 mile SE of the point.

Ponta da Casaca is located 2 miles SE of Ponta Norte and an islet lies close inshore, 0.3 mile WNW of this point.

Ponta do Cagarral is located 3.5 miles SSE of Ponta da Casaca and a shallow ledge of rocks extends up to about 0.5 mile NE of it. A prominent conical hill, 172m high, stands close WNW of the point.

Ponta de Guine, low and rocky, is located 0.7 mile SSW of Ponta da Cagarral and a prominent cross stands on a hill close WNW of it.

Porto de Pedro Lume (16°45'N., 22°54'W.) is situated 0.5 mile W of Ponta da Guine and is used by coasters. A breakwater shelters a small boat harbor; cargo is worked at the anchorage by lighters.

A prominent church stands near the center of the town and the metal towers of a salt cableway can be seen amongst the houses. A water tower stands near the S end of a beach, 0.7 mile W of Ponta de Guine.

A light is shown from the head of the breakwater; however, it has been reported (1994) that the light no longer exists, although the light tower remains. A range, maintained by the salt works company, is shown on request.

Baixona, a rocky shoal with a depth of 6.3m, lies about 0.3

mile SSW of Ponta da Guine and the sea breaks on it. A shoal, with a depth of 2m, lies about 0.5 mile WSW of Ponta da Guine and a spit, with depths of less than 4m, extends about 0.3 mile S from a point on the shore, 0.5 mile W of Ponta da Guine.

Anchorage may be obtained, in a depth of 12m, sand, stone, and shells, about 0.4 mile S of the breakwater head, or in a depth of 11m, about 0.3 mile S of the breakwater head.

8.73 Ponta do Morrinho Vermelho (16°48'N., 24°47'W.) is located 5.5 miles S of Porto de Pedra de Lume. The coast between is bordered by submerged rocks. Baixa Alta, with a depth of 8.2m, lies 1.3 miles offshore, 3 miles SSE of Porto de Pedra de Lume and is the outermost danger. Ponta do Morrinho Vermelho is low but is backed by a hill, 81m high.

Ponta da Fragata, located 1.7 miles SW of Ponta do Morrinho Vermelho, is fronted by a rocky islet. A shoal, with a depth of 7.4m, lies about 0.8 mile E of the point.

Serra Negro, 99m high, stands close SW of the point.

Ponta do Leme Velho, located 3 miles S of Ponta da Fragata, is the SE extremity of the island. It is low, dark, and bordered by rocks. A detached patch, with a depth of 13.1m, lies about 1.2 miles SSE of this point.

Ponta do Sino (16°35'N., 22°56'W.), located 2 miles W of Ponta do Leme Velho, is formed by a low sandy promontory composed of dunes.

A light is shown from a tower, 9m high, standing 0.2 mile inland of the point and is obscured on some bearings.

Baixo do Sino, a steep-to and rocky spit, extends about 0.2 mile SE of the point and should be given a wide berth.

Porto de Santa Maria (16°36'N., 22°54'W.) is situated within the bay lying between Ponta do Leme Velho and Ponta do Sino. It is used by coasters to load salt from lighters. Santa Maria, the principal town of the island, stands at the head of this bay. Anchorage, with good holding ground, can be taken in mostly any part of this bay depending upon the draft and size of the vessel. A good berth is in a depth of 13m, clay and shells, about 0.3 mile S of the town. Local knowledge is advised.

Baia da Mordeira (16°48'N., 24°47'W.), located 6 miles NNW of Ponta do Sino, is entered between Ponta do Rife and Ponta Pesqueirona, 3.5 miles NW. This bay affords good anchorage except during the rainy season, when S winds blow into it and are accompanied by rollers. The depths within the bay deepen gradually seaward and the bottom consists of fine sand and shells with several rocky spots.

Caution.—Due to the existence of submarine cables, a prohibited anchorage area extends SW from the head of the bay and may best be seen on the chart. This area greatly limits the roadstead within the bay.

Ponta do Rabo de Junco (16°42'N., 22°59'W.) is located 0.4 mile NW of Ponta Pesqueirona. An islet lies 0.3 mile off the point and is joined to it by a reef.

Ponta do Fontona is located 2.5 miles N of Ponta do Rabo de Junco. The coast between is steep and fronted by rocks.

8.74 Baia da Palmeira (16°45'N., 22°59'W.) is entered between Ponta da Fontana and Ponta do Joaozinho, 1 mile NNW. It is occupied by an airport fuel terminal and the village of Palmeira stands in the N part.

Tides—Currents.—Tides rise 1.2m at springs and 1m at neaps.

Depths—Limitations.—An offshore oil terminal berth, consisting of four mooring buoys, lies in a depth of 14m, in the center of the bay A submarine pipeline extends NE from the berth to the NE shore of the bay.

From April through November, tankers up to 183m in length, 21m beam, and 12.5m draft can be handled. Due to heavy swells from December through March, tankers up to 175m in length, 21m beam, and 11.5m draft can be handled.

A pier, 112m long, extends SE from the N part of the bay and has depths of 1 to 4m alongside, but only one side is available for berthing.

Aspect.—A group of oil tanks stands close E of the village, in the NE part of the bay. A fish freezing plant stands close NNW of the root of the pier. Casa Valente is situated 0.3 mile ESE of the oil tanks. It is easily identified, as a tree with a prominent rounded top, the only one of its kind in the area, stands within the walls.

A lighted range, which is shown on request, indicates the position of the submarine pipeline and the approach to the offshore oil berth.

Pilotage.—Pilotage is available. A pilot and a mooring master will board about 1 mile W of the mooring buoys. Pilots are stationed at Porto Grande and travel as required.

Regulations.—Vessels should send an ETA at least 48 hours in advance through Sao Vincente coast radio station or Lisbon coast radio station and contact the terminal on VHF channel 13 or 16 when within 40 miles.

Anchorage.—Small vessels anchor under the lee of the pier. Larger vessels anchor, in a depth of 31m, about 0.3 163

mile SW of the oil berth.

Caution.—It is reported that a floating fish farm lies close to the shore in the N part of the bay.

From December to March, the terminal may occasionally close due to heavy swells.

During winter months, berthing at the offshore berth is difficult with S to NW winds.

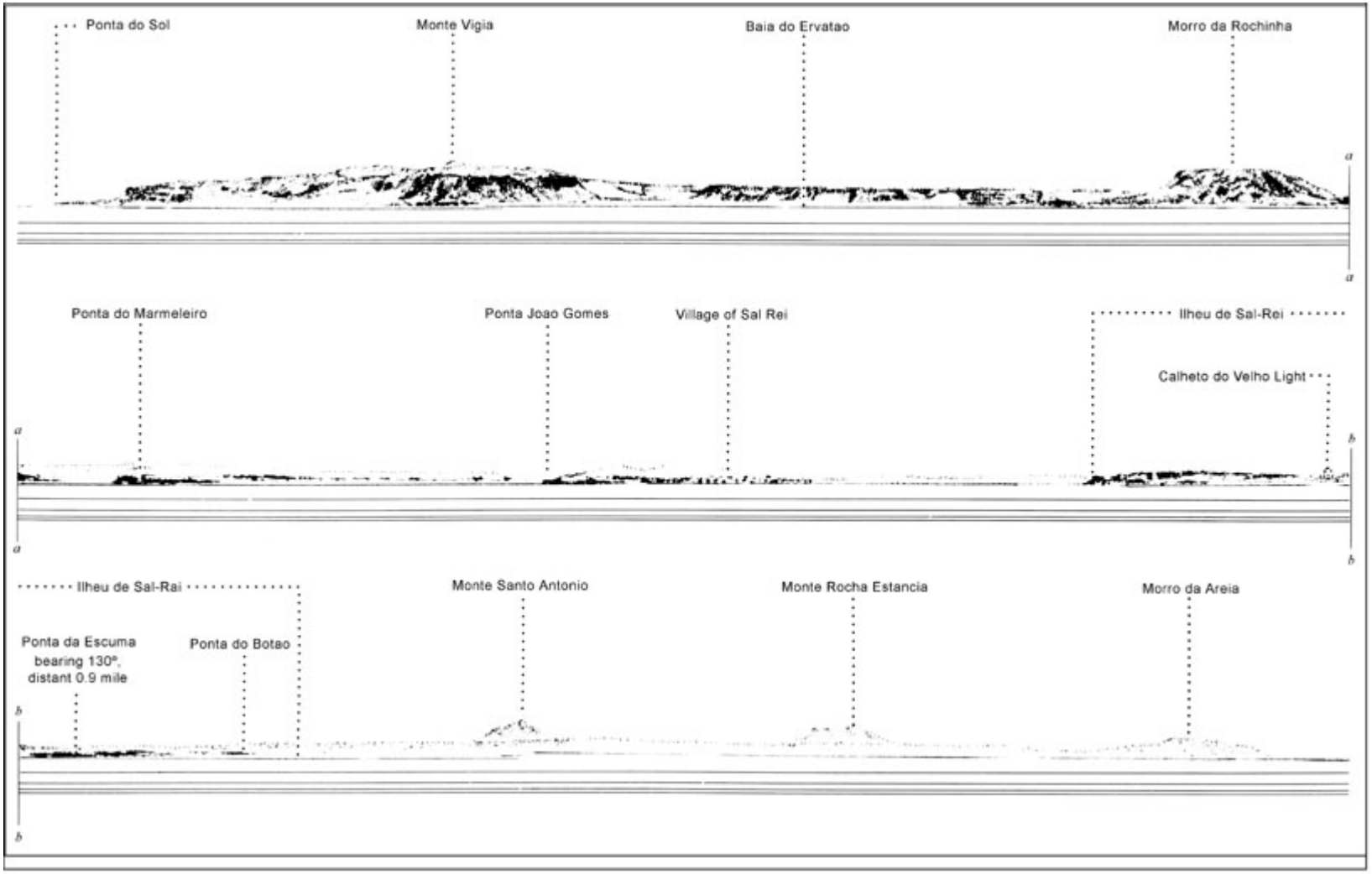
8.75 Ponta Nha Gertrude (16°49'N., 23°00'W.) is located 3.5 miles N of Baia da Palmeira. Morre Leste, 263m high, stands 0.7 mile ESE of the point and is conspicuous.

Ponta Preta, the highest point on the NW coast of the island, is located 1 mile NNE of Ponta Nha Gertrude. Ponta Palhona, located 2.3 miles NW of Ponta Preta, is low, rocky, and fronted by a reef. Ponta Norte, previously described in paragraph 8.72, is located 2 miles ENE of Ponta Palhona. The coast between is fronted with rocks.

Ilha da Boa Vista

8.76 Ilha da Boa Vista (16°05'N., 22°50'W.), located 12 miles S of Ilha do Sal, is mainly flat with a group of mountains which extend across the island in a N/S direction.

Monte Cacador, 355m high, and Pico Forcado, 369m high, stand in the E part of the middle of the island and are conspicuous; Pico Estancia, 390m high, stands in the SE part of the island and is the highest peak; Monte Calhau, 326m high, stands isolated and prominent in the NE part of the island; and Santo Antonio, 378m high, and Rocha Estancia, 354m high, stand in



View, in three parts, of Ilha da Boa Vista

the SW part of the island.

The coasts of the island are low and mainly consist of long, sandy beaches which are separated by rocky points with detached dangers lying close off them. Salt pans are located close to the E extremity of the island.

Caution.—Local magnetic anomalies are reported to exist off the E coast and the S extremity of the island.

8.77 Ponta do Sol (16°14'N., 22°57'W.), the NW extremity of Ilha de Boa Vista, is low, rocky, and always marked by breakers. A light is shown from a tower, 7m high, standing on the point. Monte Vigia, 146m high, stands 1.2 miles S of the point and is prominent. Foul ground extends up to 0.5 mile N of the point, but depths over 20m lie about 1 mile N and NW of it.

Baia de Sal Rei is entered between Ponta Joao Gomes, located 3 miles S of Ponta do Sol, and Ponta Laginha, 5.5 miles SSW. Ilheu de Sal Rei, a low and grass-covered islet, lies on the outer edge of an area of foul ground which extends 1 mile SW from Ponta Joao Gomes. The ruins of a fort stand at the SE extremity of this islet and a light is shown from a mast, 8m high, standing on the NW part.

Baixo do Chave lies midway along the shore of the bay and consists of a chain of rocks, awash, and drying rocks which extend up to 0.4 mile seaward. This chain of rocks divides the bay into two parts, Porto do Sal Rei to the N and Porto da Chave to the S.

Baixona, a reef, lies 1 mile S of the light structure on Ilheu de Sal Rei. It has a least depth of 2.5m and the sea frequently breaks over it.

8.78 Porto do Sal Rei (16°09'N., 22°57'W.) lies in the N part of the bay. It provides sheltered anchorage, but is exposed to NW swells from November to April. The village of Sal Rei is situated on the shore, close SE of Ponta Joao Gomes, and is fronted by a wharf used by small craft.

A conspicuous chimney stands near the shore, 2.7 miles S of the village and a prominent stranded wreck lies close inshore, 1 mile N of it. The small town of Rabil, with two prominent towers, is situated 1 mile E of the chimney.

It is reported that Ribeira de Rabil Light is shown from a point near the shore, about 1 mile N of the chimney.

Good anchorage can be obtained, in a depth of 14m, crushed shells, about 0.7 mile SSE of the SE extremity of Ilheu de Sal Rei. Large vessels can anchor farther out, but the holding ground is poor. The bottom generally consists of rock covered by a thin layer of sand or shell, which may cause the anchor to drag.

Baixo do Bartola, with a least depth of 6.3m, lies in the S approach to Porto do Sal Rei, about 2 miles NW of Ponta Laginha.

Porto da Chave, in the S part of the bay, is sheltered; anchorage may be obtained according to draft.

8.79 Ponta do Morro Da Areia (16°05'N., 22°59'W.), located 1.2 miles SW of Ponta Laginha, is low and rocky. It is dominated by Morro da Areia, 167m high, standing 0.8 mile ESE.

Baixo da Estancia, with a depth of 19.6m, and Baixo Vauban, with rocks awash, lie 3 miles WNW and 1.2 miles WSW, respectively, of Ponta do Morro da Areia. Both of these dangers should be given a wide berth.

Ponta Varandinha, the W extremity of the island, is located 2.5 miles SSW of Ponta do Morro da Areia. It is low, rocky, and a reef, awash, extends 0.5 mile W of it.

A light is shown from a structure, 7m high, standing on the point. A racon is situated at the light.

From Ponta Varandinha, the coast trends 6.5 miles SE to Ponta Lacacao and then 4.7 miles E to Ponta Tarafo, the S extremity of the island. It is mostly low and sandy. Anchorage can be taken off Praia do Curralinho, which is located 1.5 miles NW of Ponta Lacacao. This roadstead has depths of over 10m lying within 0.2 mile of the shore and depths of 20m lying about 1 mile offshore.

Ponta Tarafo is bordered by foul ground, which extends up to 0.8 mile S, and should be given a berth of at least 1 mile. A small islet, capped with guano, lies 0.3 mile ENE of the point.

Enseada do Curral Velho, entered between Ponta Tarafo and Ponta Medronho, 3 miles NE, provides good anchorage. A good berth lies 1 mile NE of Ponta Tarafo, where depths of 10m are found 0.3 mile offshore.

Baixo Queen, an extensive reef over which the sea frequently breaks, lies 0.5 mile offshore, 5.7 miles NE of Ponta Tarafo.

8.80 Ponta do Roque (16°05'N., 22°42'W.), the E extremity of Ilha de Boa Vista, is high, dark, and conspicuous. A small islet lies close N of this point and Baixo do Roque, with a least depth of 7.4m, lies about 0.7 mile ESE of it.

Morro Negro, dark and isolated, stands 1.3 miles NW of the point. This hill, 154m high, is conspicuous. A light is shown from a tower, with a dwelling, 12m high, standing on the summit.

Baixo Queen and Ponta do Roque should be given a berth of at least 1.5 miles.

Ponta do Porto Ferreira is located 2.5 miles N of Ponta do Roque and an islet lies close off it. The coast between these two points should be given a berth of at least 2 miles.

A detached patch, with a depth of 17m, lies about 2.7 miles E of Ponta do Porto Ferreira.

Small coasters which load salt can obtain anchorage, in a depth of 8m, about 0.3 mile S of Ponta do Porto Ferreira, but local knowledge is required.

Ponta do Rife Baluarte, located 1 mile N of Ponta do Porto Ferreira, is low and fronted by rocks which extend up to 1 mile seaward. Ilheu do Baluarte lies 1 mile NE of the point. This islet is reported (1968) to be marked on its E side by the remains of a stranded wreck which stands higher than the islet.

Ilheu Holandes and Baixo de Fora lie 2 miles NNW and 1.7 miles N, respectively, of Ilheu do Baluarte. A patch, with a depth of 19m, lies 3.2 miles offshore, about 1 mile ENE of Baixo de Fora. It is the outermost danger off the NE part of the island.

Ponta Rodrigo, the NE extremity of Ilha de Boa Vista, is located 3.8 miles NW of Ponta do Rife Baluarte. This point is low, fringed by rocks, and fronted by foul ground which extends up to 0.8 mile E of it. A small bay, encumbered with rocks, is located close W of the point and an islet lies in the entrance.

Caution.—The sea constantly breaks on the dangers lying off the NE side of the island. Several vessels have been set onto

these dangers by the SW current. In clear weather, these dangers may be seen, but in poor visibility, it is not advisable to approach the island as the currents close inshore are sometimes irregular.

8.81 Ponta Antonia (16°14'N., 22°50'W.), located 5 miles WNW of Ponta Rodrigo, is low, dark, and rocky. It is fronted by foul ground which extends up to 0.5 mile seaward. A rock, awash, lies about 0.5 mile NE of the point.

Baia de Salina is entered between Ponta Antonia and Ponta do Sol, 7 miles W. It has a sandy shore, but is encumbered with reefs which extend up to 2 miles offshore. The coast in this vicinity should be given a wide berth.

Caution.—Baixo Joao Leitao (Baixo de Joao Valente) (15°49'N., 23°09'W.) lies 17 miles SW of Ilha da Boa Vista. It mainly consists of coral and shell and is awash. The sea almost always breaks over this shoal bank in moderate weather, but not when it is calm.

Numerous fishing vessels may be encountered in the vicinity of this shoal bank.

Ilha de Maio

8.82 Ilha de Maio (15°15'N., 23°10'W.), located 43 miles SSW of Ilha da Boa Vista, has generally low coasts with a few scattered and conspicuous peaks.

Monte de Santo Antonio, 252m high and isolated, stands in the N part of the island; Monte Penoso, 436m high, stands on the E side of the island and is the highest peak; and Monte Batalha, 294m high, stands on the W side of the island.

When seen from the SE at a distance of about 15 miles, the island appears as a group of islets.

Vessels navigating along the NW and W coasts of the island should remain in depths of over 20m by giving the points along the shore a berth of at least 1.2 miles.

Ponta Cais (15°20'N., 23°12'W.), the N extremity of Ilha da Boa Vista, is low and generally dark in color. It is bordered by detached rocks over which the sea normally breaks. A light is shown from a structure, 7m high, standing close E of the point. A racon is situated at the light structure.

Baixa Rasa, a shoal bank with a depth of 16.5m, lies about 2.8 miles WNW of Ponta Cais. A sandy bank, with least depths of 80m, extends up to 10 miles N of the point.

A rocky bank, with a least depth of 35m, lies about 15 miles WNW of Ponta Cais.

Vessels navigating N of the island are advised to remain at least 4 miles NE and NNE of Ponta Cais.

Baixo Galeao, a group of dangerous rocks, lies about 1 mile N of Ponta Pipa, a narrow point located 1.2 miles E of Ponta Cais. The sea breaks constantly on this danger.

Ponta Pedrenau is located 2.7 miles ESE of Ponta Pipa. The bays lying between are foul. A reef extends up to 0.5 mile N of Ponta Pedrenau.

Ponta dos Flamengos is located 9 miles SSE of Ponta Pedrenau. The coast between is fronted by foul ground which extends up to 0.5 mile offshore.

Ponta da Poca Grande is located 5 miles SW of Ponta dos Flamengos and a reef, with depths of less than 2m, extends 0.5 mile S of it.

Ponta das Casas Velhas, located 2.3 miles W of Ponta da Poca Grande, is fringed by rocks and a river flows into the sea close W of it. A reef extends 0.3 mile SSE from the point and the sea usually breaks over it.

A dangerous wreck is reported to lie about 0.8 mile S of Ponta da Poca Grande and an isolated shoal, with a depth of 27m, is reported to lie 2.5 miles SE of Ponta das Casas Velhas.

Ponta Preta, the E entrance point of Porto Ingles, is located 1.5 miles WNW of Ponta das Casas Velhas. A rocky spit, with depths of less than 10m, extends 0.5 mile S from the point.

8.83 Porto Ingles (Porto do Maio) (15°08'N., 23°13'W.) is entered between Ponta das Salinas and Ponta Preta, 1.7 miles SE, and is sheltered from the prevailing NE winds. Swells from the S and SE occur from June to October and rough seas occasionally prevent the landing of persons or freight in August or September.

The town of Porto Ingles is situated on a low cliff at the head of the bay. A large, conspicuous church stands in the town and Forte de Sao Jose, from which a light is shown, is situated at the S end of the town.

The shore lying between Ponta das Salinas and the town is fronted by a steep-to and sandy beach, except for Baixinha, a rocky spit, which has depths of less than 10m and extends 0.3 mile seaward from a point located 0.2 mile W of the town. A wooden pier is situated midway along the beach. Low cliffs, fringed by rocks, border the shore from the town to Ponta Preta which is high and rocky.

Anchorage may be obtained, in a depth of 24m, about 0.3 mile SW of Forte de Sao Jose, or closer inshore in a depth of 12m, about 300m from the shore. Anchorage may also be obtained, in a depth of 12m, about 250m SW of the wooden pier. Local knowledge is advised.

Caution is necessary when approaching the anchorage as the depths increase rapidly off the town.

Ponta do Osso da Baleia (15°13'N., 23°14'W.) is located 4.5 miles N of Ponta das Salinas. The coast between is formed by a low sandy beach. The village of Calheta stands 1 mile NE of the point and its white houses are prominent from seaward.

From Ponta do Osso da Baleia, the coast trends 3.2 miles N to Ponta do Morrinho and then 4.7 miles NE to Ponta Cais. The bays which lie along this stretch of coast are, for the most part, encumbered by foul ground and rocks.

Ilha de Sao Tiago

8.84 Ilha de Sao Tiago (Ilha de Santiago) (15°03'N., 23°40'W.), located 14 miles WSW of Ilha de Maio, is the largest and most populous island of the Arquipelago de Cabo Verde. It is also the most important from a commercial and agricultural viewpoint.

The island is very mountainous. Pico da Antonio, 1,392m high, stands near the center and is the summit of a range which traverses the island from NNW to SSE. Monte Graciosa, 643m high and isolated, stands in the N part of the island and is very conspicuous.

Ponta de Lobo (Ponta San Lorenco) (15°00'N., 23°26'W.), the E extremity of Ilha de Sao Tiago, is low and fronted by a reef which is normally marked by breakers. A light is shown from a tower, with a dwelling, 8m high, standing on the S part of the point.

Ponta das Bicudas is located 5.7 miles SW of Ponta do Lobo. The coast between mostly consists of steep cliffs. Monte do Facho, 140m high and isolated, stands 1.5 miles N of the point and is very prominent.

8.85 Porto da Praia (14°55'N., 23°31'W.) (World Port Index No. 45910), entered between Ponta das Bicudas and Ponta Temerosa, 1.5 miles WSW, is the principal anchorage roadstead of the island.

The city of Praia, the capital of the island, is situated on a plateau at the head of the bay. This prominent plateau, 30m high, has steep sides with deep ravines at each end.

Dona Maria Pia Light (Porto da Praia)

Winds—Weather.—The bay is sheltered, for the most part, from winds from the W through N to NE. However, it is exposed to S and SW swells which are frequent from June to October. Strong winds blow over the land during the dry season, December to June, but the anchorage is generally safe. With strong NE winds, the NE shore of the bay affords little protection and a considerable swell may develop.

Tides—Currents.—Tides rise 1.3m at springs and 1.1m at neaps.

The tidal currents are normally weak.

Depths—Limitations.—Cais Novo mole extends 300m SSW from the shore of the bay, 1 mile WNW of Ponta das Bicudas. A quay extends NW from the root of this mole. There is 690m of total berthing space, with depths of 5 to 9m alongside.

Aspect.—The N shore of the harbor is high and cliffy.

Ilheu de Santa Maria lies at the W side of the bay and is connected to the shore by a reef. The islet is 16m high and flat-topped. A shallow wharf is situated on the W side of the islet and a disused light stands at the S extremity.

The custom house, a prominent two-story building, stands at the S end of the city. Conspicuous radio masts stand 0.5 mile W and 1.2 miles N of the N end of Ilheu de Santa Maria.

It was reported (1987) that two prominent towers stand close NE of the root of Cais Novo mole.

Dona Maria Pia Light is shown from a tower attached to a dwelling, 21m high, standing on Ponta Temerosa.

Pilotage.—Pilotage is compulsory for berthing. Vessels should send an ETA at least 24 hours in advance and contact the pilot on VHF channel 13 or 16, 2 hours before arrival. Pilots board off Dona Marie Pia Light.

Anchorage.—Vessels of any size can anchor in the bay. A good berth, in a depth of 16m, lies about 250m S of the head of the mole. Small vessels may anchor, in a depth of 6m, about 0.3 mile SE of the T-head pier which fronts the custom house.

Caution.—Foul ground, with a least depth of 9m, extends up to 0.2 mile S of Ponta Temerosa.

8.86 Ponta Grande da Cidade (14°54'N., 23°38'W.) is located 6.5 miles W of Ponta Temerosa. The coast between is fringed with rocks and several floating shellfish farms are reported to lie along the shore.

Monte Vermelho, standing 1.5 miles, WNW of Ponta Temerosa, is a reddish color and very conspicuous. A prominent radio mast is reported to stand 3.5 miles E of Ponta Grande da Cidade.

Cidade Velha is situated at the lower end of a ravine, 1 mile E of Ponta Grande da Cidade. Anchorage, with local knowledge, may be obtained, in depths of 14 to 26m, off this town.

It is reported (1994) that a light is shown from a point on the coast, 4.5 miles NW of Ponta Grande da Cidade.

Ponta da Janela (15°04'N., 23°47'W.), the W extremity of Ilha de Sao Tiago, is located 13 miles NW of Ponta Grande da Cidade. This point is dark and steep, but can easily be recognized from the N or S by a rock in the shape of a column lying close off it. The coast between is high and mostly cliffy, with a few indentations in which some houses may be seen. Baia de Santa Clara, entered 4.5 miles SE of Ponta Janela, is very deep and bordered by steep cliffs.

Porto da Ribeira da Barca, entered 3.7 miles NNE of Ponta da Janela, is the N of two small bays. A village stands at the head of this bay and is fronted by a pier used by small craft. A light is shown from a tower, 3m high, standing on a building in the village.

Ponta de Chao Bom is located 7.2 miles N of Porto da Ribeira da Barca. Baia de Chao Bom is entered between this point and Ponta da Ribeira da Prata, extending 2 miles S. The village of Prata stands on a plateau near some cliffs, at the S end of the bay.

Ilha do Fogo—Cha das Caldeiros

Ponta do Atum is located 1.3 miles N of Ponta de Chao Bom. This point is rocky and a reef extends 200m W from it.

Baia do Tarrafal (15°17'N., 23°46'W.) is entered between Ponta do Atum and Ponta Preta, 1.2 miles NW.

Ponta Preta consists of a high cliff with a group of black rocks lying at the base. It is bordered by a rocky reef, with a least depth of 5m, which extends about 300m seaward. A light is shown from a hut, 6m high, adjoining a building with a brown roof, standing close SE of the point.

Ilheu dos Cuscuz, a rocky islet, is located 0.4 mile ENE of Ponta do Atum. It is connected to the shore by a sandy isthmus and a rock, with a depth of 8.8m, lies 0.3 mile WNW of it. A group of rocks, with a least depth of 2.7m, lies up to 200m W of this islet.

A small pier, marked by a light, extends NE from the shore, 300m SW of Ilheu dos Cuscuz. The main part of the village of Tarrafal, with a prominent church, overlooks this pier.

Anchorage can be obtained, in a depth of 15m, chalk, about 0.2 mile W of Ilheu dos Cuscuz. Larger vessels may anchor farther WNW in good holding ground.

8.87 Ponta Moreia (15°20'N., 23°45'W.), the N extremity of Ilha de Sao Tiago, is located 3 miles NE of Ponta Preta. This point is high, rocky, and steep. The coast between consists of three bays, all of which are foul.

A light is shown from a hut, 4m high, standing on the point.

From Ponta Moreia, the coast trends 1.7 miles E to Ponta Bicuda and then 14.3 miles SE to Ponta de Santa Cruz. The greater part of the coast is cut by a wide network of valleys which extend NE and terminate in beaches of black sand or gravel, between cliffs.

Ponta de Santa Cruz is low, rocky, and inconspicuous from the NW or SE. The point may be identified by a group of above-water rocks which extends up to 0.5 mile N of it.

Porto de Pedra Badejo, a cove, is located 1.7 miles SE of Ponta de Santa Cruz and entered between Ponta da Coroa and Ponta de Pedro Badejo, 1.5 miles WNW. The town of Santiago (Pedra Badejo), with a prominent church, is situated in the NW part of the cove.

Anchorage, with local knowledge, can be taken, in a depth of 13m, sand, about 300m SE of Ponta de Pedro Badejo.

Ponta da Coroa, the S entrance point, is low and shallow depths, over which the sea normally breaks, lie up to 0.7 mile NE of it.

Ponta da Achada da Baleia is located 6 miles SE of Porto de Pedra Badejo. The coast between is low and indented. From this point, the coast trends 4 miles SSE to Ponta do Lobo, which has previously been described in paragraph 8.84.

Ilha do Fogo—Ponto de Vale de Cavaleiros

Ilha do Fogo

8.88 Ilha do Fogo (14°57'N., 24°21'W.), located 30 miles W of Ilha de Sao Tiago, is the loftiest island of Ilha the Arquipelago de Cabo Verde. Cha das Caldeiros, the principal peak stands on the E side of a large crater near the middle of the island. It is formed by a symmetrical cone, 2,829m high, and is generally obscured by clouds. The most recent eruption was in 1995.

The coasts are generally high and rugged. Several small villages stand on the slopes of the central mountain; Cidade de Sao Filiple, situated on the SW side of the island, is the main commercial center.

Off the N and NE ends of the island, the currents are strong and are mostly influenced by the wind.

Caution.—Local magnetic anomalies exist in the vicinity of the island.

8.89 Fio do Monte Vermelho (15°03'N., 24°23'W.), the N extremity of the island, consists of a high bluff which descends steeply seaward and ends in a platform of low rocks. Baixo das Sete Cabecas, a group of low above-water rocks, extends up to 0.4 mile NNW of the point. Depths of 100m lie 0.2 mile seaward of this group of rocks.

From Fio do Monte Vermelho, the coast trends 7.2 miles SW to Ponta da Garca, which is steep and dominated by Monte Ledo, 470m high. It then trends 4.3 miles SSW to Ponta de Vale de Cavaleiros, which is dominated by Monte Almada, 327m high. A shoal, with depths of less than 2m, lies about 0.5 mile offshore, 1.3 miles N of Ponta de Vale de Cavaleiros.

A pier extending S from close E of Ponta de Vale de Cavaleiros has a depth of 5m alongside its outer 45m. Anchorage may be obtained, in a depth of 16m, good holding ground of fine sand and mud, about 300m S of the pier head.

8.90 Porto de Sao Filipe (14°54'N., 24°30'W.) lies 1.5 miles S of Ponta de Vale de Cavaleiros. The coast between is sheer and fronted by a beach.

The town of Sao Filipe stands on top of a cliff which is bounded on its N and S sides by ravines through which rivers flow. It appears as a prominent whitish spot from offshore.

Fortim Carlota, an old fortress used as a police station, stands in the S part of the town and is marked by a light shown from a column, 4m high, standing on its W wall. A prominent church, with two spires, stands close NE of the fortress.

Anchorage may be obtained, in a depth of 17m, very good holding ground of fine sand, about 0.3 mile NW of the fortress.

Porto de Nossa Senhora da Encarnacao lies 1 mile SE of Porto de Sao Filipe. A prominent church here stands on top of the cliffs, 0.9 mile SE of Fortim Carlota. Several conspicuous buildings are also situated at the foot of the cliffs, close W of the church.

Anchorage may be obtained, in a depth of 16m, fine sand, about 0.3 mile SW of the church.

Persons with local knowledge are available at Sao Filipe to aid vessels entering the above anchorages.

8.91 Ponta do Pescadeiro (14°49'N., 24°23'W.), the S extremity of the island, is located 8 miles SE of Porto de Nossa Senhora Encarnacao. The coast between is formed by high cliffs. A small, rocky islet lies close offshore, 2.5 miles SE of Porto de Nossa Senhora Encarnacao.

Ponta do Alcatraz (14°50'N., 24°19'W.) is located 3.5 miles NE of Ponta do Pescadeiro. The coast between consists of mostly cliffs.

A light is shown from a column, 3m high, standing close SW of the point. It is reported that during the day, the light structure can only be distinguished when near the coast.

Ponta de Sougui, low and rocky, is located 3 miles NE of Ponta do Alcatraz. The land and the shore extending up to 1 mile NW of this point were affected by lava flows during the eruption in 1951. Several villages in this vicinity were destroyed. Inland of the coast, the land rises steeply to the central mountain.

Ilha Brava

Porto dos Mosteiros (15°02'N., 24°20'W.) is located 10.2 miles NNW of Ponta Sougui. The coast between is mostly fringed by foul ground. It is entered between Ponta Manuel Dias, a low point, and Ponta Queimada, 1 mile NW. The town of Igreja stands on a low promontory at the head of the bay and beaches extend on both sides of it. Several buildings situated in the town are prominent and a conspicuous power station stands on a hill at the SE end of the town.

A light is shown from a pyramid, 3m high, standing at the NW end of a stone wall, on the seaward side of the town. A small quay used by boats is situated in an inlet entered close NE of the light.

An anchorage roadstead used by coasters lies 0.2 mile N of the light. It has a depth of 33m with a good holding ground of fine sand, but the depths increase rapidly to seaward.

The coast trends 2.8 miles WNW from Porto dos Mosteiros to Fio do Monte Vermelho, which has been previously described in paragraph 8.89. It is low and fringed with rocks, but becomes higher in the vicinity of the point.

The Ilheus do Rombo (Ilheus Secos)

8.92 The **Ilheus do Rombo** (Ilheus Secos) (14°58'N., 24°40'W.) consists of a group of six rocky islets and lies 8 miles W of Ilha do Fogo.

Ilheu Grande, the W islet, and Ilheu de Cima, the E islet, lie 2.5 miles apart but are almost connected by rocks and the other four small islets. The group is volcanic in origin and uninhabited.

Ilheu de Cima (14°58'N., 24°39'W.), a rocky islet, rises to a height of 77m near its SW extremity. A light is shown from a hut, 4m high, standing on the summit.

The N extremity of the islet should be given a berth of at least 1 mile in order to avoid several rocky shoals, some of which break continuously. The NE and SE coasts of the islet should also be given a berth of at least 1 mile.

Ilheu Grande rises to a height of 96m and should be given a berth of at least 0.5 mile.

The passage lying between this group and Ilha do Fogo, to the E, and the passage lying between this group and Ilha Brava, to the S, are both clear and deep.

Ilha Brava

8.93 Ilha Brava (14°51'N., 24°43'W.) is located 10 miles W of Ilha do Fogo. It has several high peaks, but they are generally enveloped in clouds. Fontainhas, the highest peak, rises to a height of 976m near the middle of the island.

The coasts are generally steep and safe to approach and, although rocky and precipitous, landing can be made in most parts.

Vila de Nova Sintra (Vila de Nova Cintra), the capital of the island, is situated on a plateau on the N slope of Fontainhas.

Ponta Jalunga (14°53'N., 24°41'W.), located at the NE end of the island, consists of a relatively low ledge projecting from the side of a hill and is prominent. A light is shown from a column, 8m high, standing on this point.

Ponta do Incenso is located 0.7 mile NW of Ponta Jalunga. A prominent cliff extends 0.6 mile W from this point to Ponta da Vasa and forms the N extremity of the island.

8.94 Porto da Furna (14°53'N., 24°41'W.), a small bay, lies close SW of Ponta Jalunga; the prominent village of Furna stands at its head.

A sandy beach and a shallow pier, marked by a light, front the village. The swell does not enter this bay and small vessels can obtain anchorage here. Vessels up to 60m in length generally moor with one anchor to seaward and their stern secured to the shore.

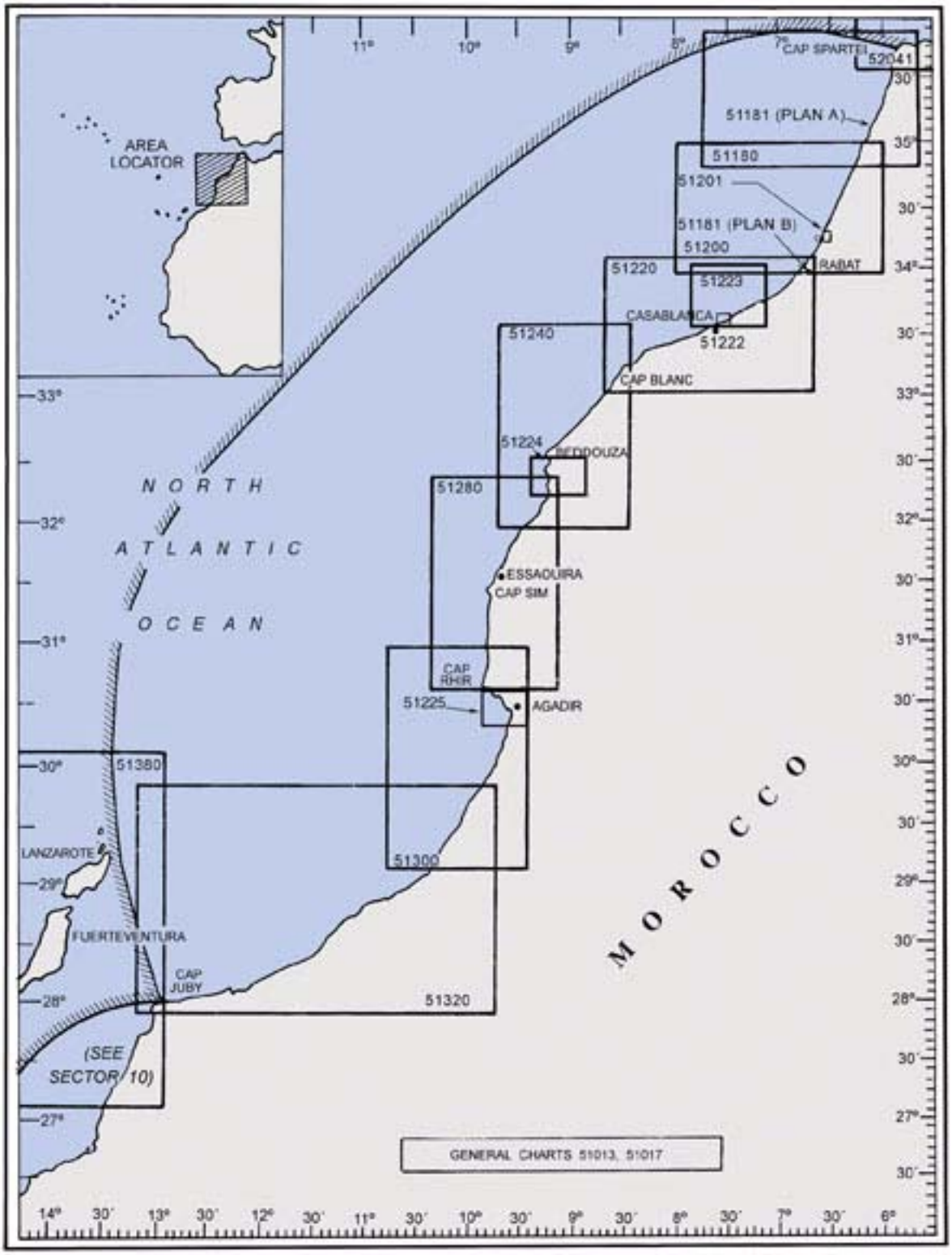
It is reported that vessels up to 100m in length have also moored in the bay using extreme care.

Persons with local knowledge are available to aid vessels when entering and mooring.

8.95 Ponta Nho Martinho (14°48'N., 24°43'W.), the S extremity of the island, is located 5.3 miles SSW of Ponta Jalunga. A light is shown from a tower, 4m high, standing on the point. A rock, with a depth of less than 2m, lies about 0.5 mile ENE of this point.

Porto da Faja, a small bay, lies on the NW side of the island, 4.2 miles NW of Ponta Nho Martinho. The village of Faja de Agua stands at the mouth of a river which flows into the NE part of this bay. A prominent church stands near its N end. The village is fronted by a sandy beach, but the shore of the bay is generally fringed by rocks.

Small vessels with local knowledge can obtain anchorage, in depths of 15 to 16m, sand, in the NE corner of the bay.



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

SECTOR **9** — CHART INFORMATION

SECTOR 9

MOROCCO AND WESTERN SAHARA—CAP SPARTEL TO CAP JUBY

Plan.—This sector describes the NW coast of Africa from Cap Spartel to Cap Juby, and includes the ports of Casablanca, Safi, Port d'Anza, and Agadir. The descriptive sequence is from the NE to SW.

General Remarks

9.1 The coast from Cap Spartel to Cap Juby, about 600 miles SW, is generally barren and consists of a low and dangerous coastline backed by low sand hills.

In the vicinity of Cap Beddouza, 260 miles SW of Cap Spartel, the coast, being at the W end of the Atlas Mountains, is slightly higher and cliffs are seen in a few places.

The whole coast is exposed to onshore winds and sea and there are very few good anchorages along this stretch. Several high mountains stand in the interior and their summits make good landmarks in clear weather.

Caution.—Tunny fishing nets may be found extending up to 2 miles from the coast. Generally, by day, yellow or white flags, bearing the letter "M" or "A," mark the middle and the seaward extremity of the net. At night, two green lights, placed vertically, are shown at the middle of the net and a red light over a green light marks the seaward end. Vessels should give these nets a berth of at least 3 miles. The tunny fishing season generally lasts from May to November.

Oil exploration and production rigs may be encountered off the coasts within this sector.

Concentrations of fishing vessels may be encountered off the coasts within this sector.

Fog may be encountered off this coast. It is rather frequent in summer above the cold water which borders the shore. Visibility may also be reduced by fine particles of sand and dust, which are sometimes carried a considerable distance seaward by offshore winds.

The security of vessels off this coast and at some ports is a serious problem. Reports have been received (1986-1990) of firings upon cargo and fishing vessels off this coast. In addition, a grounded bulk vessel was fired upon from the shore. All vessels should exercise extreme caution.

Reports have been received (1990) that Moroccan warships, while engaged in anti-smuggling operations, have been known to fire on innocent vessels which were navigating within the territorial waters claimed by Morocco.

Cap Spartel to Kenitra

9.2 **Cap Spartel** (Cap Espartel) (35°47'N., 5°56'W.) is formed by a headland which terminates in a large, black, and conical rock. It is the NW extremity of Africa and the SW limit of the Strait of Gibraltar. When viewed from the NE or SW, the cape resembles a detached islet.

The high land backing the cape rises to Jebel Quebir, 315m high. In good weather, this hill can be seen from a considerable distance and from the NW, it may be easily recognized by two long, vertical patches of gray-colored rock located near the summit which is surmounted by a tower.

South of the cape, the land slopes steeply to an extensive plain. El Yebila, 130m high, stands in the middle of this plain, 3 miles S of the cape. This hill is prominent and its summit is surmounted by a triangulation tower.

Cap Spartel Light is shown from a tower, 24m high, standing on the cape.

A group of black pinnacle rocks, above-water and steep-to, lies on the N end of a reef which extends up to 0.2 mile NW of the light. A drying rock lies about 0.2 mile offshore, 0.6 mile SW of the light. Several shoals, with depths of 10 to 12m, lie close W of the cape and the sea breaks continually over them.

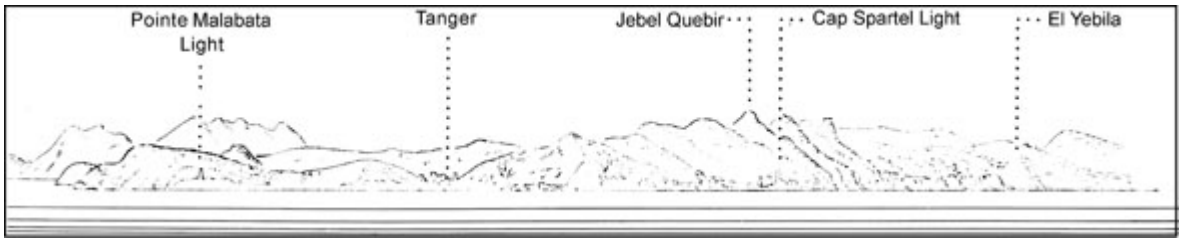
A stranded wreck is reported to lie close SW of the cape.

Note.—An IMO-adopted Traffic Separation Scheme lies in the approaches to the Strait of Gibraltar, 12 miles NW of the cape, and may be seen on the chart.

A Vessel Traffic Service (VTS) has been established within the waters to the E of the cape. For further information, see Pub. 131, Sailing Directions (Enroute) Western Mediterranean.

Caution.—Vessels should not approach within 0.8 mile of the cape. It is also necessary to guard against the tidal races which are sometimes produced by the strong currents in the vicinity of the cape.

At night, when it cannot be seen, the low land lying to the S of the cape may sometimes be mistaken for the entrance to the Strait of Gibraltar; however, this error may be avoided by attention to the soundings.



Cap Spartel bearing 135°, distant 13 miles

9.3 Anse Spartel (35°46'N., 5°56'W.), a shallow and sandy bay, is entered 0.8 mile S of Cap Spartel. Small vessels may obtain anchorage, in depths of 10 to 12m, about 0.3 mile off the shore of this bay. It is sheltered from E winds, but heavy squalls blow off the land and a continual swell renders landing difficult.

The coast from Anse Spartel to Asilah, lying 20 miles SSW, is formed by a sandy beach which is broken by a few rocky projections and backed by a line of low hills. A range of very conspicuous mountains stands about 13 miles inland.

Monte Sidi Hebib, 923m high, stands 14 miles E of Asilah. It is conspicuous and the highest peak of the range. Monte Hauxben Kreaa, 640m high, stands 15 miles SE of Cap Spartel and is prominent. Both of these mountains are good landmarks when in the approaches to Asilah.

An aeronautical light is shown from a control tower, 12m high, standing at an airport, 3.8 miles SSE of Cap Spartel.

From a point along the coast located 6 miles SSW of Cap Spartel, a rocky shoal, with depths of 5 to 20m, parallels the shore and extends up to about 1 mile seaward. During bad weather, this shoal causes the sea to break far from the shore.

Asilah (35°28'N., 6°02'W.), a small fishing port, is formed by an old town and a modern town. The old town is surrounded by a wall surmounted by four towers, the N tower being 27m high. The modern town, situated NE of the old town, has a prominent church with two towers, and is fronted by a beach. The military barracks standing on the high ground, SE of the old town, and Palacio del Raisuni, a massive building with numerous windows standing on the seaward side of the old town, are also good landmarks.

A ruined breakwater, which is built on a drying reef, fronts the town and protects the harbor. It extends WNW from the N end of the old town and then curves NE. A lighted range indicates the entrance fairway, which has a depth of 2m. Local knowledge is recommended. El Anman, with a depth of less than 1.8m, consists of several rocks and lies about 0.7 mile N of the harbor entrance. Anchorage can be taken, in a depth of 11m, about 0.5 mile NW of the old town. In general, the bottom is rocky with poor holding ground, especially with W winds and swell.

Caution.—Submarine cables extend W from the vicinity of the Oued el Helou (Rio el Helu), a stream which flows into the sea 0.7 mile NE of the town.

9.4 Larache (35°12'N., 6°09'W.) is situated 15 miles SSW of Asilah. The coast between presents nearly the same appearance as that to the N of Asilah. The coastal hills rise about 3 miles S of Asilah to heights of over 200m.

Ras el Nuida, located 5 miles SSW of Asilah, appears from the N as a high steep cliff, 40m high, facing the sea.

Haffat el Beida, better known as El Cenizo, stands 3.5 miles SSW of Ras el Nuida. It consists of a large and conspicuous white triangular rock, 100m high, with a lookout tower situated on the summit.

Bajo el Cenizo (El Cenizo Bank), with a least depth of 26m, lies about 4 miles W of Haffat el Beida and breaks in heavy weather.

From Haffat el Beida, a sandy beach extends SSW for 6.5 miles to Punta Negra, which consists of dark-colored cliffs with a prominent white mark near their foot.

The coast between Punta Negra and the mouth of the Oued Lucus, 1.5 miles SSW, consists of a sandy beach backed by dunes. A prominent pine tree plantation stands on the N side of the river mouth.

Punta Nador (35°12'N., 6°10'W.), fringed by reefs, is located 2.5 miles SW of Punta Negra. A light is shown from a prominent tower, 35m high, standing on the point and a signal station stands close N of it.

9.5 Larache (El Araish) (35°12'N., 6°09'W.), a small port, lies at the mouth of the Oued Lucus (Uad Lucus) (Rio Lucus). The town stands on the S side of the river mouth and extends W nearly as far as Punta Nador.

Tides—Currents.—Tides rise 2.9m at springs and 2.1m at neaps.

Depths—Limitations.—A breakwater extends W from the N side of the river mouth; a training wall fronts an area of reclaimed land on the S side. Quays, situated SE of this training wall, have 380m of total berthing space with a depth of 4m alongside. Coasters up to 45m in length and 3m draft can be handled alongside. Larger vessels, with drafts up to 4m, can work cargo from lighters at an anchorage berth inside the bar.

Aspect.—The best landmarks include Jebel Sarsar, 609m high, which stands 25 miles SE of the port and is conical with a gradual slope on its S side; the modern buildings of the town, with a mosque standing at the N end; and Jemis de Sahel, a former military post, which stands amidst a clump of tall trees on the highest of the coastal hills, N of the town.

Lighted ranges lead over the entrance bar and to the anchorage within the river mouth; they may best be seen on the chart.

Pilotage.—Pilotage is compulsory. Pilots can be contacted by VHF and board about 2 miles seaward of the entrance.

Anchorage.—Small coasters can obtain good anchorage within the harbor. Outside, the best anchorage, in a depth of 14m, sand, lies about 0.7 mile NNE of Punta Nador. In good weather, small vessels can anchor closer inshore with good holding ground. Good anchorage may also be obtained, in a depth of 22m, sand, about 1.2 miles offshore, with Jebel Sarsar in range with the entrance, bearing about 140°.

Caution.—The bar lying S of the breakwater is subject to great changes and the lighted entrance range is moved accordingly. The entrance has a constant swell on it except during the summer. Generally, the entrance is unsafe from October through May.

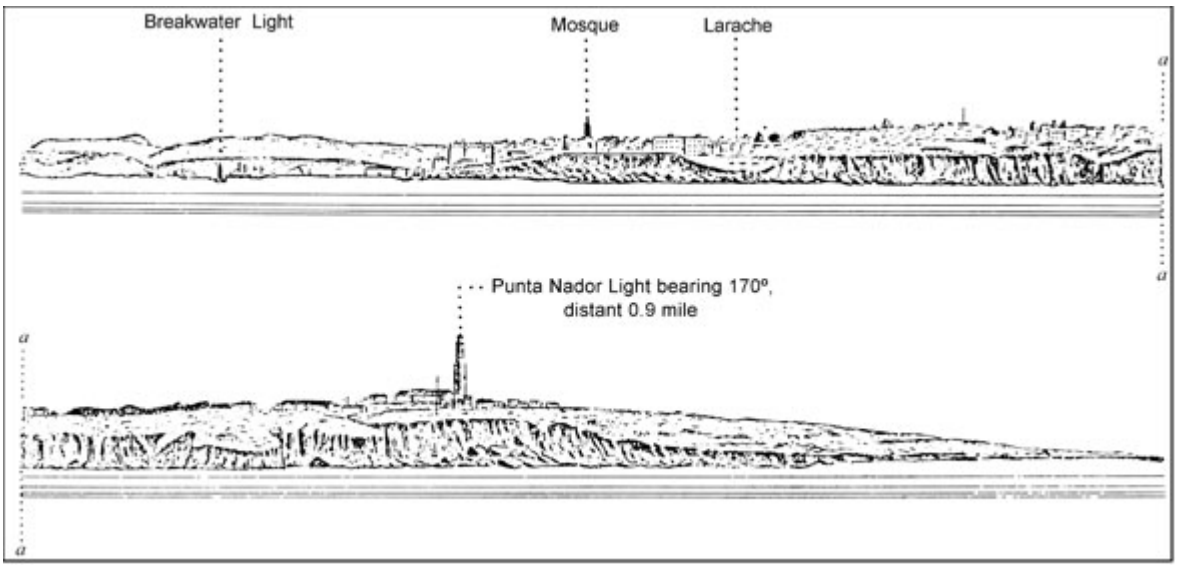
It is reported that several patches, with depths of 17m, lie on the line of the breakwater. They are surrounded by depths of 25m and break in heavy weather.

9.6 Moulay bou Selham (34°53'N., 6°18'W.), an outlet for an inland lagoon, lies 20 miles SSW of Larache. The coast between rises to heights of 90m. The N part consists of reddish cliffs and the S part consists of sandhills, partly covered with scrub.

An aeronautical light is shown from a tower standing 10.3 miles SE of Punta Nador.

Moulay bou Selham can be recognized by several white tombs which stand on its N side, and one tomb which stands on its S side. The lagoon is hidden from view by a sand dune, 70m high.

Anchorage can be taken in good weather, in depths of 15 to



View of Larache in two parts

18m, sand, off the outlet; however, seaward of depths of 20m, a rocky bottom exists.

The coast from Moulay bou Selham to the mouth of the Oued Sebou, 41 miles SSW, is sandy, broken in places by rocks, and backed by sand hills. An isolated and conspicuous black rock, 59m high, lies on the shore, 14 miles SSW of Moulay bou Selham.

It is reported (1990) that a light is shown from a tower standing in the vicinity of this isolated rock.

A windpump stands 2 miles inland, about 10 miles S of the black rock and is also conspicuous.

Caution.—Ammunition dumping areas, the limits of which are shown on the chart, lie offshore about 35 miles and 60 miles NW of the entrance to the Oued Sebou.

Kenitra (Port-Lyautey) (34°16'N., 6°40'W.)

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9.7 The port of Kenitra lies on the S bank of the Oued Sebou, about 9 miles above the mouth. The town of Mehdiya (Mehdia) stands on the S side of the river entrance.

Tides—Currents.—Tides rise 3.6m at springs and 2.9m at neaps.

The flood current sets N and the ebb sets S at the entrance bar. The flood current in the river off Mehdiya, during normal conditions, commences 2 hours after LW and the ebb current commences 1 hour 30 minutes after HW. A rise of 2m in the upper river causes an outgoing current of 3 to 4 knots at Mehdiya; this current overcomes the flood at neaps and causes a prolonged period of SW at springs.

Rollers, prevalent during the winter, may raise the level of the river by as much as 0.9m above the spring tide level. The flood current then predominates and the ebb current varies in proportion to the violence of the rollers.

The river is subject to floods from October to May; during this period, it usually submerges the surrounding areas with muddy waters. During the remainder of the year, it is at a low level and is subject to tidal influences for 50 miles above the mouth. High water at Kenitra occurs, on the average, about 45 minutes after HW at Mehdiya.

Depths—Limitations.—The river is entered between two breakwaters. A quay, with 870m of total berthing space, fronts the town of Kenitra and has a depth of 5.5m alongside. In addition, a T-head petroleum pier situated 0.7 mile upstream has a depth of 4.5m alongside.

The channel across the bar is variable; permissible drafts are equal to the height of the tide increased by a constant of 1.6m. Vessels can generally reach Kenitra with drafts up to 5.5m at HWS and up to 4.1m at HWN. The maximum permissible length for entry is 115m; at night, this is reduced to 75m for tankers and to 95m for other vessels.

A quay, used by fishing vessels and tugs, fronts the NE part of Mehdiya and a naval quay, about 400m long, is situated 0.5 mile NE of it and has a depth of 8.5m alongside.

Aspect.—Mehdiya, situated on the lower slope of a hill, is a good landmark and can be easily identified by its old fortifications. Also prominent are the lighthouse and signal station standing on the ridge to the S of the town, a large white house standing close N of the lighthouse, and a group of buildings at Mehdiya Plage situated S of the river entrance.

Medhiya Light is shown from a tower with a dwelling, 9m high, standing on a hill, 1.2 miles ESE of the breakwater entrance. This tower also forms the rear structure of the lighted entrance range which leads into the mouth of the river.

An aeronautical light is occasionally shown from a tower standing on a hill, 4 miles NE of the river entrance.

The river channel to Kenitra is indicated by lighted ranges and marked by lights and lighted buoys.

Pilotage.—Pilotage is compulsory and available day or night during periods of HW. The pilot boards in the vicinity of the river mouth and may be contacted on VHF channel 9 or 16.

Signals.—The following signals are displayed at the signal station at the light tower:

1. International Code flag S—conditions on the bar are passable. This signal may also be displayed by the pilot boat.
2. A red flag shown over a green flag—the bar is impassable.

Anchorage.—Vessels which, due to their draft, cannot cross the bar should anchor seaward of the entrance. Anchorage, with good holding ground of mud, may be found W of the light. Vessels should moor, in a depth of 30m, during winter and, in a depth of 15m, during summer. This is sometimes an insecure roadstead due to heavy seas caused by winds from the SW through W to N. Within the river, only temporary anchorage can be taken due to the strong tidal currents and bad holding ground.

Caution.—Several unlighted mooring buoys are situated along the sides of the river channel.

Mehdia (Kenitra) to Casablanca

9.8 The coast between the mouth of the Oued Sebou and Rabat, 16 miles SSW, is bordered by sandy beaches. It is backed by conical hills in the N part and by cliffs in the S part. Two prominent radio masts, marked by red obstruction lights, are situated 7 miles S of Mehdiya. Three prominent pillars stand near the coast, 4 miles NW, 3.5 miles W, and 5 miles SW of these radio masts.

Rabat (34°02'N., 6°50'W.) is situated on the S side of the entrance to the Oued Bou Regreghas and has prominent fortifications standing on its seaward and river sides. The town of Sale is situated on the N side of the river entrance and is surrounded by a wall with prominent towers standing at regular intervals. A prominent battery also stands at the SW end of the town of Rabat.

The white walls and minarets of both towns are conspicuous. The most conspicuous object is Hassan Tower, 55m high, which stands on a cliff, 21m high, at the NE end of Rabat.

Rabat Light is shown from a tower, 24m high, standing on Fort de la Calette, 0.5 mile WSW of the river mouth.

An aeronautical light is shown occasionally from a control tower which stands 3.5 miles E of the river mouth.

Note.—The port of Rabat is almost completely abandoned and no commercial operations are performed. The harbor, frequented only by pleasure craft and fishing boats, is accessible to vessels with drafts of 2.1 to 3.7m, depending on the tide. The bar within the breakwaters is variable and boats, with local knowledge, usually enter between 2 hours before and 1 hour after HW. It is reported that local persons are available to aid boats wishing to enter.

Anchorage, in good weather, can be taken seaward of the breakwaters, in depths of 10 to 30m, sand, good holding ground. However, this roadstead is exposed to W winds and sea, and in bad weather, vessels must put to sea.

Caution.—A prohibited area exists off the coast between Rabat and Mohammedia. It is enclosed by a line joining the following positions:

a. 33°55.3'N, 6°58.6'W.
b. 34°04.2'N, 7°07.6'W.
c. 33°58.2'N, 7°19.0'W.
d. 33°45.1'N, 7°18.6'W.

9.9 The coast from Rabat to Cap de Fedala, 34 miles SW, is sandy and interspersed with rocky patches. Two ranges of barren hills commence at a position about 8 miles SW of Rabat and run nearly parallel to the coast. The range near the coast, 1 mile inland, has a height of 60m; the inner range, 5 to 6 miles inland, has heights of 60 to 120m. Both these ranges extend about for about 80 miles SW.

The minaret at Temara, 7 miles SW of Rabat, stands on the summit of a hill, 96m high, and is conspicuous. The prominent white steel works at Skhirat are also conspicuous. They stand 1.7 miles SE of Ilot de Skhirat, 15 miles SW of Rabat.

Caution.—It has been reported (1986) that the entrance to the harbor at Skhirat (33°52'N., 7°03'W.) lies within a prohibited area.

Sidi el Haj Bou Derbala (33°50'N., 7°09'W.), a low promontory, is located 5.7 miles SW of Skhirat. It is joined to the mainland by a sandy isthmus and stands out as a dark shape against the coastal cliffs.

A generating plant situated at Bouznika, 2.5 miles SSW of the promontory, is reported to be conspicuous from seaward. In addition, a minaret standing at Mansouria, 9 miles WSW of the promontory, is also reported to be conspicuous.

Caution.—An obstruction is reported to lie about 4.5 miles NW of Sidi el Haj Bou Derbala and marked by a buoy moored close NW.

It is reported (1980) that navigation and fishing are prohibited within an area which extends up to 10 miles from the coast between Rabat and Sidi el Haj Bou Derbala.

Cap de Fedala (Cap de Mohammedia) (33°43'N., 7°24'W.) is located 14 miles SW of Sidi el Haj Bou Derbala. This prominent point appears as an island from a distance and can be identified by a conspicuous group of white oil tanks which stand on it.

A shoal, with a depth of 18m, lies about 2.7 miles W of the cape.

Mohammedia (33°43'N., 7°24'W.)

World Port Index No. 45790

9.10 Mohammedia (Port de Fedala), a petroleum and fishing port, lies in the SW part of Baie de Fedala which is entered between Cap de Fedala and the mouth of the Oued Nefifikh, 2.5 miles ENE. The town stands close S of the port.

Tides—Currents.—Tides rise 3.5m at springs and 2.7m at neaps.

Currents, which set SW at about 2 knots, have been reported in the vicinity of the bay.

Depths—Limitations.—The bay and port are sheltered by an outer breakwater which extends 1 mile NE from Cap de Fedala.

The inner harbor is protected by two breakwaters which form an entrance, 82m wide.

Quay No. 2, at the W side of the harbor basin, is 170m long with a depth of 6.2m alongside. Quay No. 1, at the N side of the harbor basin, is 70m long with a depth of 7m alongside. Quay No. 6, at the NE side of the harbor basin, is 90m long with a depth of 6.1m alongside. Generally, vessels up to 120m

in length and 6.7m draft can be accommodated. In addition, there are several small jetties situated at the S side of the harbor basin for the use of fishing vessels.

A spur jetty extends about 0.5 mile ENE from the inner root of the outer breakwater and has a tanker terminal for crude oil, LPG, and naphtha situated at its seaward end.

Berth A, on the W side of the jetty, is 260m long, with dolphins, and can handle tankers up to 100,000 dwt and 17m draft.

Berth B, on the E side of the jetty, is 290m long, with dolphins, and can handle tankers up to 150,000 dwt and 17m draft.

It is reported (1990) that the former offshore oil pipeline mooring buoy berths are no longer in use.

Aspect.—The following landmarks are conspicuous:

1. A hill, 185m high, standing inland, 8 miles S of the cape.
2. Minaret de la Kasbah, which is difficult to identify from the W, standing 1.2 miles SSE of the cape.
3. A white funnel-shaped tank standing 0.3 mile S of the minaret.
4. A silo standing 0.2 mile SSW of the minaret.

Lighted ranges, unlit ranges, and a directional light indicate the approaches to the port and the entrance. It was reported (1988) that the day marks of the approach range were not conspicuous.

It was reported (1994) that an outer lighted buoy has been moored about 2 miles N of the outer breakwater head.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance, with a confirmation sent 1 hour in advance, on VHF channel 11. Pilots may be contacted on VHF channel 11 or 16 and board E of the harbor entrance, in position 33°43.5'N, 7°22.3'W; vessels bound for the oil terminal board the pilot in position 33°46.2'N, 7°23.0'W, in the vicinity of the Approach Lighted Buoy.

Generally, deep-draft vessels are berthed only during daylight.

Anchorage.—An inner anchorage berth lies, in a depth of 9m, about 0.5 mile ENE of the entrance to the harbor basin. This berth has good holding ground, but it is exposed to the heavy swell. Vessels should be prepared to put to sea if the swell becomes dangerously high and the port cannot be entered.

Caution.—Several obstructions, shoals, and wrecks lie up to 2.3 miles N and NE of the outer breakwater head and may best be seen on the chart.

A prohibited entry area, and an anchoring and fishing prohibited area, the limits of both of which are best seen on the chart, lie in the approaches to the port.

The entrance channel to the harbor basin has a bottom of hard rock. During a heavy swell, vessels, with a keel clearance of 1.2m, have reported touching the bottom.

A shoal, with a depth of 5.2m, lies about 0.5 mile E of the entrance to the harbor basin.

9.11 The **Oued Mellah** (33°42'N., 7°25'W.) flows into the seas, 1 mile SW of Cap de Fedala. The coast between this river and the roadstead of Casablanca, 11 miles SW, is low. It is mostly formed by a sandy beach and some rocky ledges backed by sand dunes.

A conspicuous flare and two conspicuous chimneys stand 2.3 miles SW of Cap de Fedala. A conspicuous rock lies close to the shore, 3.7 miles SW of the river mouth.

Pointe d'Oukkacha (Table d' Oukacha) (33°37'N., 7°34'W.) is located 10 miles SW of Cap de Fedala. A light is shown from a tower, 19m high, standing on the point.

A T-head pier, in ruins, extends from the shore, 0.2 mile E of the point. Prominent water towers stand 0.5 mile E and 0.7 mile SE of the point. A conspicuous tomb stands, at a height of 115m, 3 miles SE of the point.

Pointe d'El Hank (33°37'N., 7°39'W.) is located 4.7 miles W of Pointe d' Oukkacha. It is the N extremity of a promontory and is fronted on the N side by a reef and several shoals.

A light is shown from a tower, 51m high, standing on the SW part of the promontory.

Two prominent pylons stand close E of the light.

The Moroccan government periodically prohibits all maritime activity, transiting, and anchoring in an area N and W of Pointe d'El Hank.

Casablanca (33°36'N., 7°37'W.)

World Port Index No. 45793

9.12 The harbor of Casablanca, the largest and most important port in Morocco, lies about midway between Pointe d'Oukkacha and Pointe d'El Hank.

Winds—Weathers.—It was reported (1998) that winter months are frequently characterized by dense fog with extremely low visibility.

Tides—Currents.—The tides rise 3.7m at springs and 2.9m at neaps.

The prevailing winds are from the SW to NW in winter and from the E to NE in summer. The currents caused by the winds are the most important, sometimes setting ENE and sometimes WSW.

Depths—Limitations.—The harbor is protected from the NW by Jetee Moulay Youssef (formerly Jetee Delure), a breakwater, which extends 1.5 miles NE from a point located 1.7 miles E of Pointe d'El Hank. It is also protected from the E by Jetee Nouvelle, a breakwater, which extends 0.5 mile NW from a point located 1.2 miles SW of Pointe d'Oukkacha. The harbor entrance lies between the head of Jetee Nouvelle and the head of Epi Nord, a short spur, which extends SSE from near the head of Jetee Moulay Youssef.

A fishing harbor, a yacht basin, and a naval dockyard are situated close W of Mole Tarik, at the head of the harbor.

Generally, vessels up to 270m in length and 9.8m draft can be accommodated in the harbor.

Aspect.—The most conspicuous landmarks in the vicinity of the city include a group of radio masts standing 0.3 mile SSW of Point d'Oukkacha; several short chimneys standing on the roof of the electric building, 0.3 mile SW of the radio masts; and a group of chimneys standing 0.7 mile SSW of the radio masts.

Casablanca—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
Jetty Moulay Youssef			
A-E	—	2.4-10.0m	Naval facilities

Casablanca—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
F	300m	10.0m	Ore
P3	120m	10.0m	Petroleum. Can accommodate tankers up to 40,000 dwt, with a maximum length of 280m and a maximum draft of 10m.
Jetty des Phosphates			
60-63	540m	9.0-12.0m	Coal and ore
64-66	510m	9.0-12.0m	Phosphates
T7	125m	9.0-12.0m	Phosphates
R4-R5	200m	7.5m	Scrap
Mole des Agrumes			
40-44	565m	8.5m	Fruits and vegetables
T5-T6	220m	9.1m	Fruits
50-55	700m	9.1m	Fruits
Mole du Commerce			
20-24	575m	9.1m	General cargo
T3-T4	220m	10.2m	General cargo
30-34	600m	9.1m	General cargo
35-36	400m	9.1m	General cargo
R2-R3	200m	7.5m	General cargo
Mole Tarik			
T2	120m	7.5m	
10-13	400m	8.2m	Container cargo
A1-A2	280m	8.2m	Ro-ro
Container Terminal	380m	12.0m	Container cargo

The Hassan II Mosque, the second-largest mosque in the world, is very prominent and stands close W of the SW end of the harbor.

Prominent landmarks include two pylons standing 1 mile ESE of Pointe d'El Hank and several grain silos standing on Mole du Commerce.

Roches Noires Light is shown from a tower, 18m high, standing close to the shore, 0.3 mile E of the root of Jetee Nouvell.

A lighted range, which should not be used as a lead into the harbor, assists in the approach from the NE to the pilot boarding position, and may best be seen on the chart. Due to the height of the buildings comprising this range, it is conspicuous in daylight, although it has been reported (1997) that the front range structure is difficult to discern, even at a distance of less than 0.5 mile.

The outer approach Lighted Buoy CA1, equipped with a racon, is moored about 3 miles NNW of Pointe d'Oukkacha. Lighted Buoy CA3 is moored about 1.2 miles NW of Pointe d'Oukkacha.

Pilotage.—Pilotage is compulsory for all merchant vessels over 100 grt and all sailing vessels over 80 gross tons. Pilotage is not compulsory for military vessels but is advisable for vessels not familiar with the port. Military vessels should send an ETA and a request for pilotage message at least 1 hour before arrival. The pilots should be contacted on VHF channel 12. Pilots board in position 33°38.0'N, 7°34.6'W.

Regulations.—Vessels should send a message to the Vessel Traffic Service 24 hours in advance or immediately upon departure from the previous port. The ETA should be confirmed 12 hours and 4 hours prior to arrival. The initial message should state:

1. Vessel name and nationality.
2. Length overall, maximum dimensions, and gross tonnage.
3. Maximum draft on arrival.
4. ETA.
5. Type and tonnage of dangerous cargo to be unloaded/in transit.
6. Present damage to the vessel or cargo.

Vessel movements and special bulletins are broadcast on VHF channel 14.

Signals.—A signal station stands at the head of a short spur, 0.8 mile NE of the root of Jetee Moulay Youssef, and will display the following swell signals:

Casablanca—Swell Signals		
Day	**Night**	**Meaning**
Black ball over a black cone, point up	Three green lights, vertically disposed	A moderate swell (3 to 4m) is predicted within 24 hours
Black ball over two black cones, points down	Red light between two green lights, vertically disposed	A dangerous swell (over 4m) is predicted within 24 hours

A red flag by day indicates the pilot cannot come out but vessels may enter at their own risk.

Anchorage.—The roadstead outside the harbor is partially sheltered by Pointe d'El Hank from winds between the S and W, but swells from the W and NW are felt. This anchorage is dangerous during heavy W or NW swells which may set in suddenly, especially during the bad season, from October to April. The holding ground is poor as the bottom mostly consists of sand and rock.

Designated anchorage areas, the limits of which are shown on the chart, lie centered 5 miles NE and 5 miles NNW of the outer breakwater head.

Caution.—The roadstead is directly affected by NW or W swells which form, especially in winter, in the N part of the Atlantic. These swells, which occur even when the local weather is good, also cause a particularly violent surge within the harbor basins. Hawsers are therefore subject to considerable strain

Casablanca—Hassan II Mosque

and vessels should take all necessary precautions. Vessels are also advised to use nylon ropes or shock absorbers.

Anchoring prohibited areas, the limits of which are shown on the chart, lie in the approach to the harbor.

Several wrecks, some dangerous, lie in the approaches to the port and may best be seen on the chart.

Due to the existence of debris, vessels should stay at least 0.5 mile from the head of the outer breakwater and never pass between the head of the outer breakwater and the charted position of Lighted Buoy CA5.

It is reported that development of new quays is being carried out in the area between Jetee Nouvelle and Jetee Transversale, at the SE side of the harbor.

The Moroccan government periodically prohibits all maritime activity, transiting, and anchoring in an area N and W of Casablanca. This area, which is shown on the chart, extends 3.5 miles N from the root of Jetee Moulay Youssef to position 33°40'N, 7°37'W; then 7.5 miles WSW to position 33°36.5'N, 7°45.0'W; then 3 miles S to the shore in position 33°33.5'N, 7°45.0'W.

Casablanca to Jorf Lasfar

9.13 The coast from Pointe d'El Hank to Pointe d'Azemmour, 36 miles WSW, is backed by a line of hills, 100 to 200m high, which stands parallel to the shore. Cockscomb Rock lies close offshore, 3 miles SW of Pointe d'El Hank. It is surmounted by a small tomb and marked by a beacon.

An aeronautical light is shown from a tower standing in the vicinity of an airfield, 3.2 miles SSW of Point d'El Hank.

Caution.—Due to the existence of submarine cables, an anchoring prohibited area, the limits of which are shown on the chart, lies close W of Point d'El Hank and extends up to 7 miles seaward.

9.14 Pointe de Dar Bou Azza (33°32'N., 7°49'W.), a prominent headland, is located 7 miles WSW of Cockscomb Rock. A conspicuous white building, surmounted by a belfry, stands on a hill, 1 mile SW of the extremity of the point.

Numerous shoals front the shore between Pointe de Dar Bou Azza and Pointe d'Azemmour, 26 miles SW; vessels should keep at least 1.5 miles from the coast.

Pointe d'Azemmour (33°22'N., 8°18'W.) can be identified by a wooded sand hill, shaped like a small truncated pyramid, standing on its extremity. This hill appears dark and detached above the neighboring dunes. A light is shown from a tower, 13m high, standing 1.5 miles S of the point.

Epi d'Azemmour, a spit, extends about 2 miles NW of Pointe d'Azemmour. It has a depth of 3.7m at the seaward extremity and breaks heavily with onshore winds. A patch, with a depth of 6.2m, lies about 3 miles W of the point. In bad weather, the sea breaks in a depth of 13m off the point; it should be given a berth of at least 5 miles.

The Oued Oum er Rbia, the longest river in Morocco, flows into the sea, 3 miles SW of Pointe d'Azemmour. The town of Azemmour is situated on the W bank of this river, 36m above sea level.

Cap de Mazagan (33°16'N., 8°31'W.) is located 12 miles SW of Pointe d'Azemmour. It is low, rocky, and fringed by a reef, with foul ground, which extends up to 2.5 miles ENE from it. Epi de Mazagan, a shoal, lies at the extremity of this foul ground and has a depth of 6.1m. A patch, with a depth of 9.2m, lies about 2 miles N of the cape.

Sidi Bou Afi Light is shown from a tower, 50m high, standing 0.9 mile SSW of the cape.

9.15 El Jadida (Mazagan) (33°16'N., 8°30'W.) (World Port Index No. 45795), a small harbor, is situated on the SE side of Cap de Mazagan.

Depths—Limitations.—The harbor, formed by two breakwaters, has a main quay, 75m long. It can accommodate vessels up to 2,700 dwt and 87m in length, with drafts up to 5.2m at springs and 4.3m at neaps.

Commercial operations are carried out in the roadstead by means of lighters for vessels unable to enter the harbor. It was reported (1989) that lighters were not available.

Aspect.—Sidi Moussa, a rectangular whitewashed tomb surmounted by a cupola, stands 1.8 miles SE of Sidi Bou Afi Light and is conspicuous. A conspicuous beacon stands 1 mile SSW of this tomb.

A prominent mosque tower, surmounted by a minaret and flagstaff, stands 0.6 mile NE of Sidi Bou Afi Light.

Sidi Mesbah Light is shown from a tower, with a dwelling, 15m high, standing 2.5 miles ENE of Sidi Moussa tomb and a conspicuous building stands 0.4 mile NW of it.

The old and E part of the town, near the harbor, is surrounded by a wall, 11m high. Several large buildings stand in the new part of the town situated W of the old part.

Pilotage.—There are no local pilots, but a pilot from Safi can be requested with 24 hours prior notice. The pilot boards 2 miles from the harbor entrance.

Anchorage.—Anchorage, with marginal holding ground of rock covered with sand, can be taken, in depths of 11 to 13m, about 0.7 mile ENE of the N breakwater head.

Caution.—It is advisable, especially in winter, to be ready to get underway immediately, as the scend from the heavy swell may cause deep-draft vessels to touch bottom.

9.16 The coast between Cap de Mazagan and El Jorf Lasfar (Cap Blanc du Nord), 8.5 miles SW, is backed by a barren range of hills, up to 60m high, which slope gradually to the shore and terminate in a dark and rocky cliff. It should not be approached within 2 miles as detached rocks lie offshore.

A conspicuous tomb stands on the shore of Crique de Sidi Bou Zid, 3.8 miles SW of Cap de Mazagan. The ruins of the ancient city of Tit, within which stands the village of Moulay Abdullah, are situated 2 miles SW of the tomb. A conspicuous minaret, 39m high, stands in the village and prominent white tombs stand on each side of it.

El Jorf Lasfar (Cap Blanc du Nord) (33°10'N., 8°37'W.) is comparatively low but is bordered S by a white cliff, 72m high. A light is shown from a tower, 17m high, standing on the cape.

Heavy breakers extend up to 0.7 mile off this cape in strong W winds, and it should be rounded at a distance of at least 1.5 miles. During the summer months, temporary anchorage can be taken, in depths of 9 to 20m, within the bight lying on the S of the cape.

Jorf Lasfar (33°08'N., 8°38'W.)

World Port Index No. 45796

9.17 Jorf Lasfar, a small port, serves an industrial complex and was developed for the export of phosphates and minerals. The harbor is situated 2 miles S of El Jorf Lasfar (Cap Blanc du Nord).

Tides—Currents.—It is reported that the tidal range at springs is 2.4m.

Depths—Limitations.—The harbor is protected by two breakwaters. The outer breakwater extends for a total length of 3,100m WNW, WSW, and then SW, from a point on the coast, 1.7 miles SSE of El Jorf Lasfar Light. The lee breakwater extends 1,250m NW from a point on the coast, 1 mile SSW of the root of the outer breakwater. The harbor entrance has a depth of 16m.

Berth information is given in the accompanying table.

Jorf Lasfar—Berth Information			
Berth	**Length**	**Depths**	**Remarks**
No. 1	300m	15.6m	Phosphates
No. 2	180m	12.0m	
No. 3	180m	12.0m	
No. 4	180m	12.0m	Sulfur
No. 5	180m	11.5m	Sulfur
No. 6	45m	11.5m	Acids
No. 7	45m	11.5m	Acids
No. 8	60m	15.6m	Tankers
No. 9	60m	12.7m	Tankers
No. QC10	200m	5.2-9.0m	
No. QC11	100m	3.5-5.0m	
No. 13	120m	5.2m	Ro-ro
No. 14	120	10.3m	

It is reported that vessels up to 120,000 dwt and 13.5m draft can be accommodated in the harbor.

Aspect.—It is reported that a tower, 64m high, stands in the port area 2.2 miles SSE of El Jorf Lasfar.

Lights are shown from the heads of the breakwaters but have been reported, on occasion, to be extinguished.

A light, mounted on a pylon erected on a cliff over the port, facilitates entry.

Pilotage.—Pilotage is compulsory for all vessels greater than 100 gross tons. Pilots will board at least 0.6 mile W of the breakwater; in bad weather the pilot boards inside the breakwater. Vessels transporting dangerous cargo may only maneuver during daylight hours. Vessels must provide a good lee for the pilot boat which may be hampered by heavy swells. Vessels should send an ETA via Casablanca CRS. The pilots may be contacted on VHF channel 12 or 16.

Anchorage.—Vessels may anchor within 1 to 2 miles of the outer breakwater head, but should keep well clear of the approach to the entrance.

Caution.—Heavy swells outside the harbor may cause a surge alongside the berths.

Maneuvering to pass through the harbor entrance is reported to be difficult at times as 90° to 120° turns are required from the approach to the port.

Jorf Lasfar to Safi

9.18 The coast from El Jorf Lasfar to Beddouza (Cap Cantin), 50 miles SW, is generally rocky and backed by sand

dunes, up to 15m high. A line of cliffs runs parallel to the shore at a distance of about 0.7 mile behind the dunes. This line approaches near to the shore at the ruins of Oualidia.

A dark and prominent cliff projects from the coast 4 miles S of El Jorf Lasfar and appears as an island when seen from some directions.

The ruins of Oualidia are situated 33 miles SW of El Jorf Lasfar; two passages, which connect a lagoon to the sea, lead close to them. The N passage is blocked by a sand bank. The S passage is obstructed by rocks, almost awash, leaving a narrow channel with a depth of 1.5m.

The mosque of Sidi Bou Seksou is situated 7 miles NE of Beddouza. This structure is conspicuous from seaward as it stands on a slight rise of the terrain and is isolated.

Cap Beddouza (Cap Cantin) (32°33'N., 9°17'W.) rises precipitously to a height of 60m. A light is shown from a turret on a fort, 16m high, standing on the cape. The fort is flanked by four prominent towers.

A rocky spit, with a depth of 4.6m over its outer end, extends about 1 mile W of the cape. The sea breaks over this spit and the cape should be given a berth of at least 3 miles.

The coast to the S of the cape consists of white cliffs bordered by a narrow beach of sand. Above these cliffs, hills of varying heights stand and gradually increase in height towards Pointe de la Tour, 13 miles S.

Caution.—During the sardine fishing season, from the beginning of May to the end of December, numerous sardine boats operate in the area which extends, in depths not exceeding 110m, from 20 miles N of Beddouza to Essaouira.

9.19 Cap Safi (32°22'N., 9°17'W.), located 10 miles S of Cap Beddouza, can be recognized by the irregular rocks at its base. Sidi ben Krakra, a large white tomb with a cupola, is situated on the N side of the cape and is very conspicuous from the S. A transformer station stands close S of the tomb and is more conspicuous from the N.

Pointe de la Tour (32°20'N., 9°17'W.), located 2 miles S of Cap Safi, consists of high cliffs. A light is shown from a tower, 11m high, standing midway up the cliffs, at an elevation of 88m, close E of the point.

Borj Nador, a disused light tower, is situated on a summit, 155m high, 0.6 mile NNE of the point. This square tower is very conspicuous and several radio masts, marked by obstruction lights, stand close ENE of it.

Safi (32°19'N., 9°15'W.)

World Port Index No. 45797

9.20 The port of Safi lies at the head of Rade de Safi, a large bight, which is entered between Pointe de la Tour and Sidi Rhouzia (Point Rhouzia), 5 miles S. The harbor was originally constructed for the shipping of phosphates, but now it is also a commercial and fishing port and a petroleum terminal. The harbor consists of three basins which are sheltered from the W by a breakwater. It is the natural port for the Marrakech region and is managed by the Moroccan National Port Agency.

Winds—Weather.—Between April and October, winds from the NNE to N generally blow, by day, into the roadstead and the harbor. They usually commence at about 1100 and decline at night. Occasionally, these winds may reach force 7. In winter, the winds are generally more moderate, blowing from the SW to NW. The harbor experiences, on the average, two to three storms from the W.

The swell occurs only from the end of September to early May. The harbor is well-sheltered from the NW swell, but a W swell may cause a scend in the basins.

Fog occurs frequently along the coast, but is generally not experienced at the roadstead or in the harbor.

Tides—Currents.—Tides rise 3.4m at springs and 2.8m at neaps.

Depths—Limitations.—Grand Jetee, the outer breakwater, extends 1 mile NW from a point on the shore, 2.5 miles SE of Pointe de la Tour. Jetee Transversale Nord extends W from a point on the shore, 0.7 mile N of the root of the outer breakwater. The entrance lying between its head and the outer breakwater is 190m wide. Jetee Transversale extends W into the harbor, 0.2 mile S of Jetee Transversale Nord; Mole Oblique extends WNW into the harbor 0.2 mile S of it. A basin for fishing vessels is situated at the head of the harbor, close S of Mole Oblique.

It has been reported (2010) that vessels up to 185m in length and 10.6m draft can be handled, depending upon the tide.

Aspect.—Cliffs continue along the N shore of the bight as far as Sidi Bou Zid. This very conspicuous white tomb stands on the edge of the cliffs, 1.5 miles ESE of Pointe de la Tour. A sandy beach extends SE from the tomb and fronts the cliffs as far as the city, which can be recognized from seaward by its prominent white walls and buildings.

Safi—Berth Information

Berth	Length	Depth	Remarks
Quai Tableau	120m	8.0m	Coastal vessels
Quai Mole Oblique (P1)	260m	8.5m	Grain
Quai de Commerce (P2-P5)	448m	8.0-9.0m	Ore and general cargo
Quai du Phosphates (P6)	240m	8.5m	Phosphates. Accommodates a vessel with a maximum length of 185m and a maximum draft of 10.37m
Quai du Rive (P7)	386m	10.0m	Sulfur. Accommodates a vessel with a maximum length of 186m and a maximum draft of 10.37m
Quai Nord (P9)	186m	9.0m	Phosphoric acid

A conspicuous minaret and a conspicuous house, standing at an elevation of 52m, are situated 0.6 mile and 0.9 mile, respectively, SE of Sidi Bou Zid. A conspicuous silo stands near the root of Mole Oblique and a conspicuous chimney, marked by obstruction lights, stands at a hospital, 1 mile SSE of it.

A directional sector light, which indicates the approach to the harbor, is situated on Mole Oblique. The approach is made using the white sector of this light. A lighted range indicates the harbor entrance channel and may best be seen on the chart.

Pilotage.—Pilotage is compulsory for vessels over 100 grt and is available during daylight hours only. Vessels should send their ETA 7 days in advance and confirm the ETA 48 hours and 24 hours prior to arrival. The pilots board about 0.5 mile off the breakwater; in bad weather the pilots board inside the breakwater. The pilot may be contacted on VHF channel 12 or 16.

Anchorage.—The best anchorage berth in the roadstead, in depths of 24 to 27m, lies about 0.8 mile SW of the head of the outer breakwater. The roadstead has good holding ground, but with strong W winds and heavy swells, the anchorage is untenable.

Caution.—In strong W winds, the swell causes a scend in the harbor and extra mooring lines may be required. However, it is exceptional for a vessel to have to put to sea.

Safi to Essaouira

9.21 Sidi Rhouzia (Point Rhouzia) (32°15'N., 9°16'W.), the S entrance point of Rade de Safi, is marked by a pillar surmounted by an iron mast. A prominent factory, with a pylon and a chimney, is situated near the coast, 2 miles SSE of the point.

A conspicuous beacon stands, at an elevation of 74m, 2.8 miles SSE of the point and Jorf el Yhoudi (Jorf el Houdi), a prominent red cliff, 90m high, stands 1.5 miles SSW of it.

Jorf el Ghaba (Jorf Rhoraba), a similar red cliff, 60m high, stands 8.5 miles SSW of the beacon. Several prominent houses are reported to stand along the coast between these two cliffs.

The river mouth of the Oued Tensift lies 3.4 miles SSW of Jorf el Ghabas. When viewed from the NNW, it appears as a clean break in the coastal slopes. This river, although quite large, has a bar which dries in the summer.

The ruins of a Portuguese fort are situated 1 mile N of the river mouth. Several prominent buildings stand between the fort and the river; the shore in this vicinity is fronted by a small fishing harbor.

Sidi Yssahak, a conspicuous white tomb, is situated 10 miles SW of the Oued Tensift, and a conspicuous house stands 1.5 miles E of it. Several other tombs are situated along the coast between Sidi Yssahak and Cap Hadid, 16.5 miles SW. Drying rocks lie up to 0.5 mile offshore along this part of the coast.

Caution.—It was reported (1990) that several wavemeters and measuring instruments were moored, up to 3 miles from the coast, in the vicinity of Sidi Yssahak.

9.22 Cap Hadid (31°42'N., 9°41'W.) is low and fronted by a reef which only covers at spring tides; this reef extends up to 0.8 mile W of the point and has a rock, which dries 0.9m, at its outer end. A light is shown from Cap Hadid. Vessels should give this cape a berth of at least 3 miles.

Jebel Hadid, a high mountain range, stands inland between the Oued Tensift and Cap Hadid and is visible for a great distance. It extends for 20 miles in a NE-SW direction and resembles a large island from a distance.

Sidi Yakub, a very conspicuous tomb, is situated on the SW summit of Jebel Hadid, which is 658m high and stands 7.5 miles E of Cap Hadid.

The coast between Cap Hadid and Essaouira, 12 miles SSW, consists mostly of a sandy beach backed by sand hills which are surmounted by dark bushes. Sidi Moulay Bou Zergtoun, a conspicuous white tomb, stands 3 miles S of Cap Hadid.

Caution.—A bank, with a least depth of 11m, lies about 35 miles WNW of Cap Hadid.

9.23 Essaouira (Mogador) (31°30'N., 9°47'W.) (World Port Index No. 45800) is a small open roadstead port and cargo operations are performed by the use of lighters. The anchorage roadstead lies close S of the city which stands on a low and rocky peninsula. A small harbor, formed by two breakwaters, is situated on the N side of the roadstead. It is used by lighters and boats, and is sheltered by the reefs which front the SW part of the city.

Winds—Weather.—From April to August, strong N winds blow for about 20 days per year. A period of relative calm then follows until the end of November. Storms from the S to SW occur from December to mid-March.

The swell, generally moderate and 1.5 to 2m high, is from the NW for about 300 days per year and from the SW for the remainder of the year. The strong swell, 3 to 5m high, is generally from the SW and occurs from January to March. From April to August, the strong N winds create a choppy sea and the swell remains weak until the end of December.

Tides—Currents.—Tides rise 3.5m at springs and 2.7m at neaps.

Depths—Limitations.—The main entrance channel lies N of Ilot Firaoun. The channel, which lies S of Ile d'Essaouira, leads over a shoal ridge. It is only used by boats; in bad weather, the sea breaks in this passage.

Aspect.—Ile d'Essaouira, 28m high, lies on the W side of the roadstead, 1 mile SW of the city. This island is surrounded by reefs and large rocks, except on its E side. Ilot Firaoun, an islet 25m high, lies close NE of the island.

When approaching Essaouira, the first features, which are seen from seaward, are the distant craggy summits of the Atlas Mountains. These are capped with snow and contrast with the dark ridges of the intermediate hills. On nearer approach, a narrow range of sand hills, the upper parts of which are covered with vegetation, appears to rise out of the sea. At a distance of 10 miles, the minarets and buildings of the city may be identified.

Prominent landmarks include a large minaret standing in the city; Sidi Mogdoul tomb, situated 1 mile S of the city; a radio mast standing 1.5 miles SE of the city; a white circular tower standing on the crest of a dune, 1.2 miles S of the radio mast; and a tall minaret standing at Diabet, 1.7 miles S of the city.

Sidi Mogdoul Light is shown from a tower, 17m high, standing close SW of Sidi Mogdoul tomb. A range, formed by this light and the white circular tower, leads into the roadstead.

Pilotage.—There are no pilots. A local official, upon request, will assist vessels entering the roadstead, but accepts no

responsibility. The harbor can be contacted on VHF channel 16.

Anchorage.—Large vessels can anchor outside the roadstead, in depths of 22 to 27m, about 1 mile W of the city; however, the swell is often uncomfortable and vessels should be ready to weigh anchor. The bottom to the N of the entrance generally consists of sand and that to the S generally consists of rock.

Anchorage can be taken in the roadstead, in a depth of 7.5m, about 0.4 mile S of the E breakwater head of the boat harbor, but a rocky patch, with a least depth of 4.8m, lies about 220m E of this berth.

The most sheltered anchorage lies E of Ile d'Essaouira and as close to its shore as the draft of the vessel permits. It is reported that a vessel, with a draft of 7.9m, has been handled here.

Caution.—A wreck, with a depth of 8m over it, lies about 2 miles WSW of Ile d'Esaouira.

The roadstead is very dangerous when rollers come in through the N channel. This may occur regardless of the direction of the wind, but is especially the case from December to March during SW winds.

Essaouira to Agadir

9.24 The coast from Essaouira to Cap Sim, 8 miles SSW, consists of sand hills, up to 20m high, which slope gradually to the beach. From about 1 mile N of Cap Sim, a uniform line of bushes, which resemble rocks, extends to the cape. Banc de Mogador and Banc de Sim, with depths of 2 to 6m, form a continuous rocky ridge which lies parallel to this part of the coast and extends up to 1.8 miles offshore.

Cap Sim (31°23'N., 9°50'W.), 99m high, is formed by a plateau which descends to the sea in sandy slopes. Rocky reefs extend up to 1 mile W of the cape and a shoal, with a depth of 9.8m, lies 2.5 miles W of it. Vessels are advised to stay at least 3 miles from the cape.

A light is shown from a turret on a fort, 20m high, standing on the summit of the cape. The fort is situated in an enclosure and flanked by four conspicuous towers.

The Oued Tidsi flows into the sea, 4 miles SSE of the cape, through a conspicuous opening in the coastal cliffs. Sidi Harazem is situated 2 miles E of the cape and Sidi Kaouki, with a conspicuous white house, is situated 2 miles S of it.

Anchorage, sheltered from NW to N winds, is available within the bight lying S of the cape. A vessel can obtain anchorage, in a depth of 9m, good holding ground, about 0.7 mile SE of the cape, or in a depth of 15m, about 0.6 mile farther S.

The coast between the Oued Tidsi and Cap Tafelney, 14 miles S, consists of rocky cliffs which are the seaward spurs of the Atlas Mountains. These cliffs are cut by deep valleys and backed by high plateaus.

9.25 **Cap Tafelney** (31°06'N., 9°50'W.) is dominated by a summit, 213m high, which rises 0.7 mile E of it. From the N, this cape appears as a detached spur. A rocky shoal, with a least depth of 1m, lies about 0.5 mile SSE of the cape.

Due to the existence of reefs, vessels should not approach the coast in the vicinity of the cape in depths of less than 35m.

A conspicuous tower stands on Jebel Amsittene, 905m high, which stands 10 miles ENE of the cape.

Anchorage, sheltered from E and NE winds, can be taken in the sandy bight which lies close S of Cap Tafelney. This bight is also sheltered from NNW winds, but is open to the swell. The winds generally spring up around noon in summer and heavy squalls are liable to come down from the hills in the vicinity of the cape. Vessels can anchor, in a depth of 11m, about 1 SE of the cape. The cape should be given a berth of about 1 mile when approaching this roadstead.

The coast between Cap Tafelney and Cap Rhir, 29 miles S, is mostly steep with mountains, up to 900m high, rising inland.

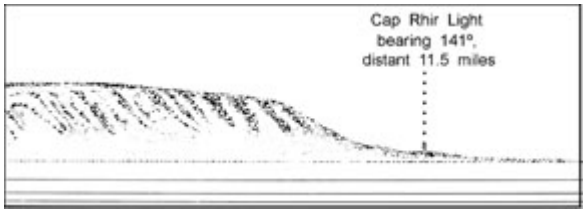
Several prominent villages and conspicuous tombs are situated along this stretch of coast, and isolated clumps of trees may also be seen from seaward.

Baie Imsouane (30°50'N., 9°49'W.), sheltered from N and NW winds, is entered close SE of Pointe d'Imsouane, 16 miles S of Cap Tefelney. The point is rather low and a large and conspicuous house stands on it. Shoal water extends up to 0.3 mile SSW of the point and it should be given a wide berth.

The bay offers excellent anchorage, in summer, in its N part. A good berth, in a depth of 10m, fine sand, lies about 0.4 mile from the head.

The mouth of the Oued Tamri (Asif Ait Ameur), 7.5 miles SSW of Pointe d'Imsouane, can be identified from seaward. The prominent tomb of Sidi Bou Zekri is situated on the N side of the river mouth.

9.26 **Cap Rhir** (30°38'N., 9°53'W.), located 18 miles SSW of Pointe d'Imsouane, is formed by a steep promontory which rises to a height of 361m, 1.2 miles NE. A light is shown from a conspicuous tower, 41m high, standing 0.4 mile NE of the cape.



Cap Rhir from NW

Shifts of wind have been frequently observed by vessels upon rounding this cape.

Jebel Tazenakht, 1,350m high, stands 15 miles E of Cap Rhir and forms the W end of the Atlas Mountains. Jebel Oulma, 1,184m high, stands 18.5 miles ESE of the cape and is conspicuous.

Pointe de Bou Irden is located 9 miles SE of Cap Rhir and a conspicuous house stands on it. The coast between this point and Agadir, 10 miles SE, is fringed by a rocky beach. Assif Tamrhakht, a river, flows through a fertile and prominent valley, 4 miles SE of Pointe de Bou Irden.

Anchorage can be taken about 0.3 mile offshore, 4 miles ESE of Cap Rhir. This anchorage lies in front of a prominent crevice in the cliff located between two gray patches. The sea is smooth here during strong NW winds, but squalls come down from the cliffs.

Good anchorage can also be taken off a sandy beach 7 miles SE of Cap Rhir. This anchorage appears to be the best in the area and affords good shelter in bad weather.

Caution.—During the fishing season, tunny nets extend up to 1.8 miles offshore in the vicinity of Pointe de Bou Irden. The coast in this area should be given a berth of 3 miles.

9.27 Agadir (30°25'N., 9°38'W.) (World Port Index No. 45803) is situated at the N end of a roadstead, 9.8 miles SE of Point de Bou Irden.

Winds—Weather.—During summer, calms and alternating land and sea breezes, from W or E, rapidly raise a temporary swell. In winter, the large Atlantic depressions raise a heavy swell, causing dangerous rollers ashore. From the end of March to the beginning of June, a strong NW wind springs up about noon and falls off only at sunset. Fog is generally frequent from the end of June to October.

Tides—Currents.—Tides rise 3.5m at springs and 2.8m at neaps.

Depths—Limitations.—Grand Bassin, the old harbor of Agadir, is protected from the W by Grande Jetee, a breakwater, which extends 0.5 mile S. It is protected from the S by Quai Sud, a mole, which extends SSW and WSW from the shore. The entrance formed between Grande Jetee and the head of Quai Sud is 200m wide.

The entrance channel has charted depths of 8.3 to 11.2m, but actual depths should be confirmed before entering.

The main basin of Grand Bassin has a total of 1,310m of berthing space, with dredged depths of 6 to 9m alongside. The fishing harbor, in the NW corner of Grand Bassin, has 740m of berthing space, with alongside depths of 3.5 to 4m.

All commercial shipping operations have been transferred to the new harbor of Port d'Anza and Agadir harbor is now only used by fishing vessels and naval craft.

The new port facilities at Port d'Anza have been constructed close NW of Grand Bassin. The facilities are protected by large breakwaters and approached through an access channel, all of which are best seen on the chart. Berth information is given in the accompanying table.

Port d'Anza—Berth Information			
Berth	**Length**	**Depth**	**Remarks**
Grain berth	300m	15.0m	Southwest side of harbor
Container berth	270m	10.5m	Northwest side of harbor
General cargo	640m	10.5m	
Jetee Est	100m	8.5m	Southeast side of harbor. Oil and LPG.

Aspect.—The town of Agadir includes El Kasba, which is situated N of the harbor. It was severely damaged by an earthquake in 1960 and then restored and sealed as a memorial to the victims; it is easily identifiable by three gigantic Arabic inscriptions on its SE side. The new part of the town is situated E of the harbor and includes some large tourist hotels. The industrial quarter lies farther SE.

A lighted buoy is moored about 0.5 miles S of the harbor entrance. This buoy is frequently moved and its position should not be relied on.

Port Aghazdis old light structure stands on the root of the outer breakwater of Port d'Anza and is very conspicuous. Other conspicuous landmarks include several radio masts standing on a hill 0.6 mile ENE of the old light and a group of silos about 0.4 mile N of the old light.

Pilotage.—Pilotage is compulsory. Pilots may be contacted on VHF channel 12 or 16 and board about 0.8 mile S of the head of Grande Jetee.

Caution.—Vessels should give the head of Grande Jetee a wide berth.

A prohibited anchorage area, the limits of which are shown on the chart, extends up to 5 miles S of the entrance to the harbor and up to 3.5 miles W of the coast.

It is reported that a marina is under construction close E of the root of Quai Sud.

Agadir to Sidi Ifni

9.28 Caution.—It is reported (1980) that navigation and fishing are prohibited within an area extending up to 13 miles from the coast between Agadir (30°25'N., 9°38'W.) and Punta Guera (20°49'N., 17°06'W.). Vessels must receive permission from the authorities to enter and navigate within this zone.

The **Oued Sous** (30°22'N., 9°37'W.) enters the sea 3 miles SSE of Agadir. The coast between is formed by a sandy beach backed by dunes. The mouth of this river is obstructed by a partly drying sand bank, which can only be crossed by vessels with drafts up to 1.5m.

A dangerous wreck lies about 1 mile NW of the river mouth.

An aeronautical light is shown from the vicinity of an airfield which is situated 2.5 miles E of the river mouth.

Tifnit, a small and prominent fishing village, is situated 11 miles SSW of the mouth of the Oued Sous.

The Oued Massa, the mouth of which lies 21 miles S of Agadir, is obstructed by a drying sandbank. The entrance of this river creates a notch in the coastal dunes which is visible from seaward.

The conspicuous tomb of Sidi Ouassai, with a white cupola, is situated within a walled village which stands on a hill 1 mile SSW of the river mouth.

Banc de Sidi Ouassai lies parallel to the coast and extends up to 5 miles SW of Sidi Ouassai. It has a least depth of 6m and extends up to 1.2 miles offshore.

The Oued Assa and the Oued Adoudou share a common river mouth and flow into the sea, 18 miles SSW of the Oued Massa. The mouth of these rivers can be recognized by two small, reddish forts which stand near it.

Between the mouth of the Oued Assa and Cap d'Aglou, 10 miles SW, the appearance of the coast changes completely. Close within the sandy beach are a series of green hills, which, as they approach the sea, form cliffs of sandstone up to 30m high. Inland, a mountain range, up to 600m high, can be seen from seaward. Much of the neighboring countryside is wooded, cultivated, and well-inhabited. Numerous brick and clay houses, some of which are large and surrounded by farm buildings, stand in this area.

A deep valley extends to the beach, 6 miles S of the Oued

Assa, and the mouth of the Oued Bou Nouar lies 0.5 mile S of it. Sidi Bou Nouar, a conspicuous mosque, stands near the mouth of this river.

Cap d'Aglou (29°42'N., 9°59'W.), low and dark, is no more than a slight projection of the coast. The Oued Salogmad enters the sea through a small conspicuous beach, 9 miles SSW of the cape. A very conspicuous conical rock lies in the river entrance and a conspicuous tomb stands on the S bank. The white houses in the village of Mirleft, situated 1.5 miles NE of the river mouth, are very prominent when the sun shines on them.

A prominent group of rocky islets, 10m high, lies about 0.3 mile offshore, 3.5 miles SSW of the Oued Salogmad. Four more rocky islets lie about 1.5 miles farther SSW.

The prominent tomb of Sidi Bu-er-reya stands 8 miles SSW of the Oued Salogmad. A T-shaped rock jetty, which dries at LW, extends 0.2 mile seaward from a small point, close W of the tomb.

9.29 Sidi Ifni (29°23'N., 10°11'W.), a small port, lies 13 miles SSW of the Oued Salogmad. The city stands on the top of cliffs, 90m high, at the S side of the Oued Ifni (Rio Sidi Ifni). A rocky beach, of pebbles and sand, lies at the mouth of this river, but its course cannot be seen at this point as it flows underground.

Winds—Weather.—Winds from the NW and SW quadrants blow most frequently and are the main cause of the strong swells.

Morning mist and haze are usually experienced at all times of the year. Fog is also quite frequent.

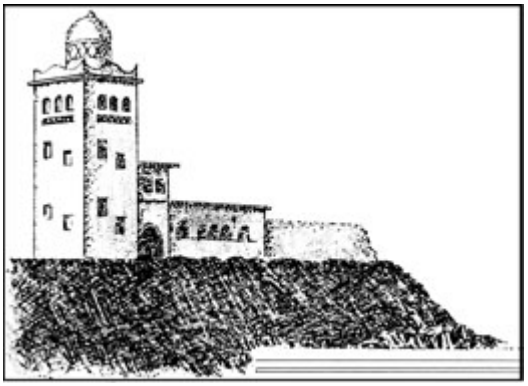
Tides—Currents.—Tides rise 3.3m at springs and 2.6m at neaps.

Generally, the current in the approaches flows S with a velocity of about 0.5 knot. It passes outside of the inshore roadstead and occasionally reaches a velocity of 0.8 knot.

A lighted buoy is moored about 1 mile SW of the mooring platform.

A new jetty has been constructed close S of the ruined transporter. This jetty has a berth, 200m long, with a depth of 2.8m alongside. A lighted buoy is moored about 0.2 mile SSW of the head of the new jetty.

Aspect.—Sidi Ifni Light is shown from a tower on a dwelling, 13m high, standing close to the cliffs in the SW part of the city.



Sidi Ifni Light

Conspicuous landmarks include a steep valley lying 2.5 miles NE of the light; the tomb of Sidi Ifni, with a white cupola, standing close N of the river mouth; a large barracks standing on the top of the cliffs, close N of the tomb; and four radio masts standing in the vicinity of an airfield, 0.5 mile SSE of the light.

Prominent landmarks include a church and an old lighthouse standing close NE of the light and a hospital, with a water tower standing nearby, situated in the S part of the city, close S of the light.

Anchorage.—Large vessels may anchor, in depths of 25 to 35m, poor holding ground of hard clay, about 2.5 miles NW of the light.

Small vessels, in good weather, can anchor, in depths of 8 to 10m, about 0.5 mile NW of the light.

Sidi Ifni to Cap Juby

9.30 Cabo Non (Cap Uarsig) (29°16'N., 10°18'W.), located 10 miles SW of Sidi Ifni, is very steep and marked close N by Sidi Uarsig, a conspicuous tomb surrounded by several buildings.

The Oued Noun enters the sea 9.5 miles SW of the cape. Its mouth lies within a small bay which is entered between two steep, rocky points. The N entrance point of this bay can be identified by a prominent white mark and a small, conical hill stands on the N bank of the river. A prominent square building, with a white tower and flagstaff, is reported to stand on the S side of the river mouth.

The entrance can be identified by the difference in geological formations on either side of the river. On the NE side, all the rocky promontories are of a red brick tint, with horizontal strata, and are hollowed out at their bases. On the SW side, there is a stretch of slate-gray colored cliff which is precipitous and about 3 miles long. This cliff has a smooth surface and a vertical strata.

A mountain range descends gradually to the sea, 4 miles S of the Oued Noun, and terminates in a conical peak. The coastal cliffs disappear here and are replaced by deep valleys separated by promontories. The mountains recede inland, 9 miles S of the Oued Noun, and leave a level plateau, 40m high and covered with vegetation, between them and the sea.

The Oued Bou Issafene flows into the sea 16 miles SW of the Oued Noun. The coast between is mostly cliffy and intersected by ravines.

Playa Blanca, a sandy beach, commences close S of the Oued Bou Issafene and extends for 15 miles to the Oued Aoreora. This beach can be recognized by an isolated and conical hill which rises close N of it, and by a table-topped mountain range which stands parallel to it, inland.

A prominent building, with several towers, is reported to stand on the S side of the mouth of the Oued Aoreora. A patch, with a depth of 8m, lies about 2.5 miles N of the mouth of this river.

The coast between the mouth of the Oued Aoreora and Cap Draa, 14 miles WSW, consists of high, sandstone cliffs with sand hills in the interior. Some rare cacti form the only visible vegetation along this stretch.

9.31 Cap Draa (Cap Dra) (28°44'N., 11°05'W.) is formed

by a gray cliff, 52m high. As the land for some distance on each side of this cape is nearly the same height, it is difficult to identify until very close offshore. The cape, when seen from the N, appears as an abrupt slope. From the S, it appears as three distinct points.

A bank, with a depth of 31m, lies about 4.5 miles NNE of the cape; vessels are advised, at night, to stay in depths of at least 37m when rounding it.

For some distance to the N and S of Cap Draa, as well as to seaward, the water has a reddish-brown tinge, with a thick muddy appearance, so that the track of a vessel is visible for some time. This discoloration, which was at one time erroneously believed to indicate the presence of shoals, was thought to be caused by the fine light sand blowing off the desert; however, it has recently been reported that it is due to fish spawn or to colonies of plankton.

The Oued Draa flows into the sea, 4.5 miles SW of Cap Draa, between several tall sand dunes. The dunes standing on the N side of the mouth have a whitish appearance. The entrance, when well open, can be identified by two isolated conical peaks which stand close together on the S bank. The ruins of an old Spanish fort stand on the N of these peaks, which is 91m high. A light marks the N side of the entrance.

The sea breaks over the rocky bottom, outside the river mouth, in depths of 7 to 9m. The entrance is 55m wide, but is completely closed by a bar. A basin, with a depth of 1.2m, lies inside the bar.

Anchorage, with good holding ground, can be taken off the mouth of the Oued Draa, but this coast is dangerous, especially from November to March, and the current sets on to it.

9.32 **Cabo Nachtigal** (28°30'N., 11°21'W.) is located 20 miles SW of Cap Draa. The coast between consists mostly of a series of cliffs.

Cabo Nachtigal Light is shown from a tower, 7m high, standing on the cape. A prominent house and a store stand close N of the light.

Uina (Meano), a boat harbor, is situated 2 miles NNE of the cape and is formed by a reef which partly dries. This harbor is about 1 mile long and 200m wide, with depths up to 5.5m in some places. It can be entered by a channel which leads through the reef or between the S extremity of the reef and the mainland.

Tan-Tan (28°30'N., 11°21'W.), a small harbor, is situated close SW of Cabo Nachtigal. It is protected by a main breakwater, 1,700m long, and has an entrance, 100m wide. There are two berths, 350m and 252m long, with depths of 4 to 6m alongside. The harbor can be contacted by VHF. A local pilot is available.

Winds from the W to N frequently raise a heavy swell in the harbor. A shoal lies near the entrance and is marked by a lighted buoy.

The harbor is mostly used by trawlers and fishing vessels, but it is reported that coasters up to 8,000 tons can be accommodated.

Vessels can obtain anchorage, in depths of 12 to 13m, 1.3 miles WSW of the main breakwater head.

9.33 The **Oued Chebeika** (28°18'N., 11°32'W.) enters the sea 16 miles SW of Cabo Nachtigal. The river entrance lies between banks which are 50m high and about 1 mile apart.

Jebel Tesegdelt, a sandy plateau, stands 13 miles SSE of the river mouth. It rises to a height of 299m and is conspicuous.

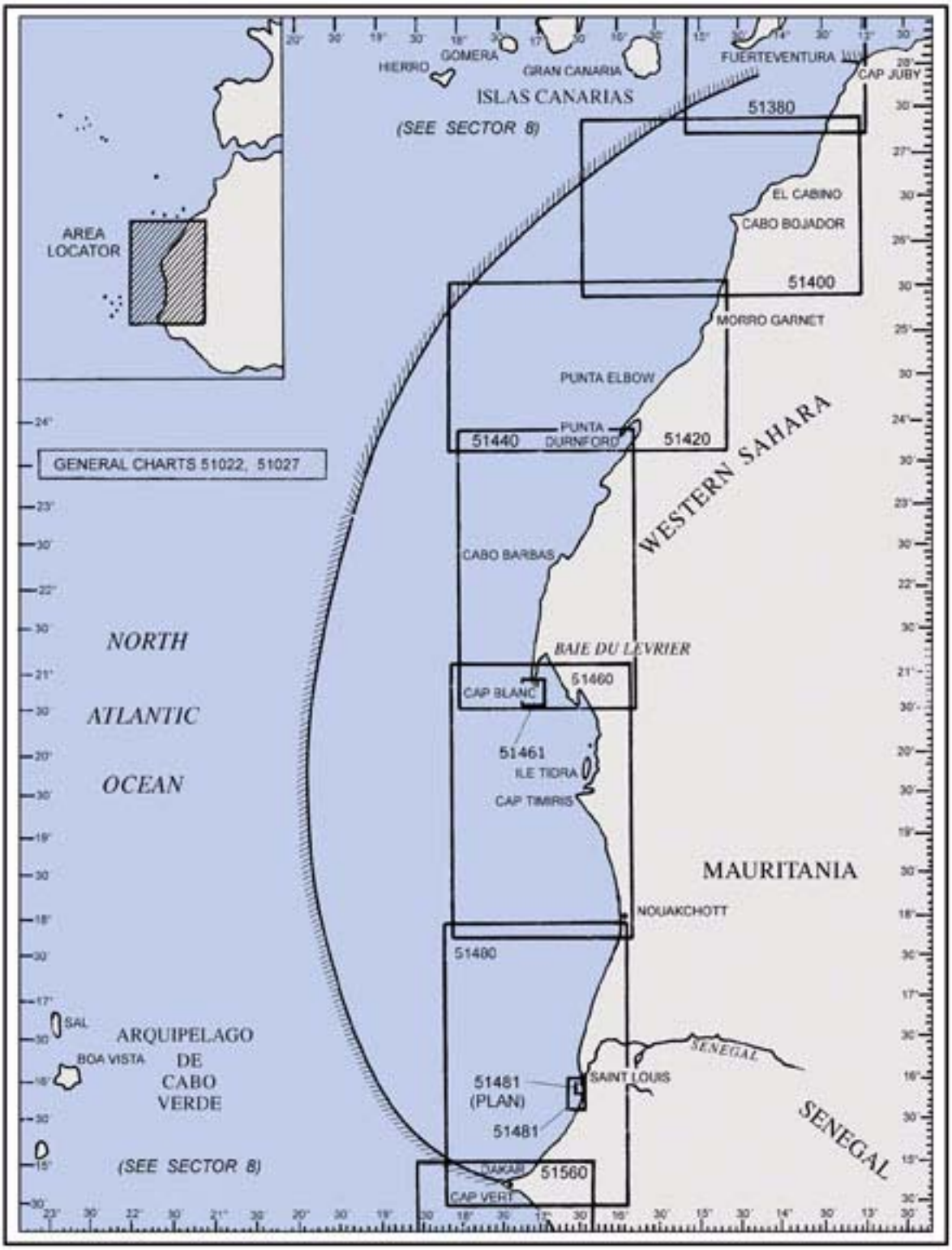
The coast between the Oued Chebeika and Punta del Morro, 29 miles WSW, is bordered by cliffs, up to 40m high, and intersected by streams.

Puerto Cansado, located 10 miles WSW of Punta del Morro, is a small inlet. It is entered between a sandy beach, on the E side, and a narrow sandy islet, on the W side. The entrance is encumbered with sand banks through which a shallow stream flows. The coast between Punta del Morro and this inlet consists of a sandy beach surmounted by sand hills.

Large sandy tracts extend W for 10 miles from Puerto Cansado to Ajfenir Point. Then, dark-colored cliffs, up to 30m high, extend W for 23 miles to Cap Juby. There is no beach at the base of these cliffs and the sea breaks and gradually encroaches on them. Where the cliffs terminate, the country becomes broken up into sand hills which are partially covered with bushes. Inland, the country consists of flat desert with occasional scrub-covered undulations.

Several stranded wrecks lie along this stretch of coast and may best be seen on the chart.

Cap Juby (Cape Yubi) (27°57'N., 12°55'W.) is described in paragraph 10.2.



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

SECTOR **10** — CHART INFORMATION

SECTOR 10

WESTERN SAHARA, MAURITANIA, AND SENEGAL—CAP JUBY TO CAP VERT

Plan.—This sector describes the W coast of Africa from Cap Juby to Cap Vert. It includes Port-Etienne, on the W side of Baie du Levrier, Nouakchott, and the Senegal River. The descriptive sequence is from the N to S.

General Remarks

10.1 The coast of Africa from Cap Juby to the mouth of the Senegal River is arid, sandy, and has no vegetation except for some sparse scrub. The coastline presents no undulations other than flattened sand dunes, the upper parts of which can scarcely be seen at distances of over 3 miles. The vast inland plateau, the surface of which is leveled by the desert winds, terminates at the coast in cliffs in some places and in gradual slopes at others. The cliffs present horizontal layers of various shades of white, the lower layers being of a more reddish tint.

Landslides cause enormous blocks of soil to fall to the base of the cliffs. These blocks resemble large rocks and the sea breaks against them with great violence. After a time, they are dissolved by the water. There is not a trace of granite on this coast as far as Cap Vert.

South of the Senegal River, the coast is formed by dunes and in some places by mounds covered with thick scrub.

Caution.—This coast should be given a wide berth, especially at night, as there are few navigational lights. Great care should be taken, especially in the morning, when refraction and mirage effects may be observed.

Oil exploration and production rigs may be encountered off the coasts described within this sector.

Concentrations of fishing vessels may be encountered off the coasts within this sector.

Fog, dense mist, or haze may obscure the coasts within this sector.

The security of vessels off this coast and at some ports is a serious problem. Reports have been received (1986-1990) of firings upon cargo vessels and fishing boats off the coasts of Mauritania and Western Sahara. These attacks have been carried out with rocket propelled grenades and small automatic weapons fired from boats. Vessels should exercise extreme caution.

Cap Juby to Puerto de Aaiun

10.2 **Cap Juby** (Cap Yubi) (27°57'N., 12°55'W.) is low, sandy, and fringed by rocks. The cape terminates in a small hill, 12m high, and several brown stone buildings of the old town stand close W of it.

The cape is bordered on the SW side by a detached reef which dries at low tide and fronts the town of Tarfaya. Casa Mar, a partly-ruined building, stands on the SW extremity of this reef, 0.8 mile SW of the cape. A prominent radio mast stands 0.5 mile ENE of this building.

Tarfaya Light is shown from a tower, 13m high, standing 2.5 miles SW of the cape.

Tarfaya Light

A depth of 14.6m was reported (1967) to lie about 5 miles NW of Cap Juby.

A small harbor, protected by two breakwaters, fronts the town of Tarfaya (Villa Bens). It has a quay, 164m long, with a depth of 6m alongside. The harbor is mostly used by fishing vessels and can be contacted on VHF channel 16. A lighted buoy is reported to be moored 1.2 miles W of the harbor entrance.

It has been reported that the harbor remains closed to commercial shipping.

An airport, with prominent hangars and workshops, is situated close NE of the town of Tarfaya.

Vessels can anchor, in a depth of 13m, about 0.5 mile WNW of Casa Mar. Anchorage can also be taken, in a depth of 30m, farther out.

The coast trends 2.3 miles SW from Tarfaya to Punta del Majorero and then 3 miles SSW to Restinga del Caracol. It is fronted by a bank, with depths of less than 9m, which extends up to 0.8 mile offshore. A prominent stranded wreck is reported to lie 0.7 mile SSW of Punta del Majorero.

Pointe Stafford, located 20 miles SW of Cap Juby, is a low and sandy point which is difficult to distinguish. However, the breakers on the reef, which fronts this point, are normally

plainly visible and with N seas and winds are very noticeable. A conspicuous stranded wreck lies close offshore, 7.8 miles SSW of the point.

Medano de Tutarran, located 19 miles SSW of Pointe Stafford, is an isolated sand dune. This dune stands close to the coast and is conspicuous due to the scrub which covers it. A well and several trees are situated close SE of the dune.

A shoal, with a least depth of 6.5m, lies about 2.3 miles NW of Medano de Tutarran.

Fum el Wad (27°12'N., 13°23'W.), the mouth of the Saguia el Hamra, is located 13 miles SSW of Medano de Tutarran and can be recognized by a mass of vegetation and a small sand dune, crowned by scrub, standing near it. The Saguia el Hamra is a dry river bed which is watered only during the rainy season as it is dammed upriver at the city of Aaiun (El Aiun).

A shoal patch, with a depth of 2.1m, lies about 1.8 miles offshore, 3.5 miles N of this river mouth.

10.3 Puerto de Aaiun (Laayoune) (27°06'N., 13°25'W.), a small port, lies 6 miles SSW of Fum el Wad. It fronts Playa de Aaiun, a slight indentation in the coast, which is bordered to the NW by an area of reefs and shoal depths.

Port Laayoune Home Page

http://www.ocpgroup.ma

The facilities here are used for the discharging of tankers and for the loading of phosphate.

Depths—Limitations.—A barge landing pier is situated off Playa de Aaiun. An oil jetty, marked at its seaward end by a light, extends 1 mile WNW from a point on the shore, 0.8 mile S of the root of the barge landing pier.

A T-headed phosphate loading pier extends 1.5 miles WNW from a point on the shore, 2.5 miles S of the root of the barge-loading pier. It has three berths, with depths up to 17m, and vessels up to 100,000 dwt can be accommodated alongside.

A general cargo pier, with a depth of 8m alongside, extends S from the middle of the phosphate pier. It can accommodate vessels up to 8,000 dwt and 120m in length.

Port Laayoune

Aspect.—The loader at the phosphate pier is conspicuous from seaward.

Prominent landmarks include Medano de Aaiun, which appears over the horizon as a white hill; the harbormaster's office; an old warehouse situated near the barge landing pier; a group of oil tanks standing 1 mile S of the warehouse; and several cranes standing midway along the pier.

At night, the installation lights are always visible; with a clear atmosphere, they can be seen from up to 25 miles off the coast.

Pilotage.—Pilotage is compulsory. Pilots board about 0.7 mile off the phosphate terminal and may be contacted on VHF channel 12. Vessels should send an ETA to the port manager 72 hours, 48 hours, and 24 hours before arrival.

Anchorage.—Vessels may anchor, in a depth of 10.5m, W of the head of the phosphate pier.

Caution.—Dangerous wrecks lie about 2 miles W and NW of the phosphate T-head pier.

Anchorage is prohibited in the vicinity of the submarine pipeline.

Puerto de Aaiun to Bahia de Rio de Oro

10.4 Medano de Santiago (26°55'N., 13°29'W.), a sand dune, stands 11.5 miles S of Playa de Aaiun and is conspicuous due to its size and proximity to the coast. Playa del Medano, a beach, lies W of this dune and is protected from the N by Arrecife del Medano, an extensive drying reef. This beach is bordered to the S by a small, sheer cliff and vessels can anchor, in a depth of 11m, about 1 mile W of it.

Mata del Desgarron, located 10 miles SSW of the beach, consists of several bushes standing near a well; from a distance it appears as a prominent black spot.

Boca de Barlovento and Boca de Sotavento, two conspicuous deep breaks in the cliffs, are located 9.5 and 12 miles SW, respectively, of Mata del Desgarron.

Oasis de Lemsid, situated 8 miles SW of Boca de Sotavento, is conspicuous due to the monotonous uniformity of the coast and appears from the NW as a dark spot. Boca de Jarro, located 8.5 miles SW of the oasis, is a break in the cliffs with a black sand and pebble beach. It appears as a light patch against the line of cliffs.

El Cabino (26°25'N., 14°11'W.), a very low point, is located 27 miles WSW of Boca de Sotavento. It is bordered by reefs on which the sea breaks almost continuously. It is reported that the breakers are more noticeable than the point itself. Several stranded wrecks lie in the vicinity of this point.

A light is shown from a tower, 32m high, standing on the point.

A detached steep-to patch, with a depth of 9.5m, lies about 9 miles WSW of El Cabino.

The coast between El Cabino and Cabo Falso Bojador, 15.5 miles SW, is low and fringed by reefs for the first 5 miles. It then rises to a sandy cliff which extends for about 6 miles. The NE part of this flat-topped cliff is known as Los Pajaitos and the SW part, which is darker in color, is known as Tierra Negro. Playa de Tigri, a low beach fringed by a reef, extends 5 miles from the S end of this cliff to Cabo Falso Bojador.

10.5 Cabo Falso Bojador (26°15'N., 14°25'W.) is formed by several tall sand dunes. A stranded wreck lies in the vicinity of this cape and aids in identifying it. A rocky shoal, with a least depth of 4.8m, extends up to 3 miles N of the cape. A

rocky patch, with a least depth of 8m, lies about 2 miles W of the cape.

Cabo Bojador Light

The coast between Cabo Falso Bojador and Cabo Bojador, 10 miles SW, consists of a sandy beach fringed by rocks. Clumps of scrub top the sand dunes which stand about 0.5 mile inland of this beach. Heavy breakers have been observed along this coast at all times.

Cabo Bojador (26°08'N., 14°30'W.), a very low point, is located 9.5 miles SW of Cabo Falso Bojador and is bordered on the S side by black rocks. From the N, the cape appears as a mass of red sand with a gradual slope towards the sea. From the W, the cape is difficult to identify, but from the S its extremity appears as a reef which dries in places and is marked by breakers even in calm weather.

A light is shown from a tower on a dwelling, 45m high, standing 0.7 mile ESE of the cape. This light has frequently been reported to be extinguished. A light is also shown from a pyramid, 6m high, standing on the W end of the cape.

For 4 miles SSE of the cape, the coast rises gradually and forms steep cliffs up to 20m high; about 2 miles farther S, the cliffs become less steep and are fronted by sandy ground. The first mile of this sandy ground is called Mancha Blanca. It is white and appears as a prominent triangular shape from seaward.

Anchorage, sheltered from winds from the NE and SE quadrants, can be taken, in a depth of 11m, muddy sand, about 1 mile SSW of Cabo Bojador. Small vessels can also anchor, in a depth of 8m, sand, about 0.6 mile S of the cape.

10.6 El Banguero (25°46'N., 14°38'W.), located 17 miles SSW of Mancha Blanca, is a low, sandy point which is conspicuous only when close to the coast. A stranded wreck lies close N of this point.

The coast between Mancha Blanca and Mesa de la Gaviota, located 2.5 miles S of El Banquero, consists of sand dunes and is bordered by a reef-fringed beach. Mesa de la Gaviota is formed by precipitous cliffs up to 30m high.

Depths of 5 to 8m lie up to 1 mile offshore along this stretch of coast.

La Malvina, a rocky reef with a least depth of 3.1m, extends up to 2 miles NNW of El Banguero. The sea breaks on this reef, even with a light sea and swell.

10.7 Punta del Corral (25°36'N., 14°41'W.) is located 8 miles SSW of Mesa de la Gaviota. A light is shown from a tower, 11m high, standing on the point.

Ensenada de los Corrales is entered close N of the point and is bordered on its N side by Restinga de la Vaca, a yellow sandy shoal, on which the sea always breaks and on which a prominent stranded wreck lies. Anchorage can be taken, in a depth of 11m, within this indentation.

A rocky bank, with a least depth of 21m, lies centered 9 miles SW of Punta del Corral.

The coast between Punta del Corral and Punta del Estante, 25 miles SSW, is formed by cliffs, 45 to 60m. Several stone pillars, 4m high, surmount these cliffs and are visible from up to 5 miles seaward.

Punta Cordero (25°21'N., 14°49'W.), located 17 miles SSW of Punta del Corral, is a rocky point on which the sea breaks heavily. It is very conspicuous, especially from the S. A small beach, with a large black rock in its N part, lies close N of the point. Another black rock, which is shaped like a tower, stands on the cliff behind this beach.

Caution.—A magnetic anomaly has been reported to exist within an area lying about 80 to 100 miles W of this section of the coast.

A dangerous wreck is reported to lie about 1 mile WSW of the point. Another wreck is reported to lie about 10 miles W of the point.

10.8 Cabo Pena Grande (25°05'N., 14°51'W.), located 15 miles S of Punta Cordero, consists of a conspicuous cliff, 147m high. It rises in three tiers which are more visible from the N than from the S. This cape is a very good landmark as it is higher than the other cliffs in the vicinity.

A light is shown from a tower, 11m high, standing on the cape. Morro del Ancla, a salient spur, lies 0.5 mile SSE of the light and appears to be a continuation of the cape.

Good anchorage, sheltered from N winds by cliffs up to 80m high, is available, in depths of 11 to 13m, close SE of the cape.

The coast between Pena Grande and Punta del Pulpito, 21 miles S, consists of continuous cliffs. These are interrupted at La Teja, a depression located 2 miles SE of Pena Grande, and at Buen Jardin, a small river valley located 9 miles farther S.

Monte Sal, a small conical mountain, stands 1.5 miles N of Buen Jardin. It is 120m high and very conspicuous.

Bahia de Garnet (Angra de los Ruivos) is a bay lying between Punta del Pulpito and Punta Siete Cabos, 8.5 miles SW. Uad Craa, a river, flows into the N part of this bay. The beach, which forms the mouth of the river, is divided into two sections by a small and prominent hill which is fronted by a reef.

Good anchorage is available within all parts of this bay. The

best berths, in depths of 7 to 20m, lie between 0.2 and 0.6 mile off the N part of the beach.

From Punta Siete Cabos, the cliffy coast trends S for 4.5 miles to Playa de las Canuelas. This sandy beach extends 8 miles WSW and is marked by breakers. El Camelitto, formed by two flat-topped sand dunes, lies at the SW end of the beach.

Cabo Leven (24°29'N., 15°10'W.) is located 13 miles SW of Punta Siete Cabos. From this cape, the coast extends in a SW direction for 35 miles to Punta Elbow. This stretch of shoreline, known as Las Almenas, consists of uniform and moderately high cliffs, without any conspicuous points.

A patch, with a depth of 10m, lies about 1.5 miles offshore, 13 miles SW of Cabo Leven.

Dangerous wrecks are reported to lie about 8 miles N, 5.5 miles NNW, and 12.5 miles SW of Cabo Leven.

To facilitate the survey of this section of coast, several stone pillars, 10m high, stand along the top of the cliffs between Cabo Leven and Punta Elbow.

Caution.—Several wrecks, some dangerous, lie up to 17 miles seaward of this stretch of coast and may best be seen on the chart.

10.9 Angra del Caballo (24°04'N., 15°35'W.), a small bay, is formed close S of Punta Elbow and is bordered by a white sandy beach which is 1.5 miles long and breaks the line of cliffs. This bay is bordered on the N side by a point which terminates in an overhanging peak. Anchorage may be taken, in depths of 6 to 7m, gravel, within the bay, but the sea always breaks on this coast.

The coast to the SW of Angra de Caballo changes in appearance and all uniformity ceases. The cliffs give way to a sloping sandy plain which is covered with sand hills. Some of these hills, which are generally conical, are isolated, but others stand in groups.

Roca Cabron (Monte de la Decepcion) (23°55'N., 15°48'W.) is located near the N end of Peninsula de Rio de Oro, 15.5 miles SW of Punta Elbow. It consists of an enormous mass of rock and sand and is a good landmark, appearing as an island from seaward. A low and sandy beach, 1.5 miles long, extends S of Roca Cabron.

Isla Herne, located 3.2 miles SSE of Roca Cabron, lies near the head of Bahia de Rio de Oro. It is flat-topped, 20m high, and can be seen over the peninsula.

Peninsula de Rio de Oro, 9m high, extends 23 miles SW and is joined at its N end to the mainland by a sandy isthmus. This isthmus is sometimes partly covered due to the tides. The peninsula becomes lower nearer to Punta Durnford, its SW extremity.

Arcipres Grande (23°44'N., 15°57'W.), located 14 miles SW of Roca Cabron, is a small promontory which is the most conspicuous point along this part of the peninsula.

Arcipres Grande Light is shown from a prominent tower, 50m high, standing on this promontory. A disused lighthouse stands on the summit of a small hill, close N of the light. A prominent line of small forts crosses the peninsula, 2.5 miles NE of the light.

A dangerous wreck is reported (1989) to lie about 16 miles W of Arcipres Grande.

The town of Dakhla (Villa Cisneros) is situated on the E side of the peninsula, 2 miles SE of Arcipres Grande. It is conspicuous from seaward and has a church, a fort, several airport installations, and several radio masts.

Arcipres Grande Light

A Dakhla fort

A light is shown from a tower, 6m high, standing on Punta Galera, the S extremity of the peninsula, which is located 0.8 mile SE of Punta Durnford.

Punta de la Sarga is located 1 mile ESE of Punta Galera. It is a low and sandy point and is the SE extremity of the peninsula.

A wreck lies about 0.7 mile S of Punta Galera; it is reported to be marked by eddies even at low tide.

Bahia de Rio de Oro

10.10 Bahia de Rio de Oro (Bahia Villa Cisneros) (23°37'N., 15°59'W.) is entered between Punta de la Sarga and Punta del Pescador, 7 miles S. The entrance is nearly blocked by an extensive and shallow sand bank on which the sea breaks. The bay is also encumbered with sandbanks, some of which dry in places.

Vessels should approach the entrance by passing S of the sand bar which extends S of Punta de la Sarga. A main channel then extends NE and provides access to the bay and to the small port of Dakhla (Villa Cisneros).

Tides—Currents.—Tides rise 2.2m at springs and 1.7m at neaps.

Off the entrance to the bay, the flood current sets E and the ebb current sets W, with rates up to 2.5 knots. Inside the bar, the tidal currents attain rates up to 2.6 knots, but strong eddies are sometimes formed on the sand bar at the commencement of the flood current. It is reported that the tidal currents set very strongly over the bar and shoals, breaking violently and indicating their locations.

Depths—Limitations.—The entrance channel to the S of Punta de la Sarga has depths of 3 to 10m, but is subject to frequent changes due to the strong tidal currents. Within the bar, the main channel has depths of 13 to 22m.

A main wharf extends SE from Dakhla and forms a harbor basin which is mostly used by fishing vessels. There is 480m of total quayage, with depths of 4 to 6.7m alongside. Vessels of up to 100m in length and 12m beam can be accommodated. It was reported (1984) that the maximum draft permitted to cross the bar was 4.5m.

Aspect.—Punta de El Aargub is located on the E side of the bay, 9 miles NE of Punta del Pescador. A prominent building and a house, in ruins, stand on the summit of this point. In addition, conspicuous buildings of a military post stand 0.7 mile S of the point.

Lighted buoys moored SW and SE of Punta de la Sarga mark the entrance to the main channel. The fairway is marked by lighted and unlighted buoys.

Pilotage.—Pilotage is compulsory for vessels over 100 grt. Pilotage may be requested on VHF channel 12 or 16 from Dakhla from 0800 to 1300 and from 1530 to 1900. Pilots usually board about 1 mile S of Punta Durnford.

Regulations.—The following instructions have been issued by the Royal Moroccan Navy for all vessels entering the port of Dakhla (Villa Cisneros):

1. Vessels must send an ETA 24 hours and 2 hours in advance.
2. Vessels must request clearance to enter the port.
3. Vessels must request pilot services in advance.

Failure to comply with the above instructions may disturb port traffic and create difficulties for the subject vessels.

Anchorage.—Anchorage outside the bar can be obtained, in a depth of 13m, about 0.5 mile SW of Punta Galera, but local knowledge is required.

Caution.—Buoys are frequently moved to mark the shifting channel.

Local knowledge is necessary to navigate the channels leading N of Dakhla and in the E part of the bay.

Bahia de Rio de Oro to Baie du Levrier

10.11 Punta del Pescador (23°31'N., 15°59'W.) is low and sandy. It is easily recognized from the N or the S, but is difficult to distinguish from the W against the coastline.

Between Punta del Pescador and Morro del Ancla Chica (Morro Ancla Chica), 12 miles SSW, the coast is bordered by flat-topped cliffs. A sandy beach backed by sand dunes extends 17 miles farther SSW to Puntilla de las Raimas.

Morro del Ancla Chica is very conspicuous, especially from the N, as it stands out against the sandy beach. Shoals, with depths of less than 10m, lie up to 4.5 miles seaward of this section of coast.

El Bajon, a sandy shoal with a least depth of 10.4m, lies parallel to the coast, about 7 miles NW of Morro del Ancla Chica. A detached patch, with a depth of 14.6m, lies about 18 miles WSW of the same point.

An unlighted buoy, which marks a wreck, is reported (1990) to be moored about 14 miles WSW of Morro del Ancla Chica.

Puertillo del Tio Quesada, located 7.5 miles SSW of Morro del Ancla Chica, is a small and prominent indentation in the coast, at the mouth of a river.

Puntilla de las Raimas is located 17 miles SW of Morro del Ancla Chica. A light is shown from a tower, 10m high, standing on the point.

Several rocky shoals extend up to 2.5 miles SSW of the point. Bajo El Tortugo, the outer shoal, is the most dangerous as the sea does not always break on it.

A shoal patch, with a depth of 8m, lies about 8.5 miles W of Puntilla de las Raimas.

10.12 Bahia de Angra de Cintra (Golfo de Cintra) (23°00'N., 16°15'W.) is entered between Puntilla de las Raimas and Puntilla Negra, 10 miles SSW. This S entrance point is dominated by Las Talaitas, which is formed by three conspicuous hills and stands close S.

Foul ground, on which the sea always breaks, extends up to 1 mile N and W of this S entrance point. Bajo Ahogado, with a least depth of 7.5m, lies in the middle of the N entrance to the bay.

A lighted range, situated on the E side of the bay, indicates a channel which leads in depths of 9 to 11m, between Bajo El Tortugo and Bajo Ahogado.

Bajo del Medio Golfo, an extensive shoal, has a least depth of 5.5m and lies between Bajo Ahogado and Puntilla Negra. A channel leading into the S part of the bay lies S of Bajo Medio Golfo.

It is reported that numerous fishing vessels use this bay for shelter.

Anchorage, sheltered from N winds, but not from the W swell, can be taken, in a depth of 11m, ESE of Bajo el Tortugo. Anchorage, with local knowledge, can also be taken, in a depth of 8m, SE of Punta de las Raimas. This berth is sheltered from W and NW winds.

Dunas de Cintra, which is composed of three or four prominent sandhills, is located 10 miles S of the bay. It is 152m high and serves as a useful landmark when approaching from the S.

10.13 Bahia de Gorrei (22°50'N., 16°19'W.), entered 5 miles S of Puntilla Negra, offers shelter from all winds, including those from the W. Morro de Gorrei, a reddish cliff, stands close SE of the N entrance point of this bay. It is 15 to 20m high and very conspicuous.

The N entrance point is bordered by reefs which continually break and have depths of less than 5m extending up to 0.8 mile SW. Reefs also border the S part of the bay and continually break.

Anchorage can be taken, in a depth of 8m, muddy sand and weed, about 0.5 mile S of Morro de Gorrei. Local knowledge is required.

Cap Barbas Light

Cabo Barbas (22°19'N., 16°41'W.) is high and cliffy with depths of less than 20m lying up to 1 mile offshore. A light is shown from a conspicuous tower, 40m high, standing on the point.

Morro Falcon, located 9 miles E of the cape, is flat-topped and 31m high. This hill is prominent and resembles a fort.

Bahia de San Cipriano, lying between Cabo Barbas and Morro Falcon, is not recommended as an anchorage as it is exposed to the prevailing N winds, heavy swell, and S currents.

Punta Galha is located 9 miles SW of Cabo Barbas. The coast between consists of series of cliffs, up to 24m high. Depths of less than 20m lie up to 1 mile offshore along this stretch. The point terminates in a bare plateau, 20m high, and is difficult to distinguish.

Islote Piedra Galha (Roque Chico) (Lahjayra Cghira), located 2.3 miles W of Punta Galha, is a steep islet with an almost flat summit, 20m high. At a distance of about 10 miles, this islet resembles a vessel under sail. From the N, the islet may be mistaken for Punta Galha which has almost the same profile. In bad weather, the sea breaks directly on this islet.

Islote Piedra Galha (Roque Chico)

Islote Virginia (Roque Grande) (Lahjayra Lakbira), a flat islet, is located 2.5 miles SSW of Islote Piedra Galha. It is 6m high and difficult to distinguish against the land.

Both of the above islets lie on a reef, fronted by foul ground, which extends up to 6 miles SSW from Punta Galha. These islets should be given a berth of at least 3 miles.

10.14 Cabo Corveiro (21°48'N., 16°59'W.) is located 27 miles SSW of Punta Galha. The coast between consists of one continuous stretch of white sand, which rises in some places to peaked hills and in others slopes gently to the sea, with a few cliffs here and there. The whole stretch has no vegetation other than some shrubs which appear as dark spots on the sand.

Cabo Corveiro is formed by a rocky cliff, which terminates in a low point on which the sea breaks. Several large rocks lie at the foot of this cape.

Bahia de Santa Ana, a slight indentation, is entered close N of Cabo Corveiro. It is fringed by a white sandy beach which extends for 7 miles and is bounded on the N side by a dark point surmounted by a low cliff. Las Canteras, a group of dark rocks, divides the bay into two parts and forms a good landmark, showing up darkly against the sand. A shoal, which breaks heavily, lies in the middle of the bay, about 1 mile offshore.

Puerto Nuevo (Boca del Bialogo) (Ensenada de Vialobos la Vieja), a small bay, lies close S of Cabo Corveiro and is sometimes used by fishing vessels. It is bordered at the S end by a dark and cliffy point.

The coast to the S of Puerto Nuevo consists of white and red sandy slopes which terminate in sandy beaches or steep cliffs, 20 to 40m high. These cliffs have been worn at their bases to such an extent that caves and small islets have been formed.

About 7 miles S of Cabo Corveiro, the coast is steep and a small prominent rock lies close off it. Farther S and about halfway up the sand hills are several distinct white patches; the N of these patches is the most conspicuous. A prominent cliff stands 10 miles farther S.

10.15 Presqu'ile du Cap Blanc (Peninsula del Cabo Blanco) (21°00'N., 17°03'W.) extends 26 miles S to Cap Blanc, its S extremity, and terminates in a plateau. The military post at Nouadhibou (Port Etienne) is situated 9.5 miles N of Cap Blanc and can easily be seen from seaward. The most conspicuous objects at the post include a square building; four radio masts, 80m high; and a water tower.

Cabo Dubouchage, located 5.6 miles NW of Cap Blanc, is low and has patches of vegetation on it. A conspicuous conical tower, with a large sand dune close S of it, stands in the N part of a bight which extends 4.5 miles N of the cape.

Dark rocky cliffs, on which the sea breaks heavily, extend 1.3 miles SSE of the cape to Punta Guera. Falso Cabo Blanco lies midway between the cape and this point.

Depths of 18.3m and 9.1m lie about 1.5 miles and 0.5 mile W, respectively, of Falso Cabo Blanco.

Punta Guera, a small and rocky promontory, is surmounted by several buildings. A light is shown from a tower, 6m high, standing on the point. A large building and a pylon, which are only visible from the S, stand 0.7 mile NE of the point.

Anchorage can be obtained, in a depth of 15m, about 0.5 mile SSW of Punta Guera. This berth is frequently used by fishing vessels.

A dangerous wreck is reported (1989) to lie about 0.3 mile SE of Punta Guera.

The coast between Punta Guera and Cap Blanc, 4.2 miles SE, first consists of a series of small sandy and rocky bights and then becomes cliffy as the cape is approached.

Caution.—It is reported (1980) that navigation and fishing are prohibited within an area extending up to 13 miles from the coast between Punta Guera (20°49'N., 17°06'W.) and Agadir (30°25'N., 9°38'W.). Vessels must receive permission from local authorities to enter and navigate within this zone.

Cap Blanc Light

10.16 Cap Blanc (20°46'N., 17°03'W.) is composed of cliffs which are subject to crumbling and are gradually being worn away by the sea; landslides are frequent. When seen from the SW or W, the cape appears as a white plateau with its extremity falling vertically to the sea.

A light is shown from a prominent tower, 20m high, standing on the cape. Ruined beacons stand on the S extremity of the cape and 0.3 mile NW of it.

Caution.—Several dangerous wrecks lie in the approach to Cap Blanc and may best be seen on the chart.

Depths of less than 20m extend up to 7 miles SW of the cape.

A local magnetic anomaly is reported to exist in the vicinity of the cape.

The boundary between Western Sahara (controlled by Morocco) and Mauritania lies in the vicinity of the center of Peninsula del Cabo Blanco.

Baie du Levrier (Levrier Bay)

10.17 Baie du Levrier, one of the largest bays on the W coast of Africa, is entered between Cap Blanc and Cap Sainte-Anne, 21 miles ESE. It is encumbered with numerous banks and shoals, and vessels with drafts over 6.1m must navigate with caution, except when proceeding to Baie de Cansado. The approach to this latter bay is deep with good landmarks.

Point Central, an important ore-loading facility and petroleum terminal, is situated 3 miles N of Cap Blanc. The port of Nouadhibou (Port Etienne) lies 5 miles farther N.

Winds—Weather.—At Nouadhibou, the winds are fresh, especially from March to October, and often laden with sand. The wind generally blows from the NNE in the morning and decreases in intensity at midday. It usually veers to the NNW in the afternoon and becomes stronger. After sunset, it becomes weak again and blows from the N.

From November to January, there is a noticeable swell which can hamper commercial operations. This swell, usually from the SE, increases in force during mid-morning and then decreases at noon. Occasionally during September, strong gusts of wind blow from the E and SE.

Tides—Currents.—Tides rise at Nouadhibou 2.2m at springs and 1.7m at neaps.

In the N approach to the bay, the flood current sets SE at rates up to 1.5 knots while the ebb current sets NW at rates up to 0.5 knot.

The flood current rounds Cap Blanc and sets N along the W side of the bay. In the vicinity of the cape, it has a maximum rate of 3 knots in summer. The ebb current sets in the opposite direction and has a maximum rate of 2.3 knots.

At Point Central, the flood current sets N, with a maximum rate of 1.5 knots, and the ebb current sets S, with a maximum rate of 2.5 knots. In the channel close E of Cap Blanc, the flood current sets NE and the ebb current sets SW.

In Baie de Cansado, the tidal currents are imperceptible, except in the shallow basin at the NW corner, where they sometimes attain rates of 4 to 5 knots.

In the N part of Baie du Levrier, the flood current sets N and the ebb current sets S. In the S part of the bay, the flood current sets E and, at a position 2 miles S of Cap Blanc, is gradually deflected to the S. The ebb current sets NW at Cap Sainte-Anne and is gradually deflected W as Cap Blanc is approached. It then turns S after the cape. Both currents have a maximum rate of 1.3 knots.

Depths—Limitations.—Banc du Milan, with a least depth of 8.8m, lies between 1.5 and 2 miles WSW of Cap Blanc. Bancs de L'Estafette, with a least depth of 10m, is extensive and extends up to 4.5 miles SSW of Cap Blanc. Bancs de la Sentinelle, with a least depth of 12m, is detached and lies centered 7 miles SSW of Cap Blanc.

Banc du Cap and Banc de la Bayadere, with depths of less than 8m, extend up to 3.8 miles S of Cap Blanc. Petit Banc, with a least depth of 12m, lies 4.5 miles SSW of the cape.

Banc du Goeland lies 5 miles SE of Cap Blanc and has a least depth of 5.1m at its SW end. Banc Vilmorin, with a least depth of 3.7m, lies 2 miles S of Banc du Goeland.

Banc du Levrier extends E and NE of Cap Blanc and has a least depth of 3.2m near its SW end. It is separated from the cape by Passe du Levrier, which is 1.4 miles wide. Banc de la Corbine and Banc du Lezard, with least depths of 5.4m and 6.7m, respectively, extend up to 6 miles N of Banc du Levrier.

Generally, the banks fronting the shores are much wider on the E side and at the head of the bay than on the W side.

Point Central has an L-shaped jetty, with an ore loading terminal in the N part and a tanker terminal in the S part. The ore berth has a depth of 16m alongside and consists of a platform, 20m wide, which rests on eight large dolphins. Vessels are moored against large pontoons secured to these dolphins.

Vessels up to 310m in length and 47m beam can be handled. Vessels up to 150,000 dwt can be accommodated, although all vessels greater than 100,000 dwt must have prior approval by

the authorities for entry. The recommended draft for large vessels in ballast or partially loaded is 12m on arrival. The maximum draft permitted at departure is 16.1m, depending on the stage and range of tide.

The tanker berth consists of a light platform resting on three dolphins. Tankers up to 140m in length can be handled.

At Pointe des Mouettes, 1 mile N of Point Central, a T-head oil jetty extends ESE from the shore. This jetty can accommodate tankers of 50,000 dwt with drafts up to 11.5m. It was reported (1985) that a fuel pier extends from the shore, close S of this oil jetty.

At Nouadhibou (Port Etienne), a commercial pier, 125m long, is connected to the shore by a bridge, 150m long. At the outer berth of this pier, vessels up to 160m in length and 7m draft can be accommodated. At the inner berth of this pier, vessels up 80m in length and 4.5m draft can be accommodated.

It was reported (1995) that a quay extends N from the root of the commercial pier. There are two berths, with a total quayage length of 1,100m, with alongside depths of 4.9 to 5.8m at the N end of the quay. Vessels up to 16,000 dwt can be accommodated.

It is reported (1989) that LPG vessels up to 100m in length can also be accommodated. Cargo can also be handled by lighters from vessels at anchor. A fishing quay, 550m long, with a depth of 6m alongside, extends N from the commercial pier.

Aspect.—The outer approach is marked by Lighted Buoy No. 0, which is moored 6 miles SSW of Cap Blanc. It is reported that this buoy is equipped with a racon. Lighted Buoy No. 2 is moored about 3 miles SSE of the cape.

A recommended route, which may best be seen on the chart, is marked by lighted buoys and leads NE past the outer lighted buoy. This route turns NNW towards the cape in the vicinity of Lighted Buoy No. 2 and then leads NE into Passe du Levrier.

The W side of Baie du Levrier, from Cap Blanc to Pointe de Cansado, 5 miles N, consists of cliffs, 10 to 20m high.

A light is shown from a building, 4m high, standing on Point de Cansado. The town is situated close SW of the light; a conspicuous water tower, marked by obstruction lights, stands 0.7 mile SSW of it.

The E shore of the bay is low and consists mainly of sandy beaches and mud flats. Sand hills, composed of fine shifting sand, stand behind the shore and are separated from it by a shallow basin which fills at springs. This part of the coast, being the edge of the Sahara Desert, is quite devoid of vegetation.

Baie de Cansado opens between Pointe de Cansado and Pointe Rey, 4 miles N. Two conspicuous towers stand in the S part of this bay, 2 miles NW of Pointe de Cansado. A light is shown from a prominent structure standing near Pointe Chacal at the head of the bay.

Farther N, the military post and radio masts previously described in paragraph 10.15 with Presqu'ile du Cap Blanc are also conspicuous.

An aeronautical light is shown from a tower standing in the vicinity of the airfield, 1.2 miles NW of Pointe Rey.

An approach channel, marked by buoys, is entered about 2 miles N of Pointe de Cansado and leads to the dredged area and facilities at Nouadhibou. A stranded wreck (Chasseloup-Laubat) lies on the N side of this channel and is always visible.

Pilotage.—Pilotage is compulsory for vessels bound to and from the ore terminal at Point Central and for vessels heading to the port of Nouadhibou (Port Etienne). Pilots can be contacted on VHF channel 12, 13, 14, or 16 and generally board in the vicinity of Lighted Buoy No. 2, about 3 miles SSE of Cap Blanc.

Vessels should send an ETA message 72 hours and 24 hours in advance. It should be addressed to Snim-Cominor Nouad-hibou coast radio station (5TA) or Dakar radio (6VA). Vessels awaiting a pilot may anchor about 1 mile NE or 0.5 mile ESE of Lighted Buoy No. 2.

Regulations.—Deep-draft vessels, with drafts of 9m or more, have the right of way in the channel between Lighted Buoy No. 2 and Point Central. These vessels must display the appropriate signals as per the International Regulations (72 COLREGS).

Anchorage.—Anchorage can be taken anywhere in the channel between Banc du Levrier and the W shore of the bay. There are depths of 11 to 15m and the bottom is generally muddy in the deeper parts of the channel, but the sea is rough when the tidal currents and the wind are opposed.

Anchorage can also be taken in Baie de Cansado over a bottom of soft mud. Vessels anchor according to draft, but it is best to moor as near as possible to the land because of the trade winds. Vessels must be careful to avoid the numerous wrecks which lie in the N part of this bay. Large vessels can anchor within an area dredged to a depth of 7.5m, about 300m SE of the commercial pier; cargo may then be handled by lighters.

Caution.—Anchoring is prohibited in an area, with a radius of 1 mile, centered on the NE extremity of the ore terminal.

When the strong trade winds blow, the air is laden with sand which almost prevents the landmarks from being seen.

Numerous wrecks, some dangerous, lie in the approaches and within the bay and may best be seen on the chart.

There is an abundance of fish in the bay. The quantity of sardines being so great that schools of these fish have sometimes been mistaken for dangers.

It has been reported on numerous occasions that the lighted aids in the approaches have been extinguished.

It has been reported that fishing boats often anchor in the approaches to the bay and frequently are unlighted.

Several dangerous wrecks lie close to the dredged channel, which leads to the facilities at Nouadhibou, and may best be seen on the chart.

Baie du Levrier to Port d'Amitie

10.18 Cap Sainte-Anne (20°41'N., 16°41'W.) is formed by a low and rocky plateau, 12m high. It is marked by a stone tower and a beacon and is the only conspicuous landmark along this section of the coast. A prominent flat-topped hill stands 1.3 miles E of the cape.

Ile des Pelicans, located 2 miles N of the cape, is surmounted by a small but prominent dune.

The coast between Cap Sainte-Anne and Cap d'Arguin, 12 miles SE, consists of sand dunes. The latter cape is very low and is marked by a beacon. Baie d'Arguin opens E of this cape.

Basse Garrigues (20°17'N., 17°13'W.), lying 31 miles SSW of Cap Blanc, has a least depth of 11m. A shoal, with a least depth of 11.3m, lies about 14 miles farther SSW. Several wrecks lie in the vicinity of Basse Garrigues and may best be seen on the chart.

10.19 Banc d'Arguin (20°10'N., 16°50'W.) borders the coast lying S of Baie du Levrier for a distance of about 80 miles and extends as far as the approaches to Cap Timiris (19°23'N., 16°32'W.).

The maximum width of this bank is 50 miles. The hydrography of this region is incomplete and vessels are advised to keep in depths of at least 30m.

The bottom on the bank is hard with a covering of sand and broken shells. No drying places have been seen on the bank, but there is evidently not much water over it, as breakers have been observed in places. The tidal currents in the vicinity of the bank attain rates up to 1.5 knots, and in addition, eddies render the steering of a vessel difficult.

The utmost vigilance should be observed when passing or approaching Banc d'Arguin. The water in the locality is often discolored. It appears brown, green, and sometimes reddish.

Fishermen with local knowledge and familiar with the route across Banc d'Arguin (Baie du Levrier to Baie de Saint-Jean) are reported to be available at Nouadhibou.

10.20 Cap Timiris (19°22'N., 16°32'W.) is the extremity of a peninsula which is marshy on its N and W sides. The central ridge of this peninsula consists of small sand dunes and terminates to the W in a white dune, 7m high. The peninsula is difficult to identify from the S, when only this dune shows above the horizon like a white islet. A conspicuous house stands at El Memrhar, 2 miles SE of the cape.

Baie de Saint Jean, which is reported to offer shelter to small craft from all winds, is entered between Cap Timiris and the SW side of Presqu'ile de Thila, 4 miles NE. The latter is a peninsula, 15m high.

Between Cap Timiris and Piton de Chedallah, 33 miles SE, the coast consists of sand hills, oriented perpendicular to the shore. These hills are separated by sebkhas or shallow lagoons.

The twin dunes of El Mahara, 35 and 39m high, stand 23 miles SE of Cap Timiris. They are reddish in color and very conspicuous from the S to SW.

Piton de Chedallah, 35m high, appears in the shape of a truncated cone. It is an especially noticeable reddish color and stands out against the dunes in the background when viewed from the W.

South of Piton de Chadallah, the dunes become lower and are no longer perpendicular to the coast.

Mottes d'Angel (18°39'N., 16°08'W.), a group of dunes, stands 18.5 miles SSE of Piton de Chadallah. Dune de Lemsid, 19m high, is the most conspicuous dune of this group because of its white color and rounded summit.

Baie de Tanit, lying 4 miles S of Dune de Lemsid, provides shelter for small vessels with local knowledge. Vessels can anchor, in a depth of 5m, about 1 mile offshore. This indentation is open, but is protected by shoal banks to the N, S, and W. It is reported to be often frequented by fishing craft from October to June.

A prominent stranded wreck lies on the beach, about 6 miles SSW of this indentation.

Banc de Ferrat, with a least depth of 7m, lies 5 miles offshore, about 10 miles SSW of Baie de Tanit.

Coppolani (Djereida) (18°19'N., 16°03'W.), a prominent military post, is situated 16 miles S of Baie de Tanit and consists of a white enclosure and a large warehouse.

Tarfayat-el-Mansour lies 12 miles S of Coppolani; landing can be made here during good weather.

Port Nouakchott Home Page

http://www.panpa.mr

10.21 Nouakchott (18°02'N., 16°01'W.), a small lighterage port, lies 17 miles S of Coppolani. The city of Nouakchott, the capital of the Islamic Republic of Mauritania, is situated 5 miles NE of the port.

Tides—Currents.—Tides rise about 2.1m at springs and 1.7m at neaps.

There is persistent ground swell off the port with an amplitude of 0.8 to 2m. The current sets S at a rate of 0.5 knot and reverses itself only a few days during the year.

Port Nouakchott

Depths—Limitations.—A pier extends 350m from the shore and is used by lighters. It is unsheltered and has depths of 7 to 8m alongside the outer end. In addition, four mooring buoys, used by lighters, lie close S of the head of this pier.

An offshore tanker berth, consisting of several mooring buoys, lies in a depth of 9m, 0.3 mile NW of the head of the pier. A submarine pipeline extends ESE from the berth to the shore.

Aspect.—In clear weather, the buildings of the city and an old fort can be seen from seaward. An aeronautical radiobeacon is situated in the vicinity of an airfield, close S of the city. A prominent radio mast, 60m high, stands 6 miles N of the pier.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channel 14 or 16. Pilots board at Landfall Lighted Buoy.

Anchorage.—Anchorage can be taken, in depths of 8 to 10m, within 1 mile W of the pier. The bottom is hard sand with good holding ground. Vessels should avoid anchoring in the vicinity of the submarine pipeline or tanker berth.

Caution.—Several dangers, including wrecks and obstructions, are reported to lie between S and SW within 1.5 miles of the pier.

The rapid onset of bad weather should carefully be observed, since the coast offers no shelter. It is recommended that vessels must at all times be capable of proceeding to open sea as the port is subject to sudden and rapid development of bad weather.

10.22 Port d'Amitie (18°00'N., 16°02'W.) is situated 2.5 miles S of Nouakchott pier. It consists of a causeway, which extends 0.3 mile W from the shore, and a pier which extends 0.3 mile WSW from the outer end of the causeway. A breakwater extends 200m SSW from the outer end of the pier.

Depths—Limitations.—Two berths, situated on the S side of the pier, have depths of 9.8m alongside. In addition, a berth, situated at the outer end of the S side, has a depth of 10.3m alongside. A turning circle, 400m in diameter, lies close S of the pier and has a depth of 10m. An approach channel, with a depth of 10m, leads to this turning circle and the berths. Vessels up to 15,000 dwt can be accommodated alongside.

It has been reported (1999) that these depths are no longer maintained by dredging.

Aspect.—A lighted buoy is moored 1.6 miles W of the head of the breakwater and a lighted range indicates the approach channel. A light is shown from a column, 37m high, standing close E of the root of the causeway.

Pilotage.—Pilotage is compulsory. The port can be contacted on VHF channel 14 or 16.

The pilot usually boards 0.5 mile W of the breakwater, or, with prior arrangement, by the Fairway Buoy.

It has been reported that if the wind speed is greater than force 4, pilotage is suspended.

Anchorage.—Vessels may anchor, in depths of 12 to 15m, near the outer lighted buoy and N of the entrance to the channel.

Caution.—A heavy swell and strong undertows may be encountered within the port.

An area of shallow water lies at the E side of the harbor and is marked by buoys.

Port d'Amitie to the Senegal River

10.23 Marigot de Maringouins (16°36'N., 16°26'W.), the old outlet of the Senegal River, lies 90 miles SSE of Port d'Amitie. The coast between is bordered by low sand dunes and presents almost no landmarks.

The coastal dunes for 10 miles to the S of Marigot de Maringouins are interrupted by a swampy plain. The coastal sand dunes, 20 to 30m high, commence again and are generally covered with dark green vegetation.

A stranded wreck lies 2.5 miles S of Marigot de Maringouins and appears as a black rock on the shore.

Ndiago (16°10'N., 16°31'W.), a village, stands near the coast with a compact group of coconut trees. A conspicuous pile of scrap iron is reported to stand on the beach in the vicinity of this village.

Anchorage can be taken, in depths of 15 to 20m, off this stretch of coast. The bottom is generally sand or mud. Heavy breakers occur along the shore and it is dangerous to attempt a landing except with local surf boats.

Langue de Barbarie, a narrow strip of land, extends 12 miles S from the vicinity of Ndiago village and separates the Senegal River from the sea.

The boundary between Mauritania and Senegal lies about 6.5 miles S of Ndiago village.

The city of Saint-Louis is situated 9 miles S of Ndiago and 11.5 miles N of the river mouth.

The Senegal River—Mouth to Saint-Louis (16°02'N., 16°30'W.)

10.24 The Senegal River is the most important river in the NW part of Africa. During the high river season, it is navigable up to 550 miles above the mouth. However, it is not accessible to vessels of any tonnage due to the bar at the entrance.

Saint-Louis, a city, is situated on an island near the W bank of the river and is connected to Langue de Barbarie, a narrow strip of land, by two fixed bridges. It is also connected to the suburb of Sohr, on the E bank of the river, by the Faidherbe Bridge, which opens. The E side of the city of Saint-Louis is quayed.

The position of the river entrance is very variable. Trade winds, from October to April, extend Langue de Barbarie to the S and the rainy season enlarges the passage. The bar is navigable except for about 80 days per year. The most favorable period is between April and December. During the dry season, the entrance may be closed by the build up of sand. When the rainy season commences, this sand is rapidly washed away. However, passage across the bar should not be attempted without a pilot. The condition of the bar is given upon request by the harbormaster at Saint-Louis, but communications with the harbormaster may only be carried out by giving 24 hours advance notice via Dakar Radio.

Tides—Current.—Tides rise about 1.6m at springs and 1.3m at neaps.

The tidal currents are, according to the season, very irregular in force and direction. Rates up to 4 knots have been recorded on the bar.

Depths—Limitations.—The depth in the passage over the bar varies with the tide and the floods. The greatest depth rarely exceeds 4m in June and July, but in September, the greatest depth rarely exceeds 2m. The admissible draft varies from 2.5 to 3m.

There are depths of 0.5 to 2m alongside the quays at Saint-Louis. Vessels up to 40m in length and 2.5m draft have been handled. Depths of 5 to 10m lie between 10 and 30m off the quays. The season of highest water is mid-October. Vessels unable to go alongside the quays anchor fore and aft close off them and are connected by gangways. The Faidherbe Bridge has a navigable opening that is 30m wide.

Aspect.—The city of Saint-Louis is easily recognized by its buildings which stand among tall trees. The Government House stands in the center and has a distinctive cupola and flagstaff. A conspicuous aqueduct stands 0.3 mile N of Government House. A military complex is located 2 miles S of Government House.

Guet N'Dar Light is shown from a framework tower, 14m high, on Langue de Barbarie, W of Government House.

Gandiole Light is shown from a 24m high octagonal tower, with black and white stripes, partially obscured by trees, standing on the coast, 7.5 miles S of Saint-Louis.

Guet N'Dar Light

Gandiole Light

The channels leading to Saint-Louis shift frequently; several beacons standing on shore assist the pilot in navigation.

An aeronautical radiobeacon is situated 3 miles NE of Saint-Louis.

Pilotage.—Pilotage is compulsory and available only during daylight hours. Vessels must request a pilot at least 48 hours in advance. Vessels should wait for the pilot in a depth of 10m; if the pilot has not boarded by 1 hour after HW, it must be assumed that the bar cannot be crossed.

Anchorage.—Anchorage can be taken, in depths of 13 to 16m, W of Saint-Louis. Although the anchorage is generally not dangerous, vessels roll heavily and tidal races, frequent in winter, may make riding uneasy. Anchorage can also be taken, in depths of 11 to 17m, off the river entrance, but the roadstead is subject to a strong swell, especially from mid-November to mid-April. During this period, a vessel may wait several days for the bar to become navigable.

The best anchorage within the river is off Saint-Louis and just below the Faidherbe Bridge.

Caution.—The mouth of the river is not easily recognized by vessels coming from the N as the heavy surf, which prevails upon the whole coast, breaks along Langue de Barbarie and prevents the surf on the bar from being distinguished. Vessels keeping too great a distance from the shore have been known to pass the entrance without seeing it. It is advisable to set course and make a landfall in the vicinity of Saint-Louis before approaching the river entrance.

Squalls or tornadoes are frequent, and when expected, a vessel under way in the river should anchor or moor until the storm abates. These tornadoes sometimes occur without warning.

A submarine cable, marked by beacons, crosses the river channel and may be best seen on the chart.

The Senegal River above Saint-Louis

10.25 Periodic inundations, caused by heavy rains, make the river navigable during a portion of the year as far as Kayes, 472 miles above Saint-Louis, as follows:

1. August 20 to September 20—vessels of 4.5m draft.
2. August 1 to October 15—vessels of 3m draft.
3. July 14 to November 10—vessels of 1.8m draft.

Podor, 147 miles above Saint-Louis, can be reached in all seasons by vessels up to about 3m draft.

During the period of LW, from December to June, only lighters can pass Mafou, situated 182 miles above Saint-Louis.

The periodic inundations allow the cultivation of extensive areas that would otherwise remain sterile. Though the rains commence early in May, the river does not begin to rise until June. The water level then rises rapidly, first filling the numerous delta channels; then the real rise takes place, inundating vast areas.

The inundation spreads very slowly, and the maximum rise at Saint-Louis occurs near the end of October, while at Kayes the river level is already falling.

According to the average of several years' observations, the approximate dates of maximum rise are, as follows:

1. Saint-Louis—November 1.
2. Richard Toll (80 miles above Saint-Louis)—October 22.
3. Podor (147 miles above Saint-Louis)—October 10.
4. Salde (260 miles above Saint-Louis)—September 20.
5. Bakel (403 miles above Saint-Louis)—September 1.

When the rains cease, the water level falls rapidly in the upper reaches, but slower in the lower reaches, due to the lakes and branch channels discharging into the river; the flood waters lying over the inundated plains also flow to the W and into the Senegal River and the branches that discharge into it.

In average years, the water is fresh at Saint-Louis at the beginning of August. The currents, in general, do not reverse at the bar after the first two weeks of August, when the fresh water of the floods stem the tide. At the end of the rainy season (November), the salt water comes back up river, and at the end of the dry season, reaches a point variable with the size of the preceding flood, oscillating between Richard Toll and Dagana, which lies 93 miles above Saint-Louis.

Sailing Directions for the river can be referred to at the harbormaster's office at Saint-Louis and at the Bureau des Affaires Maritimes de Dakar. A pilot for the upper river is necessary.

Mouth of the Senegal River to Cap Vert

10.26 Cayar (14°55'N., 17°07'W.), a village, stands 66 miles SW of the mouth of the Senegal River. The coast be-

tween is generally clear of offshore dangers. It was reported (1988) that a dangerous wreck lies 6.5 miles offshore, about 30 miles SW of Saint-Louis.

Lompoul, a yellow sand dune, stands 44 miles SSW of Saint-Louis. It is about 35m high and very conspicuous.

Fosse de Cayar, a narrow and deep canyon, extends WNW from the vicinity of Cayar and a depth of 105m lies about 0.5 mile W of the village. This canyon is useful when determining the position of a vessel.

The sea breaks heavily along this entire coast, except at Cayar, where the deep canyon extends near to the shore. It breaks very heavily between Cayar and Cap Vert.

It is reported that several buoys have been moored, up to 4 miles offshore, in the vicinity of Cayar.

The coast lying S of the mouth of the Senegal River consists of monotonous sand dunes, low and covered with scattered brush. Then, to the S of Lompoul dune, the coast consists of little mounds covered with thick brush.

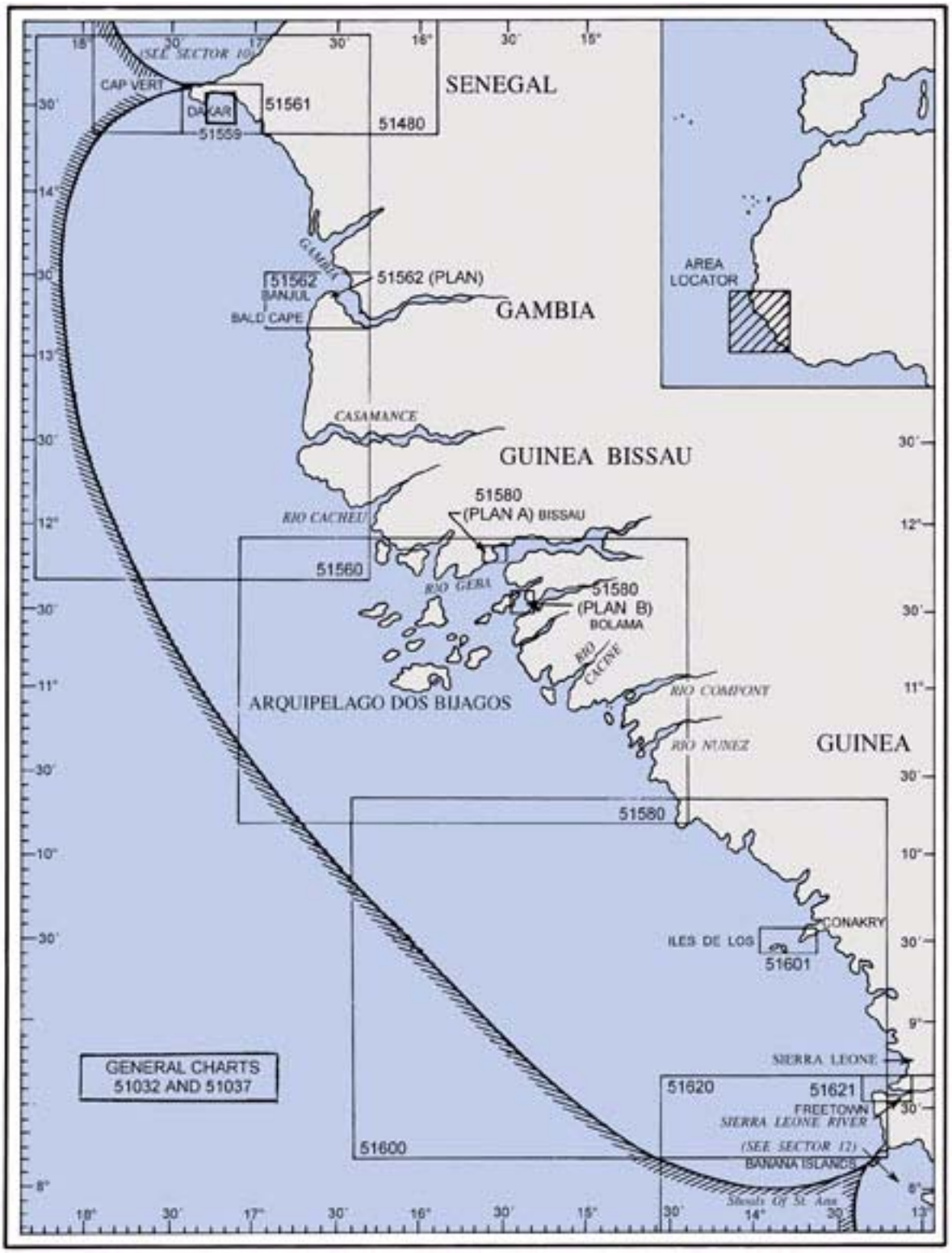
About 20 miles SW of Lompoul, the lagoon at Bono is surrounded by greenery and prominent groups of tall trees. About 6 miles farther SW, a small black hill, 36m high, stands with a prominent reddish stripe. Les Petites Mamelles, formed by two conical hills, stands 2 miles NNE of Cayar. These hills are 45m high and conspicuous from seaward.

Baie de Yof, a slight bight, lies SW of Cayar and should not be too closely approached as the currents set strongly towards its shore.

The coast from Cayar to Butte de Camberene (Kamberene Hill), 19 miles WSW, consists of low sand dunes which have numerous trees showing above their crests. These dunes are backed by shallow lagoons.

Camberene (14°46'N., 17°25'W.), a small village, stands 20 miles WSW of Cayar. Butte de Camberene, a hill, forms the E limit of Presqu'ile du Cap Vert and stands 1 mile ESE of the village. It is 37m high and surmounted by a conspicuous water tank. A prominent radio mast, marked by obstruction lights, stands near the coast, 1 mile ENE of the village.

Presqu'ile du Cap Vert (14°42'N., 16°27'W.) is described in paragraph 11.2.



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

SECTOR **11** — CHART INFORMATION

SECTOR 11

SENEGAL, GUINEA-BISSAU, AND GUINEA—PRESQUI'LE DU CAP VERT TO THE BANANA ISLANDS

Plan.—This sector describes the W coast of Africa from Cap Vert to the Banana Islands. It includes the important ports of Dakar, Bathurst, Conakry, and Freetown. The descriptive sequence is from the NW to SE.

General Remarks

11.1 Oil exploration installations, facilities, and related vessels may be encountered offshore in the waters described by this sector.

The security of vessels navigating in the waters described by this sector has been reported as a serious problem. The authorities have received numerous reports of vessels having been attacked by gangs of thieves. Generally, these attacks have taken place at the outer anchorages, but some have been while vessels were at sea or alongside. Open lights used by the thieves also pose a fire hazard. Mariners are advised to keep a constant watch and not permit any unauthorized craft to come alongside.

During the winter months, a cold wind blows from the Sahara Desert over sections of the coast described within this sector. This wind, known as the harmattan, carries dust and sand which at times reduces visibility.

Cap Vert Light

Presqu'ile du Cap Vert

11.2 **Cap Vert** (Cape Verde) (14°43'N., 17°30'W.) is the name generally given to the end of Presqu'ile du Cap Vert, which forms the W side of Baie de Goree. Cap Vert is actually a point on the SW side of the peninsula, 2 miles SE of its W extremity. The peninsula consists of moderately-high land which rises gradually to several hillocks near Cap Vert.

Les Mamelles, the two highest hillocks, rise to heights of 95m and 105m and appear as islets from a distance. They are quite distinct and are covered with stunted vegetation during the rainy season, when they form quite a contrast against the barren coast to the N.

Cap Vert Light is shown from a tower with a dwelling, 16m high, standing on the W and highest hillock. A signal station stands close to the light; an aeronautical radiobeacon is situated 1.5 miles ESE of it.

Pointe des Almadies (14°45'N., 17°32'W.), the W extremity of Presqu'ile du Cap Vert, is formed by basaltic formation. This point is 15m high; an old lighthouse stands on it.

Chaussee des Almadies, a reef with rocks up to 3m high lying on it, extend about 1 mile W of the point. A light is shown from a tower, 15m high, standing on the outer rock of this reef. The sea breaks up to about 0.3 mile W of the light and then the depths increase rapidly.

Butte de Camberene (Kamberene Hill), described in paragraph 10.26, stands 7 miles E of Pointe des Almadies and forms the E extremity of the peninsula.

Ile de Yof, 10m high, lies 3.2 miles ENE of Pointe des Almadies. This islet stands on the seward end of a reef which extends 0.3 mile NE from the coast. Ile de Ngor, 15m high, lies 1 mile NE of Pointe des Almadies and is joined to the coast, on its SE side, by a ledge of rocks which forms a basin open to the W.

Pointe des Almadies Light and nearby wreck

Hotel Ngor, a large building, stands on the mainland coast SE of Ile de Ngor and is very conspicuous. An airport is situated close SE of this hotel and several buildings standing in its vicinity are conspicuous from seaward.

The coast between Cap Vert and Cap Manuel, 6 miles SE, consists of reddish cliffs with small sandy beaches in places.

11.3 **Cap Manuel** (14°39'N., 17°26'W.), 40m high, is dark and descends steeply to the sea. A light is shown from a tower on a dwelling, 14m high, standing on the cape. An auxiliary light is shown from a structure, 12m high, joined to the S side of the light. This light should not be confused with the light on Cap Vert.

Banc Manuel, with a least depth of 7m, extends up to 0.5 mile WSW of this cape. Banc du Seminole, with a least depth of 20m, lies about 3.5 miles SW of the cape.

Ile de la Madeleine (14°39'N., 17°28'W.), 30m high, lies 2.3 miles W of Cap Manuel and is surrounded by rocks. Ile Lougne, 27m high, lies close SE of Ile de la Madeleine. A reef, with depths of less than 6m, extends from these islands to the peninsula. In this vicinity, vessels should remain in depths of at least 20m.

Conspicuous landmarks between Cap Vert and Cap Manuel include several radio masts standing 3.5 miles E of Cap Vert Light; a water tank standing 1.5 miles S of the radio masts; a cemetery situated 2 miles NW of Cap Manuel; and the main buildings of the city of Dakar which are conspicuous from offshore.

It is reported that good anchorage during a fresh trade wind can be obtained, in a depth of 22m, gravel, about 0.4 mile NW of the W end of Ile de Ngor. Good anchorage can also be found, in a depth of 21m, gray sand, about 1.2 miles WNW of Cap Vert Light.

Caution.—South of Les Mamelles, vessels should anchor farther out as rollers form at a considerable distance offshore with a heavy W swell.

An unexploded ordnance dumping area, the limits of which are shown on the chart, lies centered 14 miles SW of Cap Manuel.

Due to the existence of submarine cables, an anchoring and fishing prohibited area, the limits of which are shown on the chart, extends up to 9 miles S and 18 miles W of Cap Manuel.

Dakar (14°41'N., 17°26'W.)

World Port Index No. 45820

11.4 The port of Dakar and Rade de Dakar lie on the W side of Baie de Goree. The city of Dakar is the capital of Senegal; the port is an important resupply terminal, especially for fuel and water. The harbor is formed by two breakwaters and is large enough for maneuvering without tugs, when weather conditions are favorable, although tugs are available. The facilities of the port include an offshore tanker terminal.

Dakar Home Page

http://www.portdakar.sn

Winds—Weather.—Fog may occur a few days per month, especially in January and February. It generally forms before sunrise and clears by the end of the morning.

In the rainy season, from June to November, swells from the S occur off the entrance and are felt in some parts of the harbor.

Squalls from the S sometimes render Rade de Dakar impracticable for boats.

Tides—Currents.—Tides rise 1.6m at springs and 1.3m at neaps.

The tidal currents in Rade de Dakar are only slightly perceptible. The tidal currents in the harbor are weak; they enter on the N side of the entrance, flow in a counterclockwise direction, and leave near the S jetty head.

Depths—Limitations.—Generally, vessels up to 300m in length and 10m draft can enter at all stages of the tide. Vessels up to 12m draft may enter at HW, except possibly in the stormy season, between mid-August and mid-October. It is reported that a vessel of 330m in length has been handled in the harbor.

The entrance channel is about 200m wide and is dredged to a depth of 11m. Depths of 10 to 11m lie in the W part of the harbor and a channel, dredged to a depth of 11m, leads NW to Mole No. 4. The turning basin, lying E of Mole No. 4, is also dredged to a depth of 11m and is used by large ore carriers which load at Mole No. 5. The basin lying between Mole No. 5 and Mole No. 6 has a depth 11m.

M'Bao Offshore Tanker is situated 2 miles NE of Ile de Goree. It consists of a multi-mooring buoy berth and lies in a depth of 15m. A submarine pipeline extends N and NE from the berth to the shore and is marked by a lighted buoy which is moored 3 miles E of Pointe de Bel-Air.

Dakar—Pier Information

Berth	Length	Depth alongside	Remarks
Mole 1			
Berths 15 to 17	460m	10.0m	Containers.
Berth 14	140m	10.0m	
Berths 11 to 13	410m	10.0m	
Mole 2			
Berths 24 and 25	320m	8.5m	General cargo.
Berth 23	100m	8.5m	General cargo.
Berths 21 and 22	320m	8.5m	General cargo.
Middle Basin-Berth 102	260m	8.5-10.0m	

Dakar—Pier Information			
Berth	**Length**	**Depth alongside**	**Remarks**
Mole 3—West face of South Jetty			
Berths 31 to 33	370m	10.0m	General cargo. Free zone for cargo in transit to Mali.
East Basin-Berth 203	160m	8.5-10.0m	
Mole 4			
West face	260m	5.0m	
Berth 45	120m	7.0-10.0m	Petroleum.
Berths 41 to 44	470m	10.0m	
River face	80m	7.0m	
Mole 5			
Berth 51	170m	12.0m	Phosphate.
Berth 52	160m	8.0m	
River quay	90m	7.0m	
Container Terminal			
Berths 62 and 63	600m	9.0-11.6m	
East face	270m	4.0-5.0m	
Northwest Basin			
Berth 706	230m	4.0-10.0m	Phosphate.
Mole 8			
Berths 84 to 86	380m	10.0m	
Berth 83	150m	10.0m	
Berths 81 and 82	320m	10.0m	
Oil Basin			
Berth 819	190m	4.0m	
Petroleum Wharf			
Berth 92N and 92 S	240m	11.0-12.0m	
Berth 91N and 91S	230m	12.0m	
River quay-Berth 910	150m	4.0m	
North Jetty—West face			
Berth 01	90m	10.0m	
Berth 02	90m	10.0m	
Mole 10—Fishing Pier			
Berths 106 and 107	360m	7.0m	
Berth 104	360m	10.0m	
Berth 101 to 103	550m	7.0m	

Tankers, with drafts up to 13m, can be handled. Vessels generally berth in daylight only, but may leave at any time. Another multi-mooring buoy berth, used for the discharge of ammonia, lies at the seaward end of a submarine pipeline which extends 0.5 mile SW from the shore, close E of the oil pipeline.

Actual depths are reported deeper than charted depths in the port.

Dakar Port (partial)

Aspect.—Baie de Goree lies between Cap Manuel and Cap Rouge, 15 miles E. It is the largest and safest bay on the W coast of Africa, even though exposed to S winds.

Pointe de Dakar is located 1.5 miles NNE of Cap Manuel. The coast between is dominated by the city of Dakar. Several conspicuous radio masts stand on the point and a breakwater extends 0.3 mile SE of it.

Ile de Goree, 35m high, lies 1.2 miles E of Pointe de Dakar. It is dark in color, with reddish or yellow rocks, and is surrounded by large stone blocks. The swell breaks heavily on this island. A fort marks the N extremity of the island and its S part is surmounted by a castle. A light is shown from a tower, 3m high, standing on a prominent white building, at the S extremity of the island.

Submerged obstructions lie between the S part of this island and the breakwater which extends from Point de Dakar.

A stranded wreck, marked by a lighted buoy, lies close NE of the N extremity of Ile de Goree.

Pointe de Bel-Air, 21m high, is located 2 miles N of Pointe de Dakar. The port and city of Dakar extend to this point and a spit, with depths of less than 5m, extends up to 0.5 mile E of it.

Banc de Bel-Air lies 1 mile E of the Pointe de Bel-Air. It has a least depth of 3m and consists of rocky pinnacles covered with weeds. A dangerous wreck, marked by a buoy, lies about 1 mile ESE of this bank.

The N shore of the bay lying E of Rade de Dakar consists of a white sandy beach backed by low land which is covered with trees. The village of Tiaroye, with a conspicuous mosque, is situated 3 miles NE of Pointe de Bel-Air.

A prominent water tower, marked by obstruction lights, stands 1 mile W of the mosque. A conspicuous refinery stands 2 miles E of the mosque at M'Bao; its flares make an excellent landmark at night. In the city of Dakar, the Grande Mosque, with a conspicuous minaret, stands 1.2 miles WNW of Pointe de Dakar. The conspicuous cathedral and government building stand 1 mile N of Cap Manuel.

Lighted Buoy No. 12 is moored about 0.5 mile NE of the N end of Ile de Goree and marks the approach to the harbor. A shoal, with a depth of 11m, lies close NW of this lighted buoy.

Lighted Buoy No. 1 is moored about 1.5 miles NE of the N end of Ile de Goree and marks the approach to the offshore tanker terminal berth.

Pilotage.—Pilotage is compulsory for vessels of 1,500 metric tons and over.

Pilots can be contacted on VHF channel 14 or 16 and board about 0.3 mile NNE of Lighted Buoy No. 12.

Regulations.—Vessels entering the harbor must pass N of Lighted Buoy No. 12; vessels leaving the harbor must pass S of Lighted Buoy No. 12.

Vessels must not pass between Pointe de Dakar and Ile de Goree.

Vessels should send an ETA 24 in advance and confirm arrival time 2 hours, 1 hour, and 20 minutes before arrival.

Anchorage.—Rade de Dakar, which extends N and NE of Ile de Goree and E of Dakar Harbor, is well-sheltered except during the rainy season when tornadoes blow from the E and quickly raise a choppy sea. The roadstead has depths which decrease gradually from 19m in its outer part and lie over a bottom of sand; in the S part, the sand is mixed with shells and gravel.

Caution.—Due to silting, depths alongside the berths in the harbor may change.

A prohibited passage area, the limits of which are shown on the chart, lies between Ile de Goree and Pointe de Dakar.

A danger area, the limits of which are shown on the chart, lies about 2 miles NE of the offshore oil berth. This area, which is marked by buoys, extends 2 miles seaward from the shore. Banc de la Resolute lies within the danger area.

Several wrecks, some dangerous, lie in the approaches to the port and may best be seen on the chart.

Dakar to the Riviere Saloum

11.5 Cap de Biches (14°43'N., 17°18'W.), located 2.5 miles ESE of the M'Bao refinery, is an ill-defined point formed by a hill, 12m high. The cape slopes steeply seaward and a spit, with depths of less than 1.5m, extends about 0.5 mile S from it. A prominent power station stands close N of this cape.

The town of Rufisque is situated 1.5 miles ESE of Cap de Biches. Piers, in ruins, front the town and are no longer used. A light is shown from a tower, 11m high, standing at the W side of the town. Several radio masts, 236m high, stand 2.5 miles N of the light.

Banc de Rufisque, a flat rocky patch with a least depth of 8m, lies about 2.5 miles SW of Rufisque. A dangerous wreck lies, position approximate, lies about 3.5 miles SSW of this bank.

Cap Rouge (14°38'N., 17°11'W.), an ill-defined point of red dish color, is located 8.5 miles SE of Rufisque. The coast between is low and formed by a narrow sand and shingle beach which is backed by shallow lagoons. The walls of a factory, in ruins, mark the village of Siendou, situated midway along this stretch of shoreline. A chain of dunes, 50 to 100m high, terminates at the coast on each side of this cape. A conspicuous tree is reported to stand 0.5 mile E of the cape.

The coast between Cap Rouge and Pointe de Sangomar, 54 miles SSE, is generally low, wooded, and fringed by a sandy beach with rocks in places. Landmarks are infrequent and navigation near the shore is especially dangerous in several places. The sea generally breaks heavily along this coast.

About 0.8 mile SE of Cap Rouge, the slopes of a hill, 46m high, terminate in a conspicuous red cliff, cut by a ravine. A sandy beach, with a few low cliffs, then extends SE from the cliff to the village of Toubab Dialao (Toubab Guillao). This village can be identified by a prominent hill, 70m high, standing 1.5 miles E of it.

The village of Popenguine, situated 4 miles SE of Toubab Dialao, can be recognized by the grey belfry and red tiled roof of its mission which is visible over the trees. This village stands at the opening of a valley. A prominent peak, 50m high, stands on the N side of the valley; another prominent peak, 80m high, stands on the S side. The latter peak is the highest point in this vicinity and slopes seaward to form a cliff, 72m high, which is known as Cap de Naze. This cliff stands out against the background of greyish brush and is fronted by a bank, with depths of less than 5m, which extends up to 0.3 mile offshore.

11.6 Pointe Gombaru (14°30'N., 17°05'W.), located 2.5 miles SSE of Cap de Naze, is a low point fronted by rocks. Rocks border the coast between this point and the mouth of the river Somone, 0.4 mile SSE. The entrance of this river is almost entirely blocked by a drying sandbank.

The coast between Pointe Gombaru and Mbour, 10 miles SE, is low and covered with vegetation and large trees. The villages of Ngaparou, Sali, and Portugal are situated along this stretch.

Anchorage can be taken, in depths of 8 to 10m, sand bottom, off Portugal and a landing can be made at a break in the reef, 0.5 mile wide, close W of the village.

Mbour (14°24'N., 16°58'W.), an important village, can be recognized by the prominent water tower standing in its S part. Reefs extend up to 0.7 mile SW of the N part of the village and are marked by a buoy. A shallow wreck lies about 5.5 miles SW of the village. Anchorage can be taken, in a depth of 8m, close W of the village. A small pier fronts the village and is used by lighters.

The coast between Mbour and Pointe Senti, 15 miles SSE, is flat, monotonous, and presents few landmarks.

The village of Nianing, situated 4 miles SSE of Mbour, can be recognized by an ancient residence standing near its S end. Pointe Sarene, on which the sea breaks, is located 7.5 miles SSE of Mbour. It is low and difficult to identify. The village of Sarene is situated 0.8 mile E of this point. Ngazobil, a religious and agricultural establishment, is situated 1 mile N of Pointe Senti and can be recognized at a considerable distance by its large building with a red roof.

The village of Joal-Fadiout is situated 2.5 miles SE of Pointe Senti. It stands on a peninsula at the NW side of a drying estuary which is about 2 miles wide. This village can be recognized by a large white house which is extended on each side by a white wall. A light is shown from a framework tower, 13m high, standing in the S part of the village.

Banc de Mbour, with depths of less than 5m, extends from a position lying about 5 miles WNW of Pointe Sarene to a position lying about 6 miles WSW of Pointe Sarene. Its least depth of 2.3m and a depth of 2.8m lie 4.5 miles W and 5 miles WSW, respectively, of Pointe Sarene. A lighted buoy is moored about 7 miles W of Pointe Sarene and marks the W side of this bank.

A dangerous wreck is reported to lie about 11 miles WSW of Pointe Senti.

Navigation between Banc de Mbour and the coastal bank is dangerous due to the presence of numerous shoal patches with depths of 3 to 5m. Vessels without local knowledge should remain in depths of over 17m when in the vicinity of the bank.

The coastal bank, with depths of less than 5m, extends in places up to 5 miles offshore and may best be seen on the chart.

Banc de Guque and Banc de Faguque, with depths of less than 5m, lie near the outer edge of the coastal bank; they extend up to 6.5 miles WNW and 5 miles SW, respectively, of Joal Light. Depths of less than 3m lie about 4.5 miles WNW and 2.5 miles SW of Joal Light. A shoal patch, with a depth of 1.2m, lies about 3.5 miles SW of Joal Light.

The drying estuary, lying close S of Joal, is extended offshore by large drying sand banks; the coast to the S of it is flat and regular. The villages of Ngalou and Palmarin are situated 6 miles and 8.5 miles SSE, respectively, of the drying estuary. They are visible from seaward, especially in the evening.

Several prominent reddish dunes stand 2.5 miles S of Palmarin. The coast between these dunes and Pointe de Sangomar, 9 miles S, is formed by a low and narrow peninsula within which is the River Saloum. A group of trees hides the ruins of the factory at Djifere, 5 miles S of Palmarin. A dangerous wreck lies about 3.5 miles SW of Djifere. A stranded wreck is reported (1993) to lie about 7 miles W of Djifere.

The village of Diokhane is situated 2 miles S of Djifere. Four prominent towers of a mosque are situated at Dionouar, 3 miles SE of Djifere, on the E bank of the river. These towers may be seen from the vicinity of Diokhane over the vegetation on the peninsula.

Pointe de Sangomar (13°50'N., 16°46'W.), the S extremity of the peninsula, is low and sandy, with little vegetation. Banc du Nord, on which the sea breaks, extends 1.5 miles S of the point. The ruins of disused customs house, surmounted by a beacon, stand 1.2 miles N of the point.

The Riviere Saloum

11.7 The **Riviere Saloum** (13°51'N., 16°45'W.) is entered between Pointe de Sangomar and Pointe Jackonsa, 5 miles SE. The river is navigable by vessels up to 105m in length as far as Kaolack, 66 miles above the mouth, depending upon the tides and the depths on the bar. The river entrance is obstructed by several shifting sandbanks and is subject to violent currents. It is also subject to frequent changes and should not be attempted without a pilot.

The harbormaster at Kaolack should be contacted for the latest information concerning entry.

Tides—Currents.—Tides rise 2.5m at springs and 1.3m at neaps. Depths on the bar and in the river can be greatly influenced by the wind and may increase or decrease by as much as 0.2m.

In the channel over the bar, the flood tidal current sets ESE with a maximum rate of 0.6 knot. The ebb tidal current sets WNW with a maximum rate of 1 knot. At Foundiougne and Kaolack, the tidal currents have rates of less than 1 knot.

The salinity of the water in the Saloum is greater than that of the sea, increasing upriver until it reaches a maximum at Kaolack.

Winds—Weather.—The dry season lasts from November to June, with prevailing N winds. The rain, or tornado season,

lasts from July to November, with prevailing SW to W winds.

Depths—Limitations.—The channel over the bar is very winding and extends in an ESE direction. Inside the bar, it passes between the S extremity of Banc du Nord and Ile de Sable, and then N along the E side of Banc du Nord.

Ile de Sable, a drying sandbank, is extended E and then NE by training walls which, by deflecting the river current, contribute to the maintenance of the channel depths.

Saloum Entrance Lighted Buoy is moored about 4.5 miles W of Pointe de Sangomar. The entrance channel is marked by buoys and has a width in places of less than 40m.

It was reported (1987) that the depth over the bar was 2.9m. An underkeel clearance of 0.5m over the bar is recommended. It is reported that vessels with a deep draft will stir up mud, even in calm weather, and frequently touch bottom even in a light swell. Vessels should cross the bar from 2 hours before to 1 hour after HW.

From Pointe de Sangomar to Foundiougne, the river is obstructed by several mud banks, drying flats, and islets. The fairway is marked by buoys.

Marigot de Sangako leads off the river, 22 miles above the entrance. This creek is important as it forms a waterway for vessels up to 50m in length and 2.8m draft to the Riviere Diombas and the Riviere Bandiala.

The Riviere Silif, a river used by local vessels, enters the Riviere Saloum abreast of Foundiougne. It has depths of 5m as far as the town of Silif, 12 miles above the entrance.

At Foundiougne, anchorage can be taken, in depths of 3.5 to 7m, E of the mouth of the Riviere Silif. The piers which front the town are partially destroyed but a new wharf, 61m long, is situated close W of them.

The Riviere Saloum above Foundiougne is narrow and winding, but due to the buoyage and the measures to avoid vessels meeting in the bends, it offers no particular difficulty.

Lyndiane, situated 22 miles above Foundiougne, has a quay, 396m long, with a depth of 5m alongside. There is also a small pier for tankers at the oil refinery. Vessels up 2,900 dwt and 81m in length have been handled here.

11.8 **Kaolack** (14°08'N., 16°05'W.) is fronted by a quay, 636m long, with a depth of 4m alongside. There is also a small pier for loading salt. Vessels generally turn above the town and moor headed downstream with an anchor laid in mid river. During the rainy season, vessels should let go a stern anchor.

A bridge crosses the river 1 mile above Kaolack and only small boats can navigate above it.

Pilotage.—Pilotage is compulsory for vessels over 150 grt. Pilots board at the entrance to the channel or in the vicinity of Saloum Lighted Buoy. Pilotage is provided by Dakar.

Navigation is possible at night between the bar and Foundiougne, 33 miles upriver. Navigation is prohibited at night on the bar and between Kamatane, 20 miles below Kaolack, and Kaolack.

Regulations.—Vessels navigating in the river must be ready to anchor immediately fore and aft.

Vessels must not exceed a speed of 8 knots while passing the wharves at Foundiougne.

Vessels must not exceed a speed of 6 knots while passing the wharves at Lyndiane and proceeding between the bend at Velor and Kaolack.

Overtaking is prohibited at all bends and when between Ben Rone, 3 miles below Kaolack, and Kaolack. A vessel wishing to overtake should sound one long blast on the whistle or siren.

Vessels navigating against the current give the right of way to vessels navigating with the current.

Traffic is regulated to avoid risk of collision, especially in the bend at Velor and between Lyndiane and Kaolack. Instructions are transmitted by radio.

The Riviere Diombas and the Riviere Bandiala

11.9 The **Riviere Diombas** (13°45'N., 16°39'W.) is entered between Pointe Jackonsa and Pointe des Oiseaux, 5 miles SE. The river is unmarked and unsuitable for navigation. The extensive shoals which lie in the entrance dry over large areas and the sea breaks heavily on them in any breeze. These shoals extend 4 miles W of Pointe Jackonsa and nearly 7 miles W of Pointe des Oiseaux.

Banc de L'Ile des Oiseaux, which dries, lies 5 miles WSW of Pointe des Oiseaux and is the outermost bank. Ile de Diamanio and Ile des Oiseaux lie on these shoals S and SSW, respectively, of Pointe des Oiseaux.

The banks are dangerous to approach, especially during the harmattan season, as the haze makes the land appear farther off than it really is. Soundings are no guide, as in many places the edge of the bank rises abruptly from a flat of 7m to less than 1m.

The Riviere Bandiala, entered 10 miles SE of Pointe Jackonsa, is obstructed by sandbanks at its mouth. The mouth of Bolom Djinnack, lying 3 miles farther SSE, is also obstructed by sandbanks.

Caution.—Vessels proceeding to or from the Riviere Saloum or the River Gambia should stay at least 8 miles W of Pointe des Oiseaux. Due allowance should be made for the strong tidal currents in this vicinity.

Estuary of the River Gambia

11.10 The estuary of the River Gambia lies between Ile des Oiseaux (13°40'N., 16°40'W.) and Bald Cape (13°23'N., 16°48'W.). It is 17 miles wide at its W limit, but is reduced to a width of 9 miles between Cape St. Mary and Buniada Point.

Bald Cape (13°23'N., 16°48'W.) is bare, marked by red patches, and although low, is the highest land in the vicinity. This cape is fronted by rocks and reefs, some drying, which extend up to 4 miles W.

The Bijol Islands consist of two islands on the reef W of the cape. They are covered with bush and trees. A disused lighthouse stands on the SW island, but is not easy to be distinguished against the background of coastal trees.

The coast from Bald Cape to Cape St. Mary, 10 miles NE, becomes progressively lower and reddish cliffs may be seen against the green background.

Cape St. Mary (13°29'N., 16°40'W.) is low, but the land located within 0.5 mile SW of it rises to a height of 19m. The city of Banjul (Bathurst) is situated 5 miles farther ESE. Toll Point, located 3 miles ESE of the cape, is low and sandy. Oyster Creek enters the sea 0.5 mile W of the Toll point and a conspicuous chimney, 23m high, stands near its entrance.

The E shore of the estuary, S of Buniada Point, is a low and

featureless expanse of mangroves, with occasional tall trees in the background. The entrances to the Riviere Bandiala and Bolom Djinnack are not easily identified until near the coast.

Barra Point, located 5.5 miles S of Buniada Point, is marked by a light and can be identified by a conspicuous fort. It is reported (1993) that a racon is situated at the light.

The boundary between Senegal and Gambia lies about 6.5 miles N of Barra Point.

The W part of the estuary to the meridian of Cape St. Mary has general depths of 7 to 9m. East of this meridian, the estuary is encumbered by banks and shoals, with a narrow gullet of deeper water in its N part. This gullet widens and deepens towards the entrance of the River Gambia.

Tides—Currents.—The tidal rise at Banjul (Bathurst) is 1.8m at springs and 0.7m at neaps.

The tidal currents are affected by weather conditions in the estuary and by rainfall in the upper river. Between 1 hour and 4 hours after HW at Banjul, the current outside the river entrance sets onto St. Mary Shoal and Middle Ground. During both the flood current and the ebb current, a strong set flows across African Knoll and Middle Ground. The ebb tidal current sometimes stirs up large patches of discolored water throughout the channel.

In the outer approaches, the influence of the North Equatorial Current is experienced. In the river and the entrance, the current is mostly dependent on the level of the river as affected by the rainfall in the upper part of the river. The strongest currents occur in September and decrease in velocity as the level of the river falls to its average level in December and January. When the level of the river is high, the combination of the current and ebb tidal current at springs causes considerable swirls off Banjul (Bathurst) and vessels ride uneasily at anchor. Off Banjul, the these currents attain rates up to 3 knots at springs.

Depths—Limitations—An approach channel, which leads across the flats in the W part of the estuary delta, has a depth of 7.5m at LW and 8.5m at HW.

Horseshoe Bank, which is formed by the N part of the flats occupying the outer part of the estuary, has depths of 5.8 to 7m; strong eddies form it.

St. Mary Shoal, a narrow bank, extends 6 miles NW of Banjul and dries in places. Stop-in-time Bank, which extends up to 1.5 miles farther NW, consists of three shoals and has a least depth of 3.4m. Schooner Gap, a narrow channel, has a depth of 5.8m and separates these two banks.

African Knoll, with a least depth of 4.9m, lies 2 miles E of the N extremity of Stop-in-time Bank and is the N of the shoals which front the S shore of the estuary. It was reported (1975) that this shoal was extending to the SE.

Middle Ground, with a least depth of 3.7m, lies 0.8 mile S of African Knoll. Three small detached patches, with depths of 5.5m or less, lie close S of it.

Canoe Grounds, an extensive flat, has depths of less than 5m and extends from the coast between Cape St. Mary and St. Mary Shoal.

The E shore is fronted by a bank, with depths of 3.6m or less, and extends up to 2.5 W. Part of this bank, which extends 1.7 miles W of Buniada Point, dries from 0.3 to 1.2m.

Dangerous wrecks lie about 1.5 miles SSE and 3.5 miles SE of Fairway Lighted Buoy No. 1. A wreck, swept to a depth of 9.6m, lies 1 mile SE of Fairway Lighted Buoy No. 1.

Aspect.—A conspicuous water tower, 43m high, stands 2 miles WSW of Cape St. Mary. A light is shown from the top of this tower. It was reported (1986) that the water tower was no longer conspicuous and the light was unreliable and at reduced power. It was reported (1990) that a racon was situated at the light.

Several conspicuous buildings stand above the cliffs, 0.5 mile SW of Cape St. Mary. They are reported to be very conspicuous in the afternoon light, especially an old white fort.

Government House, with a flagstaff, stands close W of Banjul Point and is prominent. A light, with racon, is shown from a structure 0.1 mile S of Banjul Point.

Several radio masts, marked by obstruction lights, stand 0.3 mile WNW of Banjul Point. A radio tower, 46m high, stands close S of the same point.

The approach and entrance channels are indicated by lighted ranges and marked by buoys which may best be seen on the chart.

Fairway Lighted Buoy No. 1 is moored about 11 miles NW of Bald Cape.

Pilotage.—Pilotage is compulsory for all vessels above Lighted Buoy No. 5, which is moored on the W side of the entrance channel about 3 miles NW of Barra Point. Vessels should send an ETA 48 hours and 12 hours in advance. Pilots can be contacted on VHF channel 14 or 16 and generally board in the vicinity of Lighted Buoy No. 5.

Anchorage.—Anchorage can be taken anywhere in the estuary of the River Gambia where depths permit, without restriction to the length of a vessel.

Caution.—The channel buoys are reported to be unreliable; some of them are frequently reported to be extinguished, damaged, or missing.

Several wrecks, some dangerous, lie in the approaches to the river and may best be seen on the chart.

Large concentrations of fishing canoes, fishing stakes, and poles may be encountered in the channel.

Banjul (Bathurst) (13°27'N., 16°34'W.)

World Port Index No. 45825

11.11 Banjul (Bathurst) is situated on the W entrance point of the River Gambia, at the E extremity of St. Marys Island. The city stands only just above HW and is backed by marshes.

Banjul Home Page

http://www.gambiaports.com

Depths—Limitations.—Government Wharf, situated 0.2 mile S of Banjul Point, is reported (1986) to be no longer utilized due to extensive silting along its face.

New Banjul Wharf, situated 0.5 mile S of Government Wharf, is a newly constructed quay with facilities for containers and liquid cargo. It is 120m long and has a least depth of 9.8m alongside. Mooring buoys have been stationed close to each end of this wharf.

Banjul Wharf, situated at Dockyard Point, is L-shaped and provides two deep-water berths. The outer berth is 122m long, with a depth of 8.2m alongside; the inner berth is 102m long,

Banjul jetty and N terminal (aerial)

Banjul Wharf

with a depth of 6m alongside. Mooring dolphins are situated off each end of this wharf.

Vessels up to 123m in length have been accommodated alongside. It is reported that vessels up to 183m in length and 8.2m draft can be handled at HW. Vessels of any length may use the anchorage and lighters are available.

Aspect.—See Estuary of the River Gambia in paragraph 11.10 for further information. Conspicuous lattice towers stand at the N ends of both New Banjul Wharf and Banjul Wharf.

Anchorage.—Anchorage may be taken, in depths of 22 to 26m, sand and mud, up to 0.5 mile off the Government Wharf.

Caution.—Winds from the E sometimes raise heavy seas on the ebb tide.

Reduced visibility due to dust haze is common in the months of December and January.

Submarine cables lie between Banjul and Barra Point and may best be seen on the chart.

It is reported that many anchors have been lost in the harbor, making parts of the anchorage foul, especially near the shore. Two prohibited anchorage areas have been established and are best seen on the chart.

The River Gambia

11.12 The River Gambia rises in the Fouta Djalon highlands, standing about 300 miles E of its mouth, and flows W for about 700 miles over a sinuous course. The river is navigable by vessels not exceeding 3.6m draft as far as Georgetown, 156 miles from Banjul (Bathurst). At Kuntaur, 129 miles from Banjul, vessels can load to a draft of 4.6m. Vessels with a draft of 2m can go as far as Fattoto, 112 miles above Georgetown.

The river is marked by buoys for the first 80 miles, but local knowledge is necessary for navigation; lighted buoys mark the river for about 50 miles from Banjul.

The entrance of the river lying between Barra Point and the town of Banjul is about 2 miles wide. Immediately above the town, the river expands to a width of 7 miles. It gradually decreases in width to 0.3 mile at MacCarthy Island, 156 miles above the entrance.

The banks of the river, covered with mangrove brushes, are composed mostly of soft mud, rendering landing impossible, except at the creeks or at the few villages on the banks.

Kuntaur (13°40'N., 14°53'W.) is situated 129 miles above Banjul. There are many wharves and warehouses here. Good anchorage, in midstream, may be taken by vessels up to 76m in length and 4.6m draft.

11.13 Georgetown (13°34'N., 14°47'W.) is situated midway along the N side of MacCarthy Island, 156 miles above Banjul. There are factories fronted by wharves, alongside which vessels of 1,500 to 2,000 grt load. Good anchorage can be taken, in a depth of 4.6m, off the principal wharf.

Tides—Currents.—The lowest water level in the River Gambia occurs in March and April. The level of the river commences to rise after heavy rains have fallen in the upper part and reaches its highest level about September. In the river entrance, the rise in mean level is about 0.1m and between Fort James Islet and Kuntaur, about 0.3m.

When the River Gambia is in its average state, the current is not appreciable. An outgoing current commences after heavy rains in the upper river and attains its maximum rates, 0.5 knot to 1.5 knots, in September.

During heavy rains, large variations from the predicted tidal currents are to be expected near the entrances of the large creeks. The tidal influence extends for several miles up these creeks, the range of tide decreasing with the distance from the main river. A spring range of about 0.9m can be expected, 3 miles up these creeks.

In the main channel S of Banjul, the tidal currents set fairly through the channel and attains rates of 2 knots on the flood and 3 knots on the ebb.

Anchorage.—Vessels can anchor S of Banjul, but should avoid the vicinity of the rocky area lying 2.3 miles SSE of Banjul Point.

Bald Cape to the Riviere Casamance

11.14 From **Bald Cape** (13°23'N., 16°47'W.), previously described in paragraph 11.10 to the entrance of the Allahine River (San Pedro River), 19 miles S, the coast is very low and fronted by a sandy beach covered with trees.

Solifor Point (13°20'N., 16°49'W.), located 3 miles SSW of Bald Cape, is bordered by a reef which extends up to 1 mile W. Saniang Point, located 4 miles farther S, is also fronted by a reef. Dangerous wrecks are reported to lie about 17 and 24 miles W of this point.

A thickly wooded point is located 13 miles S of Bald Cape and foul ground extends up to 1 mile seaward of it. The village of Gunjur stands 1.5 miles NE of this point.

A low point is located 5 miles S of the thickly wooded point. A reef extends up to 0.8 mile seaward of this point and the sea always breaks on it.

Caution.—The coast between Bald Cape and the vicinity of the mouth of the Allahine should not be approached within 7 miles without local knowledge, as the area has not been fully surveyed.

11.15 The **Allahine River** (San Pedro River) (13°04'N., 16°45'W.) is entered 13 miles SSE of Saniang Point. It is completely closed by sand banks, except at HW. The trees in this vicinity appear from a distance like a forest with lofty clumps, resembling islands. This river forms part of the boundary between Gambia and Senegal.

A dangerous wreck, marked by a buoy, is reported to lie about 10.5 miles SW of the river entrance.

The coast from the mouth of the Allahine River to the entrance of the Riviere Casamance, 30 miles S, is flat, with a white sandy beach, on which the sea breaks heavily.

The S part of this section of coast is intersected by three river channels. The Riviere Bliss (12°46'N., 16°47'W.) is very difficult to identify. It lies between the S end of Presqu'ile aux Oiseaux, 18 miles S of the mouth of the Allahine, and Ile aux Oiseaux, which lies on the outer edge of an extensive drying sandbank, 0.5 mile SSW. The Riviere Kalisseye (Souta) (12°42'N., 16°47'W.) enters the sea 4 miles S of the Riviere Bliss and can be identified by the wide gap formed in the coast. Marigot aux Huitres (12°39'N., 16°47'W.) enters the sea 7 miles S of the Riviere Bliss and is also difficult to distinguish. Heavy breakers occur in all of these entrances.

The bottom along the coast, between Bald Cape and the entrance to the Riviere Casamance, is formed of mostly gray sand extending out to depths of 18m. Farther offshore, the bottom is formed of brown or black sand or mud; sometimes it has a greenish tint.

Banc du Large, with depths of 8 to 10m, extends up to 15 miles W from the coast between the Riviere Bliss and the Riviere Kalisseye (Souta).

The current generally sets SSW between Bald Cape and Cap Roxo (12°20'N., 16°43'W.). Near the coast and especially at the mouth of the Riviere Casamance, it is influenced by the tides.

Caution.—Thick fogs are frequent in the morning along this section of coast, especially during the good weather season. They usually dissipate by late morning. There are also refractions which may cause errors in astronomical observations.

The Riviere Casamance (Karabane) (12°34'N., 16°46'W.)

World Port Index No. 45822

11.16 The Riviere Casamance (Kasamanze River) is entered between Pointe de Djogue (Jogue Point), the S extremity of Ile Djogue (Ile de Diogue), and Pointe de Nikine, 1.2 miles S. The mouth of the river is encumbered with dangerous banks which limit the draft of vessels entering.

Tides—Currents.—Tides at the bar rise 1.5m at springs and 1.3m at neaps.

Slack water occurs about 2 hours after HW and LW; it is of short duration. In Passe Mediane, the only one used by vessels of any size, the tidal current sets in the direction of the passage in the NW and SE sections, but forms a cross-current over the middle section. The currents attain maximum rates of 1 knot.

Off Pointe de Djogue, the flood current sets ENE at 0.5 knot to 1.5 knots; the ebb current sets WSW at 0.7 knot to 2.8 knots. Off Karabane, the flood current sets E at 0.5 knot to 1.5 knots; the ebb current sets W at 0.5 knot to 2 knots.

Depths—Limitations.—The entrance of the river is fronted by two main banks which form a bar. Banc du Nord, composed of hard sand and shells, practically stretches entirely across the entrance and the sea breaks heavily on it. Banc du Sud, composed of sand and gravel, extends between Banc du Nord and the coast lying close N of Diembering; this bank is subject to great change and the sea breaks only on its W part.

Three channels cross the bar, but only Passe Mediane, which crosses Banc du Nord, is used by commercial vessels. It was reported (1985) that Passe Mediane had a least depth of 3.7m. Vessels having crossed the bar are able to navigate the river as far N as Ziguinchor, 34 miles above the entrance.

Generally, with no swell, vessels up to 120m in length can cross the bar, with drafts up to 4.7m at HWS and up to 4.1m at HWN.

Ile de Karabane (Ile de Carabane) lies on the S side of the river, E of Pointe de Nikine. It is fringed by shoal banks on the N side. The village of Karabane (Carabane) is situated on the NE end of the island and is fronted by a small pier. Depths of less than 5m extend up to 0.2 mile offshore in the vicinity of this pier.

The river from Karabane to Ziguinchor is fine and navigable. It is wide and deep, with no sharp bends, and navigation is easy and possible even in the moonlight.

Aspect.—The mouth of the river forms a very wide and distinct cut in the line of trees bordering the coast.

A light is shown from a pylon, 19m high, standing on Pointe de Djogue. A signal station is situated at the light, but the pylon is reported to be not easily identified.

The land to the S of Pointe de Nikine is higher than Ile Djogue and two prominent towers can be seen standing 1.7 and 4.5 miles SSW of the point. A conspicuous hill covered with trees stands 5 miles SSW of Pointe de Nikine and close W of the village of Diembering (Guimbering).

The coast S of Diembering is described with the estuary of the Rio Cacheu in paragraph 11.18.

Casamance Lighted Buoy is moored in a depth of 10m, about 9 miles WNW of Pointe de Djogue. The entrance channel over the bar is marked by buoys and lighted buoys. These are moved as necessary to meet the changes in the channel.

Pilotage.—Pilotage in the Riviere Casamance is compulsory. Pilots are normally embarked and disembarked at Dakar. No vessel should attempt to enter this river without a pilot. Pilots usually take vessels across the bar from 2 hours before to 1 hour after HW.

Anchorage.—Anchorage can be taken, in a depth of 10m, hard sand, off a small pier situated 0.7 mile ENE of Pointe de Djogue Light. Anchorage can also be taken, in depths of 8 to 10m, about 0.5 mile NW of the pier at Karabane.

Caution.—Several wrecks, some dangerous, lie in the approaches to the river and may best be seen on the chart.

Vessels should only enter the channel across the bar in navigable weather.

Due to the lack of landmarks and the presence of shoals, it is not advisable to make a landfall N of the mouth of the river.

The navigational aids in the Riviere Casamance are unreliable; they may be missing, unlit, or out of position.

11.17 Ziguinchor (12°31'N., 16°16'W.) is an important commercial center and has a port radio station. It is fronted by a quay, 340m long, with a depth of 5m alongside.

The river has a navigable width of 500m here between the banks. Anchorage can be taken, in depths of 8 to 12m, off the town.

A submarine cable crosses the river at the W end of the town; anchorage is prohibited in this vicinity. In addition, anchorage is prohibited near the ferry crossing.

Above Ziguinchor, the river is only frequented by lighters. Goudoump lies 25 miles upstream and is an important fishing center. Sedihou, situated 50 miles upstream of Ziguinchor, is a large commercial center.

Estuary of the Rio Cacheu (Cacheu) (12°05'N., 16°30'W.)

World Port Index No. 45835

11.18 The estuary of the Rio Cacheu (Cacheo River) lies E of the meridian of Cap Roxo (12°20'N., 16°43'W.) and N of Ilheu de Caio (Ilhas Caio), 38 miles SE. The shores of the estuary are low and difficult to identify. The estuary is encumbered with dangerous banks and shoals which are subject to frequent changes in depth and shape. Cacheu and Farim are situated 11 and 90 miles, respectively, above the river mouth.

The dangerous banks, which encumber the estuary, extend S of Cap Roxo to the parallel of 12°N. These banks are narrow, long, and oriented E-W.

Baixo de Coimbra, with a least depth of 1.5m, extends up to 10 miles W from Ponta Varela. Baixo de Falulo, with a least depth of 1.2m, extends up to 18 miles W of Ponta de Jufunco. Baixo de Sao Mandovi, with a least depth of 1.5m, extends up to 24 miles W of Ponta Cabaceira. Banco das Ilhetas, with depths of less than 11m, extends up to 37 miles W of Ilheu de Caio.

Tides—Currents.—At Cacheu, tides rise 2.8m at springs and 2.3m at neaps. At Varela, tides rise 2.2m at springs and 1.8m at neaps.

The flood current on the bar generally sets E and the ebb current sets W. The currents can reach rates up to 2.5 knots at springs. Slack water can occur up to 2 hours after HW.

In the river, the ebb current generally runs for 8 hours while the flood current, which is often merely a SW or lessening of the ebb, rarely runs for more than 4 hours.

Around December, after the rains, the wind generally blows from the NE to ESE and tends considerably to strengthen the ebb current. During this period, vessels at anchor rarely swing to the flood.

Depths—Limitations.—Southwest Channel, the only entrance channel in use, is reported (1989) to have a least depth of 3.2m. The Rio Cacheu (Cacheo River) is navigable for vessels up to 3.7m draft to a position about 4 miles below Farim, a town situated 90 miles above the river entrance. Anchorage can be taken, in a depth of 9m, mud, off Cacheu. The town is fronted by a small pier which is used by lighters.

Aspect.—The approach to the Rio Cacheu is via Rio Geba Approach Lighted Buoy, which is moored about 23 miles WSW of Ilheu de Caio. A depth of 7.3m and the possibility of a developing sand bar were reported (1985) to lie in an area 9.5 miles SW of this lighted buoy.

The entrance to Southwest Channel is marked by Lighted Buoy No. 1, which is moored 16 miles NW of Ilheu de Caio. The fairway is marked by lighted buoys and buoys, which are moved as necessary to meet the changes in the channel. The bottom of the channel is formed of soft mud, but on the banks it is hard sand and so gives immediate notice of any deviation from the fairway.

Cap Skiring (12°25'N., 16°46'W.) is located 9.5 miles S of the entrance to the Riviere Casamance and is fronted by a sandy beach. Inland of this beach, there are several prominent wooded hills. A metal framework tower, 30m high and marked by obstruction lights, stands 0.7 mile SE of the cape. It was reported (1988) that an aeronautical radiobeacon is situated 1.5 miles SE of Cap Skiring.

Cap Roxo(12°20'N., 16°43'W.), located 4.5 miles SE of Cap Skiring, is a low sandy point. Several white sand hills, capped by trees and bushes, stand close W of it. The cape derives its name from some red patches lying close N of it.

The boundary between Senegal and Guinea-Bissau lies close N of Cap Roxo.

The shore between Cap Roxo and Ponta Varela (Cabo Varela), 8 miles SE, consists of a white sandy beach backed by low, swampy ground and palm trees. The village of Varela stands 1 mile NW of Ponta Varela and can be seen among tall trees on top of a reddish cliff.

The coast between Ponta Varela and Ponta de Jufunco (Jufung Point), 10 miles SE, is very wooded.

Cabo de Mata (12°10'N., 16°19'W.), marked by a light, is the S entrance point of the Rio Cacheu. The E shore of the estuary between this cape and Ponta Cabaceira, 9 miles SSW, is fronted by mangroves backed by palm trees.

Canal de Jeta (Jata Channel) is entered between Ponta Cabaceira and the N extremity of Ilha de Jeta (Ilha de Jata), 4 miles SE. The W shore of Ilha de Jeta extends 7.5 miles SSW and is bordered with mangroves. Ilheu de Pelinda (Ponta Caio), a

small islet, lies close off the SW extremity of Ilha de Jeta. Ilheu de Pumoune and Ilheu de Caio are located 1.2 miles S of Ilha de Jeta and lie on a large drying flat. These islets are not high, but being covered with high trees, they stand out prominently and in clear weather, may be identified from up to 15 miles seaward.

A light is shown from a tower standing on Ilheu de Caio (11°50'N., 16°19'W.). A racon is reported (1988) to be situated at this light.

An old light structure stands close SW of the light and is prominent. The pilot station for Bissau and the Rio Cacheu is situated on this islet.

The banks of the Rio Cacheu are fronted by mangroves as far as Batu, 65 miles above the entrance. Here, the clay soil is visible between the mangroves and the shores become steeper and rocky. Forest trees of large size, including mahogany, may be seen on the banks in this vicinity.

The river between Cabo de Mata and Cacheu, 11 miles upstream, is clear of dangers. The town of Cacheu stands on the S bank and can be identified by an old square fort and a church. Near Farim, the mangroves entirely disappear, the countryside becomes clear, and a gently-rising tract of fertile soil commences.

Pilotage.—Pilotage is compulsory for the bar and river. Pilots board about 3 miles S of Ilheu de Caio.

Anchorage.—Anchorage can be taken, in a depth of 12m, S of Ilheu de Caio. Anchorage can also be taken, in depths of 11 to 13m, good holding ground, about 2 miles WNW of Cabo de Mata.

Caution.—Several wrecks, some dangerous, lie in the estuary and the approaches to the river and may best be seen on the chart.

The navigational aids in the Rio Cacheu are unreliable; they may be missing, unlit, or out of position.

Estuary of the Rio Geba (Bissau) (11°52'N., 15°38'W.)

World Port Index No. 45838

11.19 The vast estuary of the Rio Geba extends S of Ilheu de Caio (11°50'N., 16°19'W.) and is encumbered by Arquipelago dos Bijagos and its surrounding banks and shoals.

The Great Geba Flat extends W of the Rio Geba estuary. Several dangerous wrecks have recently (1987) been charted in the S approach to Geba Approach Lighted Buoy; the possibility of the existence of a sand bar in this vicinity has been reported. Charted depths in the approach should be regarded with caution and can not be relied upon.

Canal do Geba (Jeba Channel), 15 miles wide, leads between Ilheu de Caio, on the N side, and Ilha Caravela, 18 miles S. It is generally accessible to vessels up to 10m draft as far as Bissau, situated 45 miles E of Ilheu de Caio.

The usual channels of approach to the Rio Geba are Canal de Geba, on the N side of the estuary, and Canal de Orango, on the S side. The latter leads to Canal de Canhabaque, Canal de Bolama, and Canal de Pedro Alvares, which joins Canal do Geba 10 miles SW of Bissau.

Above Bissau, the river channel is encumbered by numerous shoals; vessels with drafts not exceeding 1.5m can proceed 70 miles upstream.

Tides—Currents.—Tides at Bissau rise 5.5m at springs and 4.3m at neaps. The annual rise of the Rio Geba begins in July. The waters begin to fall about mid-September and continues to the end of October.

In Canal do Geba, between Ilheu de Caio and Bissau, the flood current sets NE and the ebb current sets SW. Off Ilheu de Caio, the ebb commences at the time of HW at Bissau. In Canal do Geba, both currents attain rates of 2 to 3 knots. Great caution is necessary during spring tides and after heavy rains, as the ebb current then runs with at a considerably stronger rate. Eddies are frequently formed off Canal de Pedro Alvares and Ilheu dos Passaros. The ebb current may attain a rate of 6 knots in these vicinities.

Tide rips and discolored water are frequently observed in Canal do Geba; their positions vary according to the state of the tide. These observations do not necessarily indicate a danger to navigation, but are usually caused by changes in depth.

11.20 Arquipelago dos Bijagos (Bijouga Islands) (Bissagos Islands) (11°15'N., 16°00'W.) consists of numerous islands and barren rocks of volcanic origin. The islands are very fertile; although lacking in water, the majority of them are inhabited.

Ilha Caravela (Caravela Island) and Ilha de Carache (Caraxe Island) are located at the NW end of the group and are low and wooded. A prominent cliff, 21m high, stands at the N end of Ilha Caravela; a partly drying shoal extends up to 5 miles W of it.

Ilha Formosa, Ilha da Ponta, and Ilha de Maio are separated by creeks and are practically one island. Baixo de Maio, with a least depth of 0.9m, extends up to 3.5 miles NW of the N extremity of Ilha de Maio. An almost continuous line of shoals and reefs extends up to 15 miles ENE from the N extremity of Ilha de Maio. The N part of these shoals consists of Baixo do Arriscado and Baixo do Gancho, both of which dry in places.

Ilha de Orango and Ilha de Orangozinho, separated by a creek, form the S part of the group. Ponta Camaleao (11°03'N., 15°53'W.), the SE extremity of Ilha de Orangozinho, is low and difficult to identify. Ilha Roxa, located at the SE end of the group, is covered with vegetation and is thickly populated. A white sandy beach, backed by tall trees, lies on the N side of this island and is intersected by dark rocky patches with mangroves on them. Ponta Barel, the E extremity of this island, is formed by a prominent reddish bluff, 20m high.

Caution.—Arquipelago dos Bijagos is fronted on its W and S sides, for a distance of 20 to 25 miles seaward, by shoals and foul ground. This foul area terminates to the NW in Bijagos Breaker and to the SE in South Breaker (10°41'N., 16°08'W.).

Bijagos Breaker, with a least depth of 3.7m, lies about 28 miles W of Ilha Caravela. Baixos do Rio Grande, which partly dries at LW, extends 10 miles W from a position lying 12 miles NW of Ilha Caravela and is marked by a light on the E end. This extensive shoal area is usually surrounded by breakers which can be seen at a distance of more than 5 miles in normal visibility.

11.21 Canal do Geba (11°41'N., 16°00'W.), the main entrance channel to the Rio Geba, leads N of Arquipelago dos Bi-

jagos and S of Ilha de Jeta, Ilha de Pecixe, and Ilha de Bissau. Shoals obstructing the entrance of this channel divide it into four smaller passages; the N passage, Canal de Caio, is the only one recommended for deep-draft vessels.

Baixos de Caio, a narrow shoal, lies 4 miles S of Ilheu de Caio and extends for 9 miles along the S side of Canal de Maio. It has general depths of less than 9m and a least depth of 3m. Banco do Meio lies parallel to and about 1.5 miles S of Baixo de Caio. This shoal bank is also narrow and has a least depth of 6.7m. Baixos Jaime Afreixo, which dries near its E end, lies about 2 miles S of Banco do Meio.

The above banks are steep-to and the channels leading between them are dangerous, as the soundings give no warning of their proximity.

Banco Martinho, a narrow bank, extends 6.5 miles W from a position 1 mile S of Ponta Prainha. Its central part has a least depth of 4.6m and is much shallower than the remainder. This bank is steep-to and very dangerous because the sea seldom breaks over it.

A bar, with a least depth of 7m, lies across Canal do Geba. It extends between Ponta Prainha and Ponta Bernafel, to the N, and between Baixo do Arriscado and Baixos do Gancho, to the S.

Banco do Alenquer, with a least depth of 7m, lies 2 miles S of Ponta Bernafel and extends 3.5 miles ENE from the bar. Less water than charted was reported (1983) to lie on this bank.

Banco dos Passaros, with a least depth of 7.3m, extends 1.8 miles SSW of Ilheu dos Passaros. Less water than charted was also reported (1983) to lie on this bank.

Baixo do Meio, with a least depth of 5.2m, lies about 1 mile NE of Ilheu dos Passaros.

Aspect.—See the estuary of the Rio Cacheu in paragraph 11.18 for a description of Ilheu de Caio and vicinity.

Ponta Arlete (11°46'N., 16°06'W.), the S extremity of Ilha de Pecixe, is low, but prominent. This point, which is marked by a light, is thickly wooded; several villages stand near it. Ponta Ancora, the SE extremity of the island, can be recognized by several long, white sandhills which stand on it. Ilheu de Ancora lies 1.5 miles S of this point.

Ponta Biombo, marked by a light, is located 8.5 miles E of Ponta Arlete and is the SW extremity of Ilha de Bissau. The shore in the vicinity of this point is extremely fertile and densely populated.

Ilheu dos Passaros (Ilha Passaros) (11°49'N., 15°36'W.), marked by a light, lies in the approach to Bissau and is low and wooded. The SE side of this island is comparatively steep-to.

Ilheu do Rei (Ilha Rei) lies off Bissau, 2.5 miles NE of Ilheu dos Passaros. It is 16m high and marked by a light. Restinga do Rei, with depths of less than 5m, extends up to 0.5 mile SW of this island.

Pilotage.—Pilotage is compulsory for all vessels proceeding to Bissau or Bolama through Canal do Geba. Local pilots board 3 miles S of Ilheu de Caio.

Pilots will generally bring a set of river charts which are accurately maintained and should be used for the transit to Bissau.

It was reported (1987) that due to the lack of a pilot boat and VHF, vessels were proceeding upriver and taking the pilot for Bissau in the approaches to the port. However, local knowledge for entering the river is advised.

Generally, vessels approaching Canal do Geba make for the Geba Approach Lighted Buoy (11°45'N., 16°42'W.) and then proceed to the pilot boarding position S of Ilheu de Caio.

Anchorage.—See the estuary of the Rio Cacheu in paragraph 11.18 for anchorage off Ilheu de Caio.

Anchorage, with good holding ground, mud, can be taken in suitable depths in all parts of Canal do Geba. A good berth lies in a depth of 20m, about 3 miles SW of Ponta Biombo, off the entrance to the Rio Mansoa.

Anchorage can also be taken, in a depth of 10m, about 0.5 mile SE of Ilheu de Ancora, but tidal currents in this area are reported to be strong.

Sheltered anchorage can be taken, in depths of 7 to 11m, mud with good holding ground, between Bissau and Ilheu do Rei. Vessels should use caution to remain clear of the shoal banks lying near this area.

Caution.—Submarine cables lie in the channel off Bissau and may best be seen on the chart. Several buoys mark these cables, but their existence cannot be relied on.

Arquipelago dos Bijagos should be approached with great caution, especially during the rainy season when the currents sometimes set towards the islands. Frequent sounding is necessary as there is generally much haze at that time and the land is difficult to distinguish when more than 3 miles offshore.

Vessels approaching Canal do Geba from the S should not get E of the meridian of 17°12'W, until the parallel of 11°50'N has been reached, when the above-mentioned directions should be followed.

The navigational aids in Canal do Geba and in the approaches to Bissau and Bolama are unreliable; they may be missing, unlit, or out of position.

11.22 Bissau (11°51'N., 15°35'W.), a small port, is situated on the N bank of the river. It can usually be reached by vessels, with drafts of less than 7m, at all states of the tide without difficulty. Vessels, with drafts of 7 to 10m, can reach the port by making use of the high tides and navigating with caution. Pilotage is compulsory. The pilots can be contacted on VHF channel 16 and board 0.8 mile SW of Ponta de Caio Light.

The roadstead off the port can handle large vessels. There is a T-shaped jetty with a berth, 130m long, which has an alongside depth of 6.0m. Another T-head pier has a length of 275m along its face, with an alongside depth of 12.8m.

Dicol Oil Terminal pier is situated at Sacor. It extends from the N bank of the river, 1 mile N of Ilhue dos Passaros. It is reported (1990) that vessels up to 140m in length and 7.3m draft can be accommodated.

Bissau to Bolama

11.23 The port of Bolama can be reached from Canal do Geba via Canal de Pedro Alvares, Canal de Bolama, and Canal de Bolola. The latter two channels are deep. The port can also be reached from the S via Canal de Orango and Canal de Canhabaque.

Tides—Currents.—Tides at Bolama rise 5.2m at springs and 4.3m at neaps.

The tidal currents normally follow the direction of the channels. They attain rates up to 4 knots at springs, but do not exceed 3 knots at neaps. Slack water generally occurs up to 1 hours 30 minutes after HW or LW at Bolama.

When crossing Canal do Geba in order to enter or leave Canal de Pedro Alvares, full allowance should be given to the tidal currents which set almost at right angles to the course of the vessel.

To take advantage of the tidal currents, a vessel proceeding from Bissau to Bolama, or vice versa, should arrange to pass Restinga de Areia Branca (off the S side of Ilha Bolama) at LW; this occurs about 20 minutes after LW at Bolama.

There are numerous tide rips and patches of discolored water within the channels leading from Bissau to Bolama, and their positions vary with the state of the tide. They do not necessarily indicate dangers to navigation and are nearly always caused by sudden changes of depth.

The principal difficulty in navigating Canal de Pedro Alvares may be said to arise from the channel being so completely sheltered that the banks on either side seldom break.

A bar, with a least depth of 7m, extends across the N part of Canal de Pedro Alvares.

Coroa das Areias, lying on the E side of the channel, shoals abruptly and has a depth of 4.3m at its S extremity and a depth of 2.7m at its W edge.

A shoal, with a least depth of 4.6m, extends up to 3.2 miles SE of Pedro Alvares Light.

Restinga da Areia Branca, a sand spit with scattered sunken rocks lying on it, extends up to 3 miles S of Ponta da Areia Branca, the S extremity of Ilha Bolama.

Baixo Mau, lying on the NW side of Canal de Bolola, dries in its central part. The E part of this shoal has a least depth of 1.5m, which lies 1.5 miles SSE of Ponta do Preco Leve.

Aspect.—Ilha das Areias and Ilheu do Mancebo, with a conspicuous tree standing on it, lie 6.5 miles NE and 11 miles ENE, respectively, of Pedro Alvares Light (11°38'N., 15°42'W.).

A lighted buoy, moored about 2.5 miles S of Ponta da Areia Branca, marks Restinga da Areia Branca.

Anchorage.—Anchorage is good in most parts of Canal de Pedro Alvares, though there are some deep holes and shallow spots. When any of the fierce squalls, which are common along this coast, are seen approaching, vessels should anchor immediately.

Baia das Prainhas, lying on the SW side of Ilha Bolama, affords good temporary anchorage, in depths of 14 to 24m, sand and mud, about 2 miles SE of Ponta Oeste. The tidal currents are not felt at this roadstead, but it must be approached with caution as the depths shoal rapidly.

Caution.—Deep-draft vessels should pass through Canal de Pedro Alvares at mid-tide.

The channel in the vicinity of Ilha das Galinhas, due to changed depths, was reported dangerous to navigation (1975).

Due caution should be taken when the ebb tidal current sets strongly towards Baixo Mau.

Bolama (11°35'N., 15°28'W.), a small port, is situated on the E side of Ilha Bolama. The town, which is fronted by a shallow pier, stands on the site of Port Beaver which was originally formed in 1792. Anchorage can be taken, in a depth of 24m, mud and broken shells, about 0.2 mile off the town. It is reported that this roadstead is only used by local coasters.

11.24 South approach.—The S approach to Bissau and Bolama is via Canal de Orango and Canal de Canhabaque. Vessels then proceed through Canal de Bolola to Bolama, or through Canal de Bolama and Canal de Pedro Alvares to Canal do Geba and Bissau.

Tides—Currents.—The flood tidal currents in Canal de Orango and Canal de Canhabaque set NE; the ebb currents set SW. Off the mouth of Canal de Orango, the current lasts for 6 hours in each direction. The flood current is reported to set strongly on South Breakers and attain a rate of 1.5 knots in the channel. The ebb current is reported to rarely exceed a rate of 2.5 knots, except after heavy freshets.

11.25 Canal de Orango (11°00'N., 15°49'W.) is about 13 miles wide at its entrance, which lies between South Breaker (10°41'N., 16°08'W.) and a shoal extending 12 miles SW of Ilheu do Poilao (10°52'N., 15°43'W.). The fairway channel has general depths of 12 to 37m, but shoals and reefs lie on both sides of it and reduce the width to about 4 miles between Baixo Branco and Cavalos Spit.

South Breaker, with a least depth of 1.8m, lies 26 miles SW of Ponta Camaleao, the SE extremity of Orangozinho Island. The sea breaks heavily over this shoal bank. A patch, with a depth of 3.7m, is reported (1942) to lie about 16 miles WNW of South Breaker. Another patch, with a depth of 8.7m, is reported (1957) to lie about 9.5 miles SW of South Breaker. A patch, with a depth of 11m and marked by breakers, is reported to lie about 8 miles E of South Breaker.

South Breaker should be given a wide berth as numerous detached rocks and shoals lie in its vicinity.

Orango Reef and Cameleon Reef always break heavily and extend up to 10 miles SSW of Ponta Camaleao. Orango Reef is rather steep-to on its E side and the tidal currents set sharply around and across it. Vessels should use caution when near this reef.

Ilheu do Poilao (10°52'N., 15°44'W.), the S island of the Joao Viera Group (Jamber Group), is thickly wooded and dominated by tall trees. A light is shown from a conspicuous framework tower standing on the summit of this island.

Bicho Bank extends about 5 miles NW of the island. Ilha do Mel, with a prominent white cliff, lies 7 miles N of Ilheu do Poilao. Ilheus dos Cavalos and Ilha Joao Vieira lie 9 miles N and 11 miles NNE, respectively, of Ilheu do Poilao and are separated by Jamber Pass. Cavalos Spit, which dries and generally breaks, extends up to 2.1 miles N of Ilheus dos Cavalos. Two rocky patches, with depths of 3.7 and 5.5m, lie 0.5 mile off the W side of this spit.

Baixo Branco, with a least depth of 2.1m and steep-to, lies 4.5 miles ENE of Ponta Camaleao Light. A patch, with a depth of 9.1m, lies near mid-channel, about 3.5 miles E of Baixo Branco.

In many places, the edges of the banks and shoals are steep-to and may be approached with caution.

Caution.—Vessels approaching Canal de Orango from the N or the W should give a berth of at least 10 miles to the foul ground which extends W of Arquipelago dos Bijagos. This may be done by keeping in depths of not less than 37m until reaching a position about 20 miles SW of South Breaker. Vessels may then proceed to the E and then to the N in order to enter the channel.

Vessels approaching from the S should pass W of the shoals

which extend up to 10 miles SW of Ilheu de Poilao. Care must be taken to avoid the heavy breakers which occur in a position about 8 miles E of South Breaker.

Careful attention should be paid to the tidal currents and soundings when proceeding through the channel; a sharp lookout should be kept for ripples or discolored water.

11.26 Canal de Canhabaque (11°14'N., 15°37'W.), a continuation of Canal de Orango, extends 23 miles N and NNE to the junction of Canal de Bolama and Canal de Bolola. It has considerable depths within the fairway.

Ilha Roxa (11°10'N., 15°47'W.) lies on the W side of the channel and is marked on its E side by a light. The reefs fringing the island are marked by beacons.

Baixos de Oliviera Muzanty, lying on the E side of the channel, is formed by a succession of drying banks, with narrow and deep channels between them. These drying banks extend 13 miles NNE from the N end of Ilha Joao Vieira and are steep-to on their W sides.

Ponta Tombali (11°20'N., 15°30'W.) is the SW extremity of Ilha dos Escravos. A shoal, with a least depth of 4.5m, lies about 3.5 miles NW of this point. Baixos da Honra do Monteiro, on which there is a drying sandbank, extends up to 3 miles offshore, 6 miles N of the point.

Canal de Bubaque, entered between Ilha de Orangozinho and Ilha Roxa, extends in a general N direction for 22 miles. It then joins Canal de Galinhas which leads into Canal de Bolama.

Canal do Fundao separates Ilha de Bubaque from Ilha de Rubane. The village of Bubaque stands on the N side of the former island. A light and a radio mast are situated near this village. Anchorage can be taken, in a depth of 30m, about 0.3 mile E of the light, but the tidal currents run strongly through the channel.

Estuary of the Rio Geba to the Rio Nunez

11.27 The coast between Ponta Tombali (11°20'N., 15°30'W.) and the entrance of the Rio Cacine, 28 miles SE, is little known. Shoals and breakers, which may be separated by narrow channels, extend over 10 miles from the shore and the coast is so low that it is seldom seen by vessels bound for Canal de Orango.

The Rio Tombali, which enters the sea close S of Ponta Tombali, is reported to have a depth of 3m on its bar.

Several groups of shoals, which have depths of 2 to 9m and are separated from each other by comparatively greater depths, lie between Ilheu do Poilao and Recifs Alcatraz, 24 miles SE.

Recifs Alcatraz (Alcatraz Reef) (10°35'N., 15°25'W.), an extensive reef, has general depths of 5m and dries in places. Rocher Alcatraz, 12m high, is a volcanic rock which stands on the NE extremity of this reef. Ile du Naufrage (Wreck Island) is low and lies 1 mile SW of Rocher Alcatraz. Rocher Spitfire (Spitfire Rock), with a depth of 1.8m, lies about 1.5 miles SE of Rocher Alcatraz.

Anchorage can be taken by small vessels, in a depth of 11m, about 0.7 mile E of Ile du Naufrage, but local knowledge is required.

The **Rio Cacine** (11°02'N., 15°09'W.) is entered between Ilha de Melo (Mello Island) (10°59'N., 15°17'W.) and Ponta Cassumba, the W extremity of Ilha Cataque, 3.7 miles ESE.

The river is navigable by vessels up to 1.8m draft, but its immediate approaches are encumbered by numerous sand banks and islets. The factories of Bicaise and Cacine stand on the S bank of the river, 11 miles above Ponta Cassumba. Shallow draft vessels can anchor off these factories, but landing is difficult at LW due to the mud bank that fringes the shore. In the vicinity of the river, the countryside is rich in timber. Vessels intending to enter this river should anchor near Rocher Alcatraz and try to obtain a local pilot. The best time to enter is at LW when the banks are visible; it is reported that this river cannot be approached with SW winds.

The **Rio Katchek** (Kasset River) (10°54'N., 15°08'W.) flows into the sea, 8 miles SSE of the entrance to the Rio Cacine. This river is merely an arm of the sea with passages leading between Iles Tristao, a group of islands, of which Ile Aube is the W.

The boundary between Guinea-Bissau and Guinea lies in the vicinity of the entrance to this river.

The **Rio Compony** (10°49'N., 14°51'W.) flows into the sea 27 miles ENE of Recifs Alcatraz. This river can be ascended for a considerable distance but numerous banks and shoals encumber the entrance and it is of no commercial importance. A rocky barrier extends across the river, 10 miles above the entrance. Above this barrier, the river narrows, but presents no difficulty for small vessels as far as the village of Kandiafara, 25 miles upstream. Local knowledge is required. Anchorage can be taken, in a depth of 10m, sand and pebbles, good holding ground, in mid-channel about 0.5 mile below the rocky barrier.

The Rio Nunez (Kamsar) (10°30'N., 14°44'W.)

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11.28 The Rio Nunez (Fleuve Tinguillinta), the most important navigable waterway in Guinea, has been traced to its source about 50 miles above its entrance. This river provides access to the important bauxite port of Kamsar, formerly known as Port Kakande.

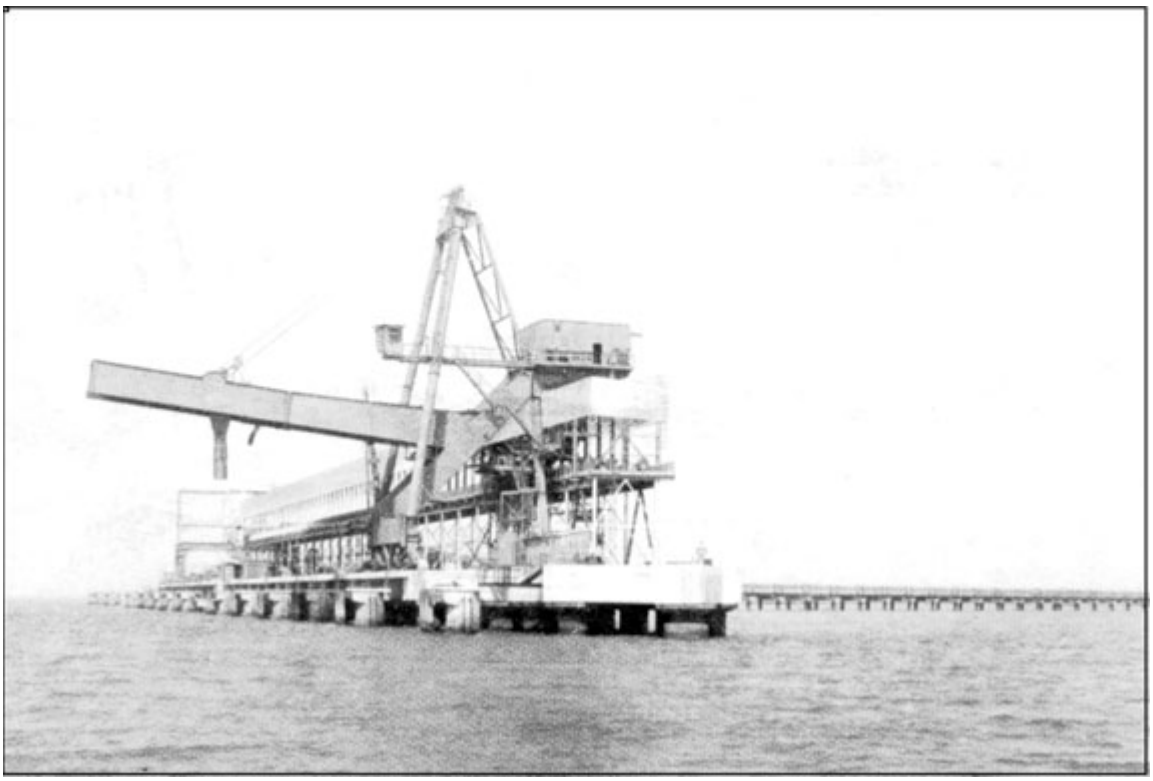
Pointe Kembuto (10°38'N., 14°42'W.), the N entrance point of the river, is high, thickly wooded, and appears detached from the adjoining land. Pointe Malouine, located 5.5 miles NE of the point, can be identified by two large cotton trees standing near it.

Ile Gonzalez (10°28'N., 14°39'W.), the S entrance point of the river, is located 8.5 miles SSE of Pointe Kembuto. It is wooded and prominent. Rochers de Gonzalez, a drying rocky shoal, lies 4 miles SSW of Ile Gonzalez. A light is shown from a tower standing on this shoal. A racon is situated at the light.

A conspicuous stranded wreck is reported to lie close N of the light.

The coast between Ile Gonzalez and Pointe de Dapiar, 6 miles N, is covered with large trees, and like all of this part of the coast, surrounded by a belt of mangroves.

Winds—Weather.—Kamsar has a typically tropical climate which is hot, humid, and characterized by two separate seasons. Rain falls mostly at night and heavy rains fall in July and August. The rainy season commences in May and ends in October. At this time, the winds are variable, force 3 to 6, between



Bauxite-loading wharf and jetty at the Rio Nunez (Kamsar)

the S and W.

There is the possibility of a tornado from the N or NE when winds reach force 10, but for only a short period of time. During the dry season, there are light breezes from the SW to W.

Fog often occurs along the coast, particularly during the dry season.

Tides—Currents.—Tides at Kamsar rise 5.2m at springs and 4m at neaps.

The tidal currents at the entrance to the river set between NNE and NE on the flood and in the opposite direction on the ebb; they usually attain rates up to 3 knots. It was reported (1982) that the currents attained a rate of 6 knots during the rainy season at springs.

Off Pointe Malouine, the flood current sets NNE and attains a rate of 2.7 knots at springs; the ebb current sets SSW and attains a rate of 2.5 knots at springs.

The water of the Rio Nunez is brackish, with specific gravity varying between 1.013 in the rainy season and 1.028 in the dry season at HW.

Bancs Komponi, consisting of above and below-water rocks, extends up to 28 miles SW of Pointe Tristao (10°48'N., 14°59'W.), the S extremity of Ile Aube. A patch, with a depth of 9.4m, lies about 8 miles WSW of the SW end of Bancs Komponi. Recifs Conflict (Conflict Reef), consisting of numerous drying reefs and shoals, forms the SE part of Bancs Komponi.

La Tete de Roche (Rocky Head), a dangerous shoal with a least depth of 1.6m, lies 5 miles S of Bancs Komponi; depths of less than 9m extend up to 7 miles WSW of it. La Tete de Roche consists of ridges which cause cross currents and discoloration of the water at the surface. Vessels should not pass between La Tete de Roche and Recif Conflict.

Recif Verga, with a depth of 5.5m, lies in the S approach to the river and extends up to 9 miles W of Cap Verga (10°13'N., 14°27'W.).

Depths of 8 to 9m lie up to 19 miles W and 14.5 miles SW of Cap Verga.

A patch, with a depth of 3.6m, and another, with a depth of 9.1m, lie about 11 miles and 13 miles SSE, respectively, off Cap Verga. A dangerous wreck is reported to lie in an apprroximate position about 28 miles WSW of Cap Verga.

Plateau de Gonzalez is a dangerous flat which partly dries. It extends up to 4.3 miles SSW of Ile Gonzalez. Rochers de Gonzalez, lying at the S extremity of this flat, dries 2.4m. With a fresh breeze, breakers are generally seen to the N and S of these dangers.

Depths of 7.9m and 9.8m lie about 10.5 and 12 miles SSW, respectively, of Rochers de Gonzalez.

The coastal bank, with depths of less than 5m, extends up to 2.3 miles offshore between Ile Gonzalez and Pointe de Depiar. It dries 1.8m near the outer limit, about 2.5 miles SW of Pointe de Dapiar.

Ile de Sable (Sand Island) lies in the middle of the river, 3.5 miles N of Pointe de Dapiar. It is covered at HW and a drying bank extends SW of it to abreast of Pointe de Dapiar.

Depths—Limitations.—A dredged channel, 120m wide, extends for 9.3 miles and leads to the loading wharf at Kamsar. This channel is dredged to a depth of 9m in its seaward section and to depths of 8.5m and 8.2m in its inner sections. A turning

basin, lying off the loading wharf, is dredged to a depth 7.7m.

The loading wharf is connected to the E shore by a jetty, almost 1 mile long. It is 260m long and has a dredged depth of 13.5m alongside.

Vessels up to 229m in length and 13m draft can be handled at the wharf. However, vessels are limited in size by the river.

Vessels entering the river are generally restricted to a maximum draft of 10m, a maximum length of 220m, and a maximum displacement of 45,000 grt. Freeboard is also restricted to 13.7m when the use of shore side loaders is intended.

Two small piers, with depths of 3.5m alongside, are situated 0.3 mile N of the root of the jetty and can handle vessels up to 100m in length. It is reported that vessels may safely touch the bottom here at LW.

Aspect.—The approaches to the Rio Nunez are marked by lighted buoys.

Lighted Buoy No. I is moored about 34 miles SW of Ile Gonzalez Light and is equipped with a racon. Lighted Buoy No. II is moored about 28 miles WSW of Ile Gonzalez Light.

Lighted Buoy No. IV, Lighted Buoy No. V, and Lighted Buoy No. VI are moored about 23 miles SW, 12 miles WSW, and 6 miles WNW, respectively, of Ile Gonzalez Light. These lighted buoys mark the N side of the approach channel.

Lighted Buoy No. VII is moored about 3 miles W of Ile Gonzalez Light.

Cap Verga (Cap Koundide) (10°13'N., 14°27'W.) is located 20 miles SE of Ile Gonzalez and is very conspicuous. This cape cannot be mistaken, for unlike all the adjacent coast, it rises abruptly to a considerable height.

Cap Verga Light is shown from a framework tower, 10m high, standing 3 miles N of the cape. A radiobeacon is situated at the light.

An aeronautical radiobeacon is situated about 1.5 miles NE of Kamsar.

The dredged fairway channel leading to the loading wharf is marked by lighted buoys.

Pilotage.—Vessels must anchor and await the pilot and various authorities in the area lying between latitudes 10°26'N and 10°28'N and longitudes 14°44'W and 14°46'W. Vessels cannot proceed beyond latitude 10°28'N before being boarded.

Pilotage is compulsory for all vessels over 45m in length. Vessels under 45m in length will also be required to have a pilot onboard on their first call, but may be exempt thereafter by consent of the Port Director.

Vessels must send an ETA, at noon ship's time, 7 days, 5 days, 3 days, and 1 day in advance through Kamsar or Conakry. On approaching the river, vessels must contact the pilot on VHF channel 16.

When weather conditions prevent the pilot from going on board in the above-mentioned area, vessels may follow the pilot boat into the channel until the weather permits boarding.

Anchorage.—Vessels awaiting a berth at the loading wharf can also anchor within the turning basin.

Directions.—The recommended track for vessels proceeding to the Rio Nunez commences about 60 miles W of the entrance to the Rio Geba and leads SSE and SE to a position about 80 miles ESE of La Tete de Rochein (10°04'N., 16°36'W.). It then leads E, passing S of La Tete de Roche, and NNE towards the pilot station.

Caution.—Care must be taken to avoid Recif Verga and the off-lying shoals to the S, SW, and W of Cap Verga.

Visibility in this region is always poor, except after a thunderous squall when it is excellent for about 24 hours. Access to the Rio Nunez is therefore difficult.

Several wrecks, some dangerous, lie in the approaches to the river and may best be seen on the chart.

11.29 Victoria (10°50'N., 14°33'W.), a village, is situated 12 miles above Kamsar. A few factories are situated here. Anchorage can be taken, in a depth of 3.7m, about 0.4 mile S of the village. Anchorage can also be taken, in a depth of 7m, about 0.7 mile S of the village.

Above Victoria, the river becomes sinuous and narrows considerably.

Bel Air, a village, stands on the N bank of the river, 9 miles above Victoria, and is fronted by a stone wharf used by small craft. An important factory is situated here and vessels up to 2,000 grt can reach it. Anchorage can be taken, in depths of 7 to 8m, off the stone wharf.

Boke (10°56'N., 14°18'W.) is situated at the head of navigation 40 miles above Kamsar. It is the principal town on the river and, next to Conakry, is the chief commercial center of Guinea. The river narrows to a width of about 100m here and has a depth of 1m.

The Rio Nunez to Iles de Los

11.30 The coast from Cap Verga to Conakry, 60 miles SE, resumes its low and swampy character. The principal rivers along this stretch of the coast are the Rio Pongo, the Konkoure River, and the Rio Soumba which are only accessible to small coastal vessels. The coast in the vicinity of the entrances to these rivers changes shape and is reported to be extending seaward. The depths of the entrance channels change constantly and the latest information should be obtained from the harbormaster at Conakry.

The coastal bank, with depths of less than 5m, lies from 3 to 9 miles offshore between Cap Verga and the entrance to the Soumba. A patch, with a depth of 3.6m, lies about 11 miles SSE of Cap Verga. The bottom extending up to about 15 miles offshore consists mostly of black or gray mud, or sand and mud mixed with shells; farther seaward, it consists of mostly sand mixed with shells or gravel.

The Rio Pongo

11.31 The mouth of the **Rio Pongo** (Riviere Fatala) (10°03'N., 14°04'W.) consists of a delta which is divided into six branches. The principal branches are Barre de Vase (Mud Bar entrance) and Barre de Sable (Sand Bar entrance), which are both accessible to vessels of light draft. Farther SE, lies Barre de Taboriya, which is only accessible by boats. During the rainy season, this river overflows its banks.

Mont Beta (Mont Mahounde), 174m high, stands 6 miles NE of the entrance to Barre de Sable and is conspicuous. Its summit is formed by a truncated cone with gently sloping sides.

Tides—Currents.—Off the Rio Pongo during October and November, the current has been observed to set NE and E for several days in succession.

Within Barre de Vase, the flood current sets NE and the ebb cur-

rent sets SSW. Within Barre de Sable, the flood current sets NNE across the channel and the ebb current sets SW, sweeping obliquely towards the banks on the S side of the channel. The tidal currents vary, but attain rates of 1.5 to 3 knots after heavy rains.

Depths—Limitations.—Barre de Vase leads across an extensive bar which is marked by breakers. It then passes between Pointe Goro (Coro) (10°07'N., 14°11'W.) and Pointe Jily, 1 mile SE. The bar can be crossed by vessels with drafts of less than 4m. This channel is the most convenient for such vessels. It is narrow, but the muddy bottom causes no damage to grounding vessels. The channel then leads 7 miles NE to its junction with Crique Kissing and Marigot de Avisos, which in turn lead into the main fairway of the Rio Pongo. Crique Kissing is available to vessels with drafts up to 2.4m. Marigot de Avisos is somewhat deeper, but the bends are sharper and it is fronted by a large drying sand bank at the E end.

Barre de Sable leads between Pointe Observation (10°04'N., 14°05'W.) and Pointe Marara, 1 mile SE. Numerous shallow places on the bar give it the appearance of a continual line of breakers. This channel is narrow and constantly changes, but with the aid of a local pilot, vessels with drafts up to 5m can cross the bar at HW. This entrance, although difficult to navigate, is the only one reported to be used by commercial vessels as it is the shortest route to the factories situated along the river. Onshore winds may sometimes cause a heavy sea within this channel.

Boffa (10°10'N., 14°02'W.) lies about 7 miles above the entrance. Several factories are situated here and the town is fronted by a wharf. Small vessels may anchor off the town.

Pilotage.—Pilotage is necessary for vessels using Barre de Sable; pilots can be obtained at Conakry.

Baie de Sangareya

11.32 Baie de Sangareya (Baie de Sangarea) (9°40'N., 13°42'W.) is completely encumbered by shoals which have depths of less than 5m. Extensive shoal banks and flats also extend from each side of the bay. A channel, with a depth of 2m, leads between them.

The bottom off the bay in the outer approaches consists mainly of sand with occasional patches of broken shells and stones. In the inner part, the bottom consists of soft blue mud, and in places, the water is very muddy at the surface.

This bay provides access, for small coastal vessels with local knowledge, to the port of Dubreka, lying on the Rio Soumba (Riviere Dubreka), or to the Konkoure River, via Bouramaya Channel.

Depths—Limitations.—The Rio Soumba is entered at the NE side of the bay. It can be navigated at HW by vessels with drafts up to 3.5m as far as Dubreka, situated about 6 miles above the entrance.

Bouramaya Channel, entered at the N side of the bay, leads into the Konkoure River. Vessels up to 3m draft can ascend to Konkoure, situated 20 miles above the mouth of the channel. Upstream of this village, the river is obstructed by rapids.

Aspect.—The most conspicuous objects seen when approaching Baie de Sangareya are Mamelles Soumba, 575m high, and Mont Kakoulima, 1,007m high, standing 12 miles NNW and 5 miles ESE, respectively, of Dubreka. The latter mountain, which is the highest in the locality, has steep and regular slopes; it is clearly visible during the rainy season, but is often obscured by mist during the dry season.

The N shore of the bay is formed by Ile Khonibombe, which is low and wooded. The prominent village of Kandian stands on the SE point of this island.

Pilotage.—Pilots can be obtained at Conakry. Local knowledge is required.

Iles de Los

11.33 Iles de Los (Ile de Loos) lie on the S side of the approach to Baie de Sangarea and consist of four large islands and three small ones. The large islands are Ile Tombo, Ile Tamara, Ile Kassa, and Ile Roume. The three small islands are Ile de Corail, Ile Blanche, and Ilot Cabri.

Iles de Los are a continuation to the WSW of Presqu'ile de Camayenne. Ile Tombo, occupied by the city of Conakry, lies close SW of the SW extremity of Presqu'ile de Camayenne and is separated from it by a narrow, rocky passage crossed by two causeways.

Tides—Currents.—On the E coast of Ile Kassa, the flood tidal current sets N and the ebb tidal current sets S. At Ile Roume, the flood current sets NE and the ebb current sets SW. These currents attain rates of 1.5 to 2.3 knots at springs and 0.5 to 1.2 at neaps. They change at the time of HW and LW at Conakry.

Caution.—Local magnetic anomalies exist in the vicinity of Iles de Los. Deflections up to 6° have been observed when approaching Ile Tombo and up to 3° in the vicinity of Ile Tamara.

11.34 Ile Tamara (9°30'N., 13°49'W.), the W and largest island of the group, is formed by a range of thickly-wooded hills. Sommet Ballay, 166m high and the highest hill, stands at the N end of the island and may be seen from up to 20 miles seaward in clear weather. From the N or S, the island sometimes appears to be split in two. Its N and E sides are mostly fronted by shoals.

Pointe de l'Arethuse, the N extremity, is marked by a prominent beacon. Recifs l'Arethuse, with depths of less than 5m, extends up to 1.6 miles NE of this point. Roches de l'Ardent, lying 1.7 miles N of the point, consists of two rocks, about 0.3 mile apart. These rocks have a least depth of 3m and do not break; however, there is generally a heavy swell over them. A patch, with a depth of 5.2m, existence doubtful, is reported to lie about 1.3 miles NW the point.

Pointe du Hunier, the S extremity of the island, has an islet lying close S of it and a group of three small rocks lying 0.3 mile E of it. Ile Fousset, which dries 4.8m, and Ile Poulet, which dries 3.8m, lie 0.5 mile ENE and 0.6 mile NE, respectively, of the point and are joined to it by an area of foul ground.

Ile Tamara Light is shown from a conspicuous tower, 6m high, standing on the S end of a hill, 0.5 mile NNW of Pointe du Hunier.

A roadstead anchorage lies at the E side of the island, 0.3 mile E of the light. In the past, bauxite was loaded here.

Ile de Corail, 30m high, lies 1 mile SE of Pointe de Huier. A rock, with a depth of 1.7m, lies 0.2 mile SE of this small island.

Caution.—Due to the existence of submarine cables, anchoring prohibited area, the limits of which are shown on the chart, extends between Ile Tamara and Ile Kassa.

Ile Tamara Light

11.35 Ile Roume (9°28'N., 13°48'W.), lying midway between Ile Tamara and Ile Kassa, has several rocky hills. Sommet Mady, 80m high and the highest hill, stands on the W side of the island. Ile Souride lies close off the N side of the W part of Ile Roume and is connected to it by rocky ledges that cover at HW. Ile de la Bouteille, 3m high, lies close off the SE part of Ile Roume.

Banc Crawford, which dries in places, almost completely obstructs the passage between the N side of Ile Roume and the N end of Ile Kassa.

Ile Kassa (9°29'N., 13°45'W.), the E island of Iles de Los, is narrow and formed by a range of densely wooded hills. Sommet Souroguia, 111m high, and Sommet Horace, 103m high, stand close together, at the N end of the island. Sommet Kouromandja, 110m high, stand 1.3 miles N of Pointe du Tonnelier, the S extremity of the island. From the S, the first two summits appear isolated from Sommet Kouromandja.

Pointe de l'Almarante, the N extremity of the island, shelters a small boat harbor. A dangerous wreck lies about 0.8 mile W of the point.

The E coast of Ile Kassa is fronted by a bank, with depths of less than 5m, which extends up to 0.5 mile offshore.

Pointe du Mat is located midway along the E coast of the island. Several conspicuous abandoned bauxite installations stand near this point. A disused jetty, in a dilapidated condition, extends E and SE from the vicinity of the point and has a depth of 10m alongside.

Ile du Goulu, marked by a disused light tower, lies 1 mile S of Pointe du Mat and is connected to the island by a drying reef. An isolated patch, with a depth of 6.8m, lies about 0.5 mile ENE of this islet.

Pointe du Tonnelier, the S extremity of Ile Kassa, is marked by a beacon. Ilot Cabri, 5m high, and Ile Blanche, 23m high, are wooded and separated from each other by a narrow strip of foul ground. They extend up to 1 mile SW of Pointe du Tonnelier and are separated from the SW end of Ile Kassa by a passage, 0.3 mile wide. A rocky shoal, with a depth of 6.4m, lies about 0.6 mile WSW of the SW extremity of Ile Blanche and another shoal, with a depth of 5.2m, lies midway between it and the island.

Recif du Tonnelier, which dries 1.9m, lies 0.5 mile E of Pointe du Tonnelier; a patch, with a depth of 5.2m, lies about 0.2 mile farther ENE.

Caution.—Ile Kassa has been reported to lie almost 0.2 mile W of its charted position.

Conakry (9°31'N., 13°43'W.)

World Port Index No. 45855

11.36 The city of Conakry completely occupies Ile Tombo, which is flat, wooded, and almost entirely bordered by rocky ledges. The main part of the port fronts the NW side of the island; Anse du Dragonnier, used by small coasters, fronts the SW side of the island.

The main part of the port is formed by a natural basin which extends parallel to the NW side of the island. It is sheltered to the N and NW by Banc de la Prudente and to the W and SW by Iles de Los. The harbor is also sheltered by two detached breakwaters which lie parallel to the NW side of the island.

Tides—Currents.—Tides rise 3.7m at springs and 2.8m at neaps.

The tidal currents are irregular. With tidal ranges greater than 2.5m, the flood current runs from 2 hours to 4 hours 15 minutes after LW. It sets N, up to 2 knots, in the entrance and NE, up to 2.3 knots, within the harbor. The ebb current runs from 1 hour 15 minutes to 4 hours 15 minutes after HW. It sets S, up to 2.3 knots, in the entrance and SW, up to 1.5 knots, within the harbor.

Depths—Limitations.—Passe du Nord, leading between Roches de L'Ardent and Pointe de L'Arethuse, is no longer used due to reduced depths.

Grande Passe, the main fairway, passes S and E of Ile Kassa and is the normal access to the port. It was reported (1998) to be dredged to a depth of 9.7m. A depth of 6.1m was reported (1994) to lie in the vicinity of Buoy No. 9, while a depth of 6.6m lies in the vicinity of Buoy No. 8.

Berth No. 0 and No. 1, mostly used for alumina, have 350m of total berthing space, with alongside depths of 9 to 10m.

Berth No. 2, Berth No. 3, Berth No. 4, and Berth No. 5, mostly used for general cargo, have a total length of 450m, with alongside depths of 6 to 8.5m.

Berth No. 6 has depths of 2 to 7m alongside and is used by fishing vessels and small craft.

Berth No. 7, mostly used by fruit vessels, is 140m long and has a depth of 7m alongside.

Berth No. 8 and Berth No. 9, mostly used for minerals and

petroleum, have 300m of total berthing space, with a depth of 11m alongside.

Berth No. 10 is 190m long and has a depth of 10m alongside. It is used by petroleum vessels.

The container quay is 270m long, with a depth of 10.5m alongside.

Generally, vessels up to 220m in length and 9.8m draft can be accommodated in the port.

Boulbinet Light

Aspect.—Boulbinet Light is shown from a prominent tower standing on the reef which fronts the SW side of the city.

Conspicuous landmarks, which can be seen above the numerous trees, include the cathedral tower, 52m high, standing 0.5 mile NE of the light; a high-rise building standing close NW of the cathedral; a hotel standing close NNE of the light; four radio masts, marked by obstruction lights, standing 1 mile E of the cathedral; and the four minarets of a mosque standing 0.5 mile NE of the causeways.

An aeronautical radiobeacon is situated 2.3 miles NE of the city, on the SE side of the mainland.

An outer approach lighted buoy is moored about 3 miles SSW of the city. The dredged fairway channel leading to the main harbor is marked by lighted buoys.

Pilotage.—Pilotage is compulsory for vessels over 20m in length. Pilots can be contacted on VHF channel 10, 13, 14, or 16 and board in the vicinity of the entrance to the dredged channel, 2.5 miles SSW of the city. Vessels should send an ETA via Kamsar Radio or S Lys (FFL, FFS, or FFT) 72 hours, 48 hours, 24 hours, and 12 hours prior to arrival.

It has been reported (1995) that the pilot boards inbound vessels abeam of the container terminal and that pilotage is available during daylight hours only.

Anchorage.—Anchorage can be taken, in a depth of 9m, within an area on the W side of the channel, lying 0.5 mile W of the light. There is room for two vessels here, but they must remain clear of the access channel. During spring tides, the current here is strong.

A preferable and more sheltered anchorage, in a depth of about 7.3m, lies with the head of the pier at Pointe du Mat (Ile Kassa) bearing 250°, distant about 0.8 mile.

Caution.—It is reported (1990) that pilferage is a major problem at this port. Large gangs of thieves have boarded vessels alongside in daylight in order to steal cargo from containers and holds.

An anchorage prohibited area, the limits of which are shown on the chart, extends between the city and Ile Kassa and up to 4.5 miles seaward along the E side of the entrance channel. Anchoring is also prohibited within the main harbor.

Dumping areas, the limits of which are shown on the chart, lie centered 1.7 miles WNW and SE of the harbor entrance.

Vessels must supply their own fenders as the quays consist of solid face concrete.

It is reported that the navigational aids are unreliable and may be extinguished, missing, or out of position.

The S detached breakwater is low; at night it is almost invisible.

Numerous small fishing vessels may be encountered in the approaches to the port.

Conakry to the Sierra Leone River

11.37 The coast between Conakry and the entrance to the Melikhouree River (Mellacore River), 34 miles SE, is very low, densely wooded, and has no distinctive features. The contrast, which this coast presents under difficult atmospheric conditions, is very noticeable.

In clear weather, Iles de Los, the high inland mountains, the tall trees along the coast, and Ile Matakong can be seen from a considerable distance. In hazy weather, only a few sections of the low coast with an indistinct opening of a river here and there can be made out.

Within the extensive bight lying between Conakry and Ile Matakong, 21 miles SE, there are no isolated dangers and good anchorage may be obtained. The bottom is composed of mostly mud, except on some of the shoals at the entrance to the Morebaya.

The Soumbouyae River (Sarinka River), the Morebayae River, and the Forecariah River (Riviere Forecariah) are only frequented by local coastal vessels. Other vessels bound for these rivers should first call at Conakry to obtain the latest information about the river depths. The ebb currents in these rivers are reported to be very strong.

The Soumbouya River, entered about midway between Conakry and Ile Matakong, is reported to be accessible to vessels with drafts of less than 3m as far as Fallikouri, 16 miles above the entrance.

The Morebayae River, entered 7.5 miles N of Ile Matakong, has only been surveyed for about 7 miles above its entrance. The channel leading across the bar, 5 miles WSW of the E entrance point, has a least depth of 0.9m. The shoal banks, lying on either side of the entrance, dry in places and those on the S side always break. Above the entrance, there are depths in mid-channel of not less than 5.5m as far as the survey extends, except for a bank, with a least depth of 3.7m, which extends into mid-channel from the E bank, 4.5 miles above the entrance.

The Forecariah River, entered 5 miles E of Ile Matakong, is barred about 2 miles within its entrance by rocks. The mouth of this river is obstructed by a shoal flat which has a least depth of 1.2m in the fairway. This flat extends from Ile Matakong to the entrance of the Melikhoure, 10 miles SSE.

Ile Matakong (Matakong Island) (9°17'N., 13°25'W.), which lies 7 miles SW of the entrance to the Morebaya, rises to a gently sloping hummock covered with luxuriant vegetation. Although of only moderate elevation, this island forms a striking contrast to the low swampy mainland located NE of it. The SE part of the island is separated from the rest of it by a small stream. This part is low and covered with tall trees.

A light is shown from a tower, 12m high, standing on the summit of the island.

Ile Matakong is surrounded by reefs and mud flats so that only small shallow vessels can approach it.

11.38 The **Riviere Melikhoure** (Mellacore) (9°06'N., 13°19'W.) is entered between the S side of Ile Tana (Ile Tannah), lying 11.5 miles SE of Ile Matakong, and Pointe Sallatouk, 5.5 miles SW. Several tributaries enter this river and it provides access to the small port of Benti. The most important of these tributaries is the Tana, which flows into the N side of the river, W of Ile Tana.

The boundary between Guinea and Sierra Leone lies on the coast, about 1 mile S of Pointe Sallatouk.

The Riviere Melikhoure can be identified easier than the other rivers previously described. Pointe Sallatouk, the S entrance point, is higher than any of the adjacent coast. From seaward, this point appears as a steep promontory because of the tall mangroves covering it. Prominent beacons are situated on Pointe Sallatouk and Pointe Bellangsang, located 2.5 miles NE of the S extremity of Ile Tana.

The outer approaches are marked by Mellacore Lighted Buoy (9°05'N., 13°28'W.), which is moored about 8.5 miles W of Pointe Sallatouk. It is reported that several dangerous wrecks, with masts showing, lie about 10 miles WSW and 14 miles SW of this lighted buoy.

The entrance channel and the river fairway are marked by buoys as far as Benti. However, these buoys cannot be relied upon.

Middle Ground, an extensive flat, is composed of hard sand and dries in places. It divides the entrance of the river into two channels. North Pass, which leads between this flat and Ile Tana, is accessible only by small and shallow vessels with local knowledge.

South Pass, the principal entrance channel, leads between Middle Bank and the partially drying flats which front the SE side of the river entrance. The bar, which lies near the SW end of Middle Ground, is subject to frequent changes. A depth of 4.6m was reported (1953) to lie over this bar. Vessels with drafts up to 6.5m can reach Benti; vessels up to 6m draft can proceed up the river as far as Siguande, 7 miles above Benti; and vessels up to 2.8m draft can go as far as Maliguiagbe, 5 miles farther upstream.

11.39 Benti (9°10'N., 13°13'W.), a small port, is situated on the S bank of the river, 8 miles NE of Point Sallatouk. It is a center for the export of fruit and vessels call here regularly to load bananas.

Tides—Currents.—Tides at Ile Tana rise 3.9m at springs and 3.1m at neaps.

Depths—Limitations.—Two conspicuous concrete warehouses stand on the shore and are fronted by a wharf, 61m long, with depths of 11 to 12.3m alongside. Vessels berthing should swing and moor alongside the wharf headed downstream. The maximum draft of vessels reaching here depends upon the state of the sea on the bar and the tide. In good weather, vessels with drafts up to 6.5m can cross the bar at HW.

Pilotage.—Pilotage is recommended because of the frequent changes in the river channel. Pilots must be ordered in advance and are boarded at Conakry.

Anchorage.—Anchorage can be taken, in depths of 15 to 18m, mud and gravel bottom, off the wharf. The tidal currents attain rates up to 4 knots at mid-tide, but there is good holding ground and ample swinging room.

11.40 Yelibuya Sound (Skarcies Rivers) (8°53'N., 13°17'W.) is entered between Pointe Sallatouk and Ballo Point, 15.5 miles SSE. It is almost entirely filled with mud flats and shoals, and should not be navigated without local knowledge. This sound, which forms the estuary of the Skarcies Rivers, has low and wooded shores.

Yelibuya Island, located 6 miles SSE of Point Sallatouk, is low, swampy, covered with trees, and difficult to recognize. A village is situated on the S side of this island and is visible from up to 10 miles seaward. It is reported to appear as several white objects which may be mistaken for breakers.

Kortimaw Island, located 3 miles SE of Yelibuya Island, is fronted on its N and W sides by an extensive mud flat. The S side of this island is low and wooded; from the W and SW, it stands out as a clear-cut edge.

Yelibuya Sound Channel, the main entrance channel, passes between the banks which extend S of Yelibuya Island and those bordering the N and NW sides of Kortimaw Island. This channel then continues E to the entrance of the Great Skarcies River, 2.5 miles E of Kortimaw Island. The Great Skarcies River is navigable by small vessels, with drafts up to 2.7m, as far as Tawiya, 25 miles above the entrance.

Another channel, known as Direct Channel, leads between Kortimaw Island and Ballo Point, but an extensive shifting bar of sand renders access to it difficult.

The Little Skarcies River is entered S of the Great Skarcies River and is obstructed, at its entrance, by a large mud flat. This river is only navigable by small local coasting vessels. It is reported that small vessels, with drafts up to 1.8m, can go as far as the village of Mange, 25 miles above the entrance. The river is reported to be tidal for about 5 miles farther upstream. During the rainy season, the Little Skarcies River rises about 2.7m.

The coast lying between Ballo Point and the mouth of the Sierra Leone River is fronted by extensive shoals and submerged rocks. Along this section of coast, depths of 5m lie as far as 6.5 miles offshore, in places. In addition, detached, drying, and submerged rocky patches lie within 4 miles of the coast.

In order to be sure of having depths in excess of 13m, vessels are advised to remain at least 18 miles seaward of this stretch of coast.

Between Ballo Point and Leopard Island (8°41'N., 13°15'W.), the coast is formed by a sandy beach and backed by densely-wooded land. Farther S, the coast is known as Bullom Shore and it forms the N part of the entrance to the Sierra Leone River.

The Sierra Leone River

11.41 The **Sierra Leone River** (8°30'N., 13°10'W.) is an arm of the sea which receives the waters of several tributaries. It is entered between Leopard Island (8°41'N., 13°15'W.) and Cape Sierra Leone, 11 miles SSW. This river provides access to the ports of Freetown and Pepel.

The N shore of the river entrance, known as Bullom Shore, extends between Leopard Island and Tagrin Point, 11 miles SSE. It is mostly low-lying, but rises in places to heights up to

30m. Conspicuous red sand cliffs can be seen here and there between the trees and bushes.

The S shore of the entrance presents a striking contrast to the N shore. It consists of a peninsula which is formed by a bold, forest-clad range of mountains.

Cape Sierra Leone (8°30'N., 13°18'W.), 17m high, is the W extremity of the above range of mountains. It is covered with trees and scrub and joined to the peninsula by a narrow isthmus covered with mangroves and scrub. From a distance, the cape has the appearance of a rocky and craggy island.

Old Sierra Leone Light

Cape Sierra Leone Light is shown from a prominent tower on a dwelling, 21m high, standing near the N extremity of the cape. A conspicuous water tower, marked by red obstruction lights, is situated 0.3 mile S of the light; a signal station stands close NNE of the light.

Caution.—An extensive shoal, with a least depth of 8.5m, lies about 1.2 miles WNW of the cape and is marked by a lighted buoy.

Another extensive shoal, with depths of 10m and less, extends up to 1.5 mile W of the cape.

11.42 The estuary of the Sierra Leone River is obstructed by Middle Ground, a large bank of sand. This bank has depths of less than 11m and extends up to about 8.5 miles W of the N shore. It dries in places and the sea breaks on several patches with depths of less than 1.8m.

A narrow tongue, with depths of 7.9 to 11m, extends S from Middle Ground to a position about 1 mile NW of Cape Sierra Leone. The ship channel leading between Middle Ground and the S shore has a least depth of 10.7m in the vicinity of this tongue.

O'Farrell Shoal, with a least depth of 4m, is composed of mud and sand and lies about 1.5 miles NNE of Cape Sierra Leone.

substitute Sierra Leone Light

Carpenter Rock, which dries 0.9m, lies 0.7 mile WSW of Cape Sierra Leone and at the N end of a tongue of the S coastal bank. This rock can be easily distinguished by the breakers and the boiler of a wreck which lies on its S side and is visible at all stages of the tide.

A shoal patch, with a least depth of 5.5m, lies about 0.7 mile S of Carpenter Rock.

Less water than charted was reported (1983) to lie in the vicinity of a position centered 0.5 mile W of Carpenter Rock.

The passage between Carpenter Rock and Bromham Rock, lying 0.5 mile ESE, is not recommended. Even in good weather, the tide rips in this vicinity are dangerous for boats.

Cline Patches (Kline Patches), a shoal area, lies 2.5 miles WSW of Tagrin Point and 1.2 miles NE of Cline Point (Kline Point) (8°30'N., 13°12'W.). It has general depths of less than 9m and a least depth of 5.5m near the N end.

An isolated shoal area, with a least depth of 7.3m, lies about 1 mile WNW of Cline Patches and an obstruction lies 0.3 mile S of it.

It has been reported (2002) that recent surveys indicate significant shoaling in several areas of the Sierra Leone River and its approaches. Depths less than charted may be encountered.

Tides—Currents.—Tides at Freetown rise 3m at springs and 2.3m at neaps.

Inside Cape Sierra Leone, the tidal currents follow the direction of the channel. At the anchorage off Freetown and at King Tom Point, the E current commences about 5 hours before HW at Freetown and the W current commences about 1 hour after HW.

In the rainy season (June to September), the ebb currents attain rates up to 5 knots. During freshets, the start of the flood

currents may be delayed until about 2 hours before HW at Freetown and may only attain a small rate.

Across the recommended track strong currents, which can attain a rate of as much as 4.5 knots, set N on the flood and S on the ebb.

At the outer end of Kissy Oil Fuel Wharf near Ardron Point, the W current commences at, or very shortly after, the time of HW; the general direction of this current is parallel to the wharf, but it may, especially near the start, be inclined slightly inwards. Its greatest rate is reported to be 5 knots. The E current begins about 5 hours before the time of HW; its direction is less certain than that of the W current and, although generally parallel to the wharf, it may be inclined inwards or outwards by as much as 40°, especially towards the end of the period. Its greatest rate is reported to be 2.5 knots.

When within 200m of the above wharf, vessels often experience a strong offshore underwater set near the end of the W current and during the E current.

During the winter months, a cold wind blows from the Sahara and is known as the harmattan. It carries dust and sand which at times reduces visibility to 3 miles or less.

Depths—Limitations.—Vessels, with drafts of less than 11m, may generally enter the Sierra Leone River at any time. Vessels, with drafts of 11m and over, may enter during daylight hours only and at special stages of the tide.

The maximum permissible draft for entry is 11.6m plus the height of the tide above chart datum with an absolute maximum limit of 14.6m.

Aspect.—Aberdeen Hill, 62m high, stands close E of the cape and is considerably higher than the land to the E. A conspicuous hotel stands on its summit.

A radiobeacon is situated on this hill, but is frequently reported to be inoperative.

Two conspicuous radio towers stand 2 miles SE of Aberdeen Hill.

Leicester Peak, 595m high, and Sugarloaf, 760m high, are both conspicuous and stand 5 miles and 6 miles SE, respectively, of the cape.

A school is situated at Murray Town, 1.3 miles E of Aberdeen Hill. It consists of a conspicuous white building with a flat roof and extensive frontage. A conspicuous five-story building stands on Signal Hill, 0.6 mile S of the school.

A prominent bridge stands at the entrance to Aberdeen Creek close W of the school.

An aeronautical radiobeacon is situated on the N coast 10.5 miles NE of Cape Sierra Leone. A prominent church stands in the village of Mahera, 8.3 miles NE of Cape Sierra Leone.

Pilotage.—Pilots for the Port of Freetown and the Sherbro River are stationed at Queen Elizabeth II Quay and at Kissy Oil Fuel Wharf, near Ardron Point. Pilots for Pepel are stationed at Pepel.

Vessels can enter and leave the anchorage at Freetown without a pilot. Pilotage is compulsory for merchant vessels berthing at Queen Elizabeth II Quay and Kissy Oil Fuel Wharf, and for vessels proceeding to Pepel.

Pilotage is compulsory. Pilots can be contacted on VHF channel 12 or 16 and usually board about 0.5 mile N of Falcon Bridge Point. On request, pilots will board vessels off Cape Sierra Leone. Vessels should send an ETA at least 48 hours prior to arrival.

Anchorage.—Several designated anchorage berths lie N of the city of Freetown and are indicated on the chart. The instructions for anchorage should be strictly followed. The holding ground is excellent, but barnacles accumulate very quickly on the bottoms of vessels.

An emergency anchorage area, the limits of which are shown on the chart, lies centered 2 miles WNW of Cape Sierra Leone.

Anchorage for naval vessels is available in an area, 0.2 mile radius, lying centered 0.3 mile N of King Tom Point.

An explosives anchorage lies 2 miles N of Cline Point.

Caution.—A prohibited anchorage area, the limits of which are shown on the chart, lies in Cline Bay close SE of Cline Point.

A ferry crosses the river from Cline Bay to Tagrin Point.

The taking of appropriate precautions against boarding and piracy has been advised by vessels frequenting the ports of Sierra Leone or taking anchorage off the coast. Caution is also encouraged by the port authorities.

In winter, the land in the vicinity of the entrance is often covered in mist or haze and the form of the hills cannot be made out. Care is then necessary when approaching the entrance.

Vessels approaching from the W should guard against being set onto the extensive shoal banks on the N side of the entrance.

Freetown (8°30'N., 13°13'W.)

World Port Index No. 45862

11.43 The port of Freetown is a good one except for the strong tidal currents and a swell which is experienced from July to September. The city is the capital of Sierra Leone and the seat of government. The port authority manages the harbor at Freetown and the facilities within the Sherbro River.

Queen Elizabeth II Wharf, Freetown

Depths—Limitations.—Queen Elizabeth II Quay is situated on both sides of Fourah Point. Berths 1, 1A, and 2, located SE of the point, have a total berthing length of 367m,

with charted depths of 7 to 9.2m alongside. Berth No. 3 to Berth No. 6, located W of the point, have a total berthing length of 700m and charted depths of 7 to 9.1m alongside. The use of wire ropes for securing to this quay is forbidden due to the cathodic protection equipment in use at Berth No. 3, Berth No. 4, Berth No. 5, and Berth No. 6.

Kissy Oil Fuel Wharf is situated near Ardron Point, 1.5 miles ESE of Fourah Point. It is capable of accommodating vessels up to 43,000 dwt, with a maximum length of 160m and a maximum draft of 11.2m. The berth is formed by a T-shaped jetty, with two dolphins at each end, which has a face, 73m long. Berthing is restricted to daylight hours on the flood tide.

Government Wharf, situated SW of Falcon Bridge Point, is used for the landing and loading of cargo from or into lighters.

Aspect.—The King Tom Peninsula is located 2.5 miles E of Aberdeen Hill. Several conspicuous buildings stand on this peninsula, including a large power station. A beacon stands on King Tom Point, the N extremity of the peninsula.

Falcon Bridge Point is located 1 mile E of King Tom Point. A light is shown from a metal tower, 2m high, standing on this point, and two radio masts stand close SW of it. A prominent white building, with a tank close N of it, stands 0.5 mile SSE of the light. The Parliament Building stands 0.7 mile S of the light and is prominent. Another prominent white building and the conspicuous Kennedy Building, 32m high, stand 1 mile SE of the light. The prominent State House also stands 0.4 mile S of the light.

A conspicuous large crane stands on the NE knuckle of Queen Elizabeth II Quay and a lighted range is situated on Cline Point.

11.44 Pepel (8°34'N., 13°04'W.) (World Port Index No. 45865), a loading port for the Marampa Iron Ore Mines, is situated on the S side of Pepel Island. The mines are located 52 miles inland.

Above Freetown, the navigable part of the Sierra Leone River extends in an E and NE direction for 14 miles to the port of Pepel, but is considerably obstructed by shoals. The W side of the river is formed by foul ground which extends as far as 1.5 miles offshore. The islands of Kakim, Yeliwor, and Yema lie on this area of foul ground. The E side of the river is formed by Tasso Island and the drying flats which extend S from it.

On the S shore abreast Tagrin Point, the Bunce River, which is navigable for some distance by small craft, enters the Sierra Leone River. It has depths of 4.9 to 9.1m in the fairway as far as the entrance to Hastings Creek, 3 miles SE. The navigable entrance to the Bunce River is narrowed to a width of about 300m by mud flats which extend up to 1.3 miles W of its E entrance point.

Ocean-going vessels can navigate through a dredged channel, which has a charted depth of 11.6m, as far as Pepel. This dredged channel is marked by buoys but is subject to silting.

Rocky Ledge, which dries 1.5m, lies about 1.7 miles E of Tagrin Point. It is marked by a conspicuous beacon standing near the SE edge of the foul ground which extends from the W bank of the river. Depths of 5.5m and less lie up to 1 mile NE and 1.5 miles SW of Rocky Ledge.

Robene Point is located 3 miles SE of Tagrin Point and can be identified by some conspicuous trees standing near its extremity. The SW extremity of Tasso Island is located 3.7 miles NNE of Robene Point; drying sand banks extend up to 3 miles SSW of it.

Tasso Island is extensively cultivated and the shore consists mostly of mangroves. A narrow shoal, with a least depth of 1.5m, extends up to 1.3 miles in a NNE-SSW direction off the W side of the island. A tide gauge is situated at the S extremity of this shoal, about 1 mile SW of the SW extremity of the island.

Depths of less than 5.5m extend up to 0.5 mile WNW and 0.3 mile N of the NW extremity of Tasso Island. Strong eddies occur off this extremity.

The dredged channel, after clearing the banks which extend W and WNW of Tasso Island, passes N of the island and leads to the loading piers situated off the SW end of Pepel Island.

Above Pepel, it is reported that a channel, used by small craft, extends 18 miles above Freetown to Fernando Po. This channel has a depth of 5m, but is restricted by sand banks.

Tides—Currents.—Tides at Pepel rise 3.1m at springs and 2.4m at neaps.

Depths—Limitations.—Milton Margai Pier has had a new dolphin mooring system installed in order to permit the handling of larger vessels. The berth has a depth of 13.7m alongside.

Generally, vessels up to 256m in length and 39m beam can be accommodated. Vessels up to 265m in length, 41.5m beam, and 22.3m molded depth may be accepted for docking after careful consideration by the authorities concerned. The shiploader has a maximum boom height, when in the horizontal position, of 21.6m above chart datum. It also has a maximum outreach of 26.5m from the berthing line.

Due to the seasonal silting of the channel and intended annual dredging maintenance, the permissible sailing drafts for vessels remains entirely at the discretion of the harbormaster at Pepel.

Pilotage.—Pilots are provided, free of charge, by the mining company at Pepel. Pilots embark and disembark at Freetown. It is reported that pilotage is not undertaken during the hours of darkness. For further information, see paragraph 11.42.

Anchorage.—Anchorage can be obtained in the main channel between Tagrin Point and Robene Point, but the holding ground is not good and the tidal currents are strong.

The Sierra Leone River to the Banana Islands

11.45 The high mountainous range of the Sierra Leone peninsula, with peaks over 610m high, rises behind the coast between Cape Sierra Leone and Cape Shilling, 22 miles SSE. The S part of this range is the highest, and although the summits are generally clouded over, they can often be seen from as far as 45 miles seaward. Sugarloaf, previously described in paragraph 11.42, is the highest peak in the N part of this range. The most conspicuous peak, Mules Ears, rises to a height of 824m, 6 miles NE of Cape Shilling.

Depths of less than 11m lie, in places, as far as 4 miles off this stretch of coast. Landing can be made on many of the beaches along the shore except from May to October, when the surf is sometimes heavy.

Cockerill Bay, a slight indentation in the coast, lies immediately S of Cape Sierra Leone and is fronted by a sandy beach backed by trees. It terminates 4 miles S of the cape in a double

rocky point formed by Goederich Point (Godrich Point), on the N side, and False Cape, on the S.

Whale Bay, a small bight, lies 6 miles N of Cape Shilling. York, a small town, is situated at its N end and has a good landing at the S side. Small wooded islets, 15m high to the tree tops, lie close SW and 1 mile NW of the town. A reef, with drying rocks, extends up to 1.3 miles SW from a point on the shore, 2 miles NNW of the town.

Maroon Islet, 30m high, lies close offshore, 2 miles N of Cape Shilling. A rock, which usually breaks, lies 0.5 mile offshore, about 2 miles N of this wooded islet.

Cape Shilling (8°05'N., 13°09'W.), 68m high, is covered with bushes; when seen from a distance of up to 15 miles, it has the appearance of a small island. The prominent village of Kent stands on a hill near this cape. Thistle Islet, 8m high to the treetops, lies 0.5 mile SW of the cape.

Caution.—Several submarine cables, mostly disused, extend seaward from the vicinity of Cockerill Bay and may best be seen on the chart.

The Banana Islands

11.46 The **Banana Islands** (8°07'N., 13°13'W.) are a group of three islands which extend between 2.5 and 7 miles SW of Cape Shilling.

These islands appear as a few sharp peaks and rounded bluffs separated by low land when seen from a distance of 10 miles. Although they lie near the African Continent, these islands have a comparatively healthy climate. Deep-draft vessels and vessels without local knowledge should pass to the W of the Banana Islands.

Dublin Island, the NE island, is the largest of the group and rises to a height of 173m at its SW end. A large conspicuous clump of cotton trees, 37m high, stands at its NE end.

Wolf Rock, awash, lies nearly 1 mile NE of the NE end of this island. Numerous shoals, with depths of less than 5m, lie in the passage which leads between Dublin Island and Thistle Islet, 2 miles NE.

Ricketts Island, the middle island, is volcanic and the highest of the group. Banana Peak, 252m high, stands near its center. This island is connected to Dublin Island by a narrow causeway.

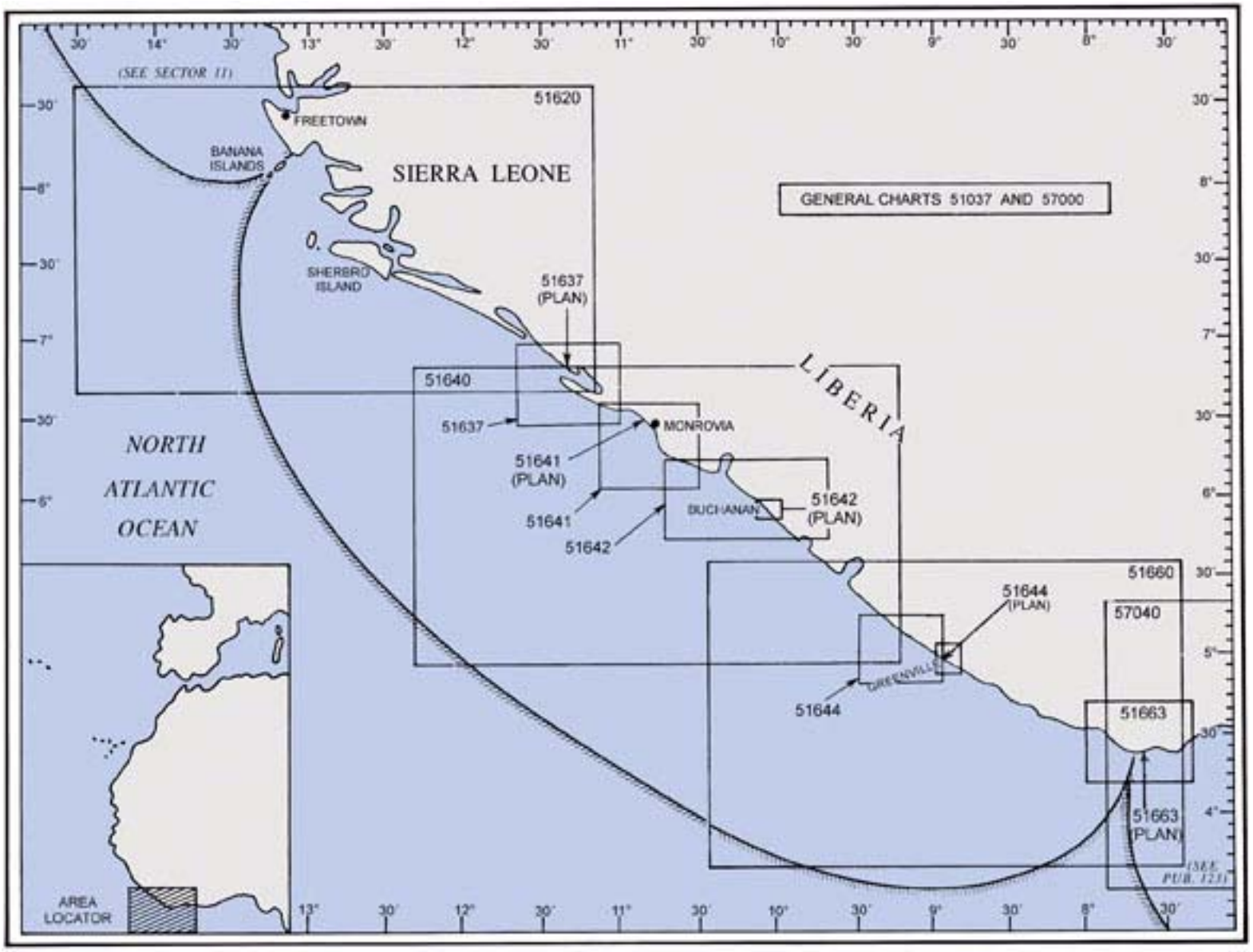
Mes-Meheux Island, the SW island, is separated from Ricketts Island by a narrow boat passage. Meheux Light is shown from a tower, 4m high, standing at a height of 31m near the SW end of this island.

A rock, awash, lies about 0.5 mile WSW of the light.

Tides—Currents.—Off the Banana Islands, the flood current sets E and the ebb current sets W. Both attain rates up to 1.5 knots.

The tidal currents set strongly through the passage between Dublin Island and Cape Shilling, and sometimes form tide rips.

Anchorage.—Vessels can anchor, in a depth of 11m, off the N side of Dublin Island. The best berth lies about 0.5 mile NW of the conspicuous clump of cotton trees. During the season of squalls, vessels can anchor, in a depth of 11m, about 1.3 miles NW of the conspicuous clump of cotton trees. Vessels at this berth would drift clear of danger if the cable parted.



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

SECTOR **12** — CHART INFORMATION

SECTOR 12

SIERRA LEONE AND LIBERIA—THE BANANA ISLANDS TO CAPE PALMAS

Plan.—This sector describes the W coast of Africa from the Banana Islands to Cape Palmas. It includes the ports of Monrovia, Buchanan, and Greenville. The descriptive sequence is from the NW to SE.

General Remarks

12.1 The coast lying S of the Sierra Leone Peninsula forms a large bight into the S side of which the Sherbro River enters the sea. An extensive shoal area, known as the Shoals of St. Ann, extends up to 46 miles WNW of Sherbro Island and forms the S side of the approach to the Sherbro River.

Between Sherbro Island and Cape Palmas, 340 miles SE, the coast is intersected by the mouths of numerous rivers. St. Paul, the principal one, enters the sea 85 miles SE of Cape St. Ann (7°34'N., 12°57'W.). The coast is mostly low and sandy, with thick forests inland, rising gradually to wooded mountains.

Caution.—Due to the recent hostilities, all vessels are advised to use extreme caution when sailing near the coast of Liberia. Vessels should be aware of any Special Warnings issued concerning the ports within Liberia.

Navigation aids along the coast of Liberia are reported to be unreliable.

Great caution should be observed by vessels navigating along the coast of Liberia, because of the strong prevailing currents. This applies especially at night off the NW part of the coast, which is unlighted. It is prudent to keep in depths of over 35m, at night.

The security of vessels navigating in the waters described by this sector has been reported as a serious problem. The authorities have received numerous reports of vessels having been attacked by gangs of thieves. Generally, these attacks have taken place at outer anchorages, but some have been while vessels were at sea or alongside. Open lights used by the thieves also pose a fire hazard. Mariners are advised to keep a constant watch and not permit any unauthorized craft to come alongside.

Oil exploration installations, facilities, and related vessels may be encountered offshore in the waters described by this sector.

The Economic Community of West African States (ECOWAS) has declared an embargo on arms and military equipment destined for Liberia. Its monitoring group has imposed a maritime exclusion zone of 15 miles along the coast of Liberia. For further information, see Pub. 140, Sailing Directions (Planning Guide) North Atlantic Ocean, Baltic Sea, North Sea, and the Mediterranean Sea.

The Banana Islands to the Sherbro River

12.2 **Cape Shilling** (8°10'N., 13°10'W.) and the Banana Islands are described in paragraph 11.45 and paragraph 11.46, respectively.

Yawri Bay (8°05'N., 13°00'W.) is entered between Cape Shilling and Shenge Point, 19 miles SE. It is fringed by a wide mud bank which dries in places. The Ribi River, the Bumpe River, and Kagboro Creek enter this bay, but are only accessible by boats.

Shenge Point (7°55'N., 12°58'W.), 6m high, is covered in jungle vegetation which may reach a height of 15m. A mission church, with a prominent roof, and a prominent government rest house are situated on the point. The village of Shenge, fronted by a beach, stands 0.5 mile SE of the point.

Plantain Island (7°55'N., 13°00'W.), wooded and 40m high, lies 1.8 miles W of Shenge Point to which it is almost connected by a chain of above-water and submerged rocks. Gilmorris Islet, which is conspicuous, and Little Gilmorris Islet, lie 0.2 mile W and 0.2 mile NW, respectively, of the W extremity of Plantain Island. Both of these islets are 24m high and wooded.

Bengal Rocks consists of two reefs which lie 0.5 mile and 2.3 miles W of Plantain Island. The W reef dries 0.9m at its NW end; the E reef dries 2.1m at its NE end. Depths of 2.3m lie about 1 mile WSW of the W reef.

Cape St. Ann (7°34'N., 12°57'W.), the W extremity of Sherbro Island, is located 20.3 miles S of Shenge Point and is low and sandy.

The **Turtle Islands** (7°36'N., 13°02'W.) are a group of small tree-covered islands from 18 to 46m high to the tree tops which lie within 10 miles NW of Cape St. Ann.

12.3 The **Shoals of St. Ann** (7°41'N., 13°10'W.) extend up to 46 miles WNW of Cape St. Ann. These shoals are numerous and are composed of knolls of fine light brown sand. This sand is apparently the deposits from the several rivers in the vicinity.

Northwest Patches (7°58'N., 13°34'W.), the outermost of the shoals, has a depth of 5.5m. A patch, position doubtful, with a depth of 4.5m, lies about 5 miles ENE of Northwest Patches.

Endeavor Bank (7°56'N., 13°18'W.), with a least depth of 6.5m on its E side, lies about 21 miles W of Shenge Point.

Shoals of a similar character lie in the area between Northwest Patches and the Turtle Islands.

For a considerable distance to the W and S of the Shoals of St. Ann, the depths are very irregular and a number of banks exist.

Orontes Bank (8°05'N., 13°49'W.), the outermost of these banks, has a least depth 15.8m lying about 17 miles NW of Northwest Patches. A shoal bank, with a depth of 18.5m, lies about 7 miles W of the center of Orontes Bank. Another shoal, with a depth of 15m, is reported (1963) to lie about 10 miles farther W. Espoir Bank, with a depth of 18.5m, lies about 19 miles S of Northwest Patches.

Caution.—During the dry season, the Banana Islands are generally obscured by haze and landmarks cannot be made out. Vessels are therefore advised not to approach any part of the Shoals of St. Ann.

Vessels from Sierra Leone, bound for ports to the S, should give a wide berth to Northwest Patches and keep in depths of

over 28m until they reach the latitude of 7°50'N. Vessels may then gradually alter course to the S and SE, but are advised to keep in depths of at least 35m as far as the meridian of Cape St. Ann. The coast then is quite clear and vessels may proceed along it in any navigable depths or at any distance desired.

The Sherbro River (Bonthe) (7°45'N., 12°58'W.)

World Port Index No. 45867

12.4 The Sherbro River, which may be more correctly described as a sound or strait, extends about 30 miles in an E direction and then about 10 miles in a S direction to Sherbro Strait (Shebar Entrance). The approach to the river lies between Meheux Island and the Endeavor Bank. The entrance to the river lies between Shenge Point and Cape St. Ann and is about 20 miles wide. Shoal banks extend from either side of the entrance and the navigable part, which can be used by vessels of moderate draft, is barely 3 miles wide. To the E of the entrance, the width of the channel decreases rapidly.

The ports within the river consist mostly of anchorage roadsteads where vessels are loaded or discharged by barges and lighters.

Tides—Currents.—Tides at Falcon Point rise 2.8m at springs and 2.2m at neaps.

The tidal currents in the river attain rates up to 2.8 knots during the dry season, while being greatly accelerated during the rainy season.

Depths—Limitations.—The Sherbro River is navigable at all times via Bagru Channel. The largest vessel permitted to enter the river was reported (1980) to be 143m in length with a draft of 7.5m. The channel between Buoy Point, located 20 miles SE of Shenge Point, and the anchorage off the village of Yangisei, 10.5 miles farther SE, may only be entered from 2 hours before to HW by vessels with near this draft. Vessels up to 5.5m draft can reach Bomplake, situated 5 miles above Yangisei, which is the usual roadstead anchorage for larger vessels. Cargo is generally sent out from York, 3 miles SE, and Bonthe, 2.5 miles S, by lighters and barges. Vessels with drafts of less than 5.5m can reach York and can anchor near the NW extremity of York Island. Only small vessels can reach Bonthe (7°32'N., 12°30'W.).

Ore-carrying vessels, which load bauxite and rutile from barges, initially anchor near Buoy No. 8 and load down to a draft of 7.5m; they then shift down river. After completing loading to a draft of 10.9m in the vicinity of Buoy No. 4, they leave the river by a more S track where deeper water has been found.

It was reported (1990) that vessels in the vicinity of Buoy No. 4 could load to a draft of 13m at HW.

Aspect.—The N shore of the river is low, undulating, and covered with vegetation. Between Shenge Point, previously described in paragraph 12.2, and Yenakain Point, 3 miles SE, there are several fishing villages and a number of prominent clumps of high trees, but all of these are difficult to identify from seaward.

The shore between Yenakain Point and Buoy Point, 16 miles SE, is wooded. Buoy Point is 18m high and clearly defined. A conspicuous tree stands in the village of Mano, situated 4 miles SE of Yenakain Point, and a large clump of conspicuous trees is reported to stand 1.5 miles NNE of it.

A conspicuous umbrella-shaped tree stands 2 miles NW of the W entrance point of Thauka Creek (7°48'N., 12°48'W.) and can be identified above the level of the remainder. Numerous groups of fishing stakes are situated on the foreshore between the entrance to Thauka Creek and Buoy Point.

The most conspicuous objects on the N shore include a clump of trees, which contains a 61m high mandu tree, situated 4 miles NW of Buoy Point; and a large dark tree, 48m high and in the shape of a flat dome, standing 1.2 miles NNW of Buoy Point.

The shore from Buoy Point to Falcon Point, 8 miles E, is heavily wooded and fringed with mangroves. A conspicuous tree, 55m high, stands 2.3 miles ENE of Buoy Point.

The S side of the river is formed by Sherbro Island, which is composed of alluvial mud and is low-lying and marshy. This island is mainly overgrown with mangroves and its N coast is marked by several clumps of prominent trees.

Jamaica Point is located 23 miles E of Cape St. Ann and the coast, which extends 1.5 miles NW of it, is backed by tall and dark trees. A conspicuous cotton tree, 37m high, stands in the village of Yangisei, 1.2 miles ESE of the point.

Bobs Island, 46m high, is located 1.2 miles NE of Jamaica Point. Bobs Island Flat, with depths of less than 55m, extends up to 2.5 miles NW of this island.

Long Island and York Island lie 4 miles ESE and 8 miles SE, respectively, of Bobs Island. Yelibana Island lies close NW of York Island. The town of York is situated near the NW extremity of York Island, and the town of Bonthe is situated on the E side of Sherbro Island.

Lighted Buoy No. 1, which marks the outer approaches to the river entrance, is moored 9.5 miles WSW of Shenge Point. The main fairways of the river from its entrance as far as Bobs Island, 50 miles ESE, are marked by lighted buoys and buoys; however, it has been reported that they are often out of position.

Bagru Channel leads between the N shore and Middle Ground. Jenkins Channel, available for small vessels, leads S of Middle Ground.

Bomplake Channel, the continuation of the main channel to the E of Middle Ground, leads between the latter and the W edge of Bobs Island Flat. It then crosses the flat to the W of Bobs Island, leads ESE past the SE extremity of Rendall Island, and continues to York. This channel is tortuous and very constricted between the shoal banks.

The N shore of the river between Shenge Point and Buoy Point is fronted by shallow flats and detached shoals. Depths of less than 5m lie within these flats and extend up to 5 miles from the coast.

The S shore of the river is also fronted by extensive shallow flats, shoals, and rocky patches. A dangerous rock, marked by heavy overfalls during the run of the tide, lies 1.5 miles WSW of Buoy Point and has a least depth of 4.9m. Buoy Rock, with a least depth of 1.8m, lies about 0.5 mile S of Buoy Point. It is very dangerous and is sometimes marked by tide rips.

Middle Ground lies in mid-river between Buoy Point and Falcon Point. This bank dries 1.5m in the N part of its NW section and has numerous drying patches in its SE section.

Pilotage.—Pilotage is advisable. Pilots can be obtained at

and requested from Freetown. Vessels not wishing to call there must give advance notice and embark a pilot off Cape Sierra Leone.

Anchorage.—Anchorage can be obtained wherever convenient in the Sherbro River, with discretion. A good berth lies, in a depth of 11m, off the village of Yangisei.

Caution.—Vessels entering the river should employ the services of a pilot or have local knowledge.

Due to the exposed positions and relative infrequency of servicing, the characteristics and positions of the buoys should not be relied upon.

12.5 Sherbro Strait (Shebar Entrance) (7°32'N., 12°32'W.), the S entrance to the Sherbro River, is entered between the SE extremity of Sherbro Island, located 28 miles SE of Cape St. Ann and Manna Point, 0.6 mile ESE. Both of these entrance points have long sand spits, on which the sea always breaks, extending from them. In addition, a sand bar lies between the two spits.

It is reported that the opening between the breakers is 200m wide. The bar has a least depth of 4.6m and the channel inside the bar has a depth of 4m. The channel leading across the bar is narrow and bends sharply around the extremity of the E sand spit, making navigation very difficult. As the channel is subject to change, entry should not be attempted without local knowledge. Several wrecks are reported to lie in the vicinity of this entrance.

Cape St. Ann to Monrovia

12.6 The S side of Sherbro Island is bordered by a sandy beach and backed by thick woods. The entrance to Sherbro Strait can be identified from seaward as it forms a very visible break in the woods along the coast.

The coast between Manna Point, the E entrance point of Sherbro Strait, and the entrance to the Mano River, 66 miles ESE, is low and sandy. However it is steep-to and free of offlying dangers, with the exception of two reported shoal patches. Racer Patch, with a depth of 20m, was reported to lie 14 miles offshore, about 23 miles WNW of the entrance to the Mano River. Another patch, with a depth of 11m, was reported to lie 19 miles offshore, 27 miles WSW of the same entrance.

The entrance to the Kerefe River (Gallinas River), lying about 6 miles NW of the entrance to the Mano River, is reported to be difficult to identify from seaward.

The Mano River is a small obstructed river which is only accessible to surf boats during the dry season. The banks are mostly high without any mangroves. A flagstaff standing at a factory on the N bank of this river is reported to be conspicuous. A prominent clump of trees surmounts a hill, 72m high, which stands 2.5 miles ENE of the mouth of the river and is reported to be the first land seen when approaching from the NW.

The boundary between Sierra Leone and Liberia lies in the vicinity of the Mano River.

Mana Point (Manna Point) (6°53'N., 11°27'W.), a slight projection, is low and fringed by above-water and submerged rocks. A rocky spit, with depths of less than 9m, extends up to 0.7 mile WSW of the point and should be given a wide berth.

Cape Mount Bay, formed between Mana Point and Cape Mount, 10 miles SSE, receives the waters of the Sugari River, the Marta River, and Lake Piso through a common entrance known as the Cape Mount River in which the surf breaks heavily. The position of this entrance is liable to change due to the shifting nature of the bottom in this vicinity.

Cape Mount (6°45'N., 11°23'W.), the S entrance point of Cape Mount Bay, is the W extremity of a large cape also known as Cape Mount. This large cape appears as a large island from a distance and consists of several hills of nearly uniform height. The highest peak, 325m high, stands 2 miles SE of the W extremity. The hillsides are partially cleared and cultivated.

The American mission stands on rising ground, on the N side of the cape, and is conspicuous from seaward. A house, surrounded by pillars, is situated 0.7 mile ENE of the mission. From seaward, this house is conspicuous and appears to stand on the end of a sandspit.

Anchorage can be obtained, in depths of 9 to 11m, good holding ground, about 1.3 miles NNW of the mission.

12.7 Robertstown (Robertsport) (6°45'N., 11°22'W.) is situated on the S side of the lagoon which forms the entrance to Lake Piso. Two prominent factories stand in the town; a conspicuous radio tower stands close S of them.

Landing is possible in surf boats over the bar of the entrance to the Cape Mount River, but the usual ship's boats can do so only in the calmest weather during the dry season.

False Cape Mount (6°42'N., 11°21'W.) is located 3 miles SE of Cape Mount. The coast between consists of a succession of rocky points and small sandy bights. Then, as far as Cape Mesurado, 39 miles SE, the coast is formed by a low continuous beach of light brown sand, backed by thick woods.

The **Lofa River** (6°34'N., 11°04'W.), which enters the sea 20 miles ESE of False Cape Mount, is considerable, but is difficult to access even by surf boats. Half Cape Mount, topped with trees 46m high, stands 0.5 mile N of the river mouth and is a good landmark.

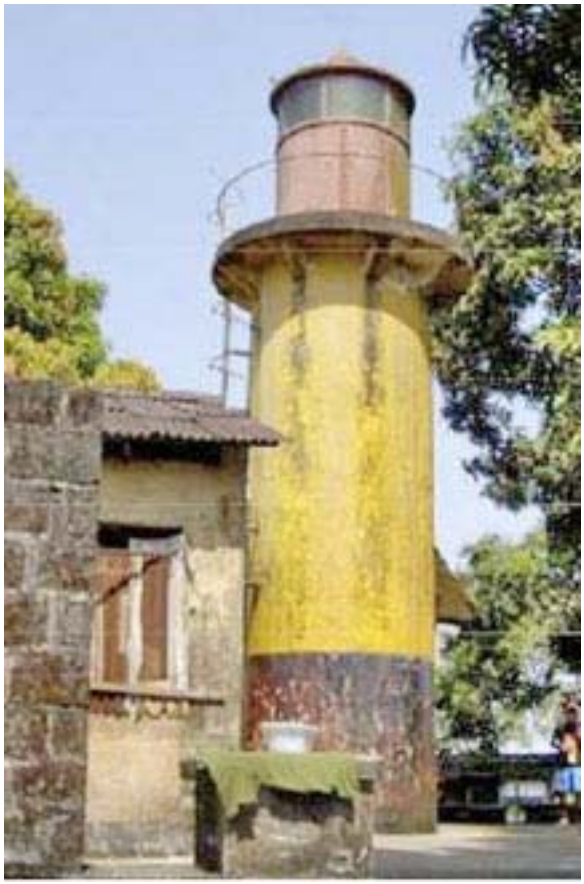
The Po River (Kpo River), which flows into the sea 9 miles SE of the Loffa River, is a small river. Its entrance can be identified by several black rocks lying on a beach at the N side of the mouth.

It is reported that a prominent stranded wreck, which is radar conspicuous, lies about 1.5 miles W of the river entrance.

Between the Po River and the St. Paul River, 10 miles SE, the coast is fringed with rocks, but there are reported to be no off-lying dangers.

The **St. Paul River** (6°22'N., 10°48'W.) is obstructed at its entrance by a shallow bar which is composed of a drying sandspit. This bar extends from End Point, the S entrance point, and curves towards the N shore. Entry over the bar is difficult at all times and during the dry season, it is possible only for surf boats. The river is navigable as far as the first rapids, 12 miles above the mouth. A conspicuous stranded wreck lies on the beach, about 3.5 miles NW of the river mouth. Several prominent radio masts stand 3.7 miles NW of End Point. A prominent hotel is reported to stand 0.5 mile N of the river mouth.

Cape Mesurado (6°19'N., 10°49'W.), located 3.6 miles SSW of the mouth of the St. Paul River, is formed by a rocky steep-to promontory, 80m high. This promontory is high in comparison to the adjacent land and appears as an island when first seen from the W.



Cape Mesurado Light

A light is shown from a prominent tower, 6m high, standing on the summit of the cape and is dominated close E by a large and conspicuous hotel. A conspicuous monument stands close SSW of the light. The British Consulate building, with two flagstaffs, stands on the S part of the cape and is very prominent.

Monrovia (6°21'N., 10°48'W.)

World Port Index No. 45940

12.8 Monrovia Harbor occupies a large part of Monrovia Bay, which is entered between End Point and Cape Mesurado.

The town of Monrovia is the capital of the Republic of Liberia and stands on the S side of the Mesurado River, close under the high land of Cape Mesurado.

Monrovia Home Page

http://www.nationalportauthorityliberia.org

Winds—Weather.—The prevailing winds are W to SW. During the dry season, a wind from the N is sometimes experienced for 2 to 3 weeks. The stronger winds are usually experienced during the wet season (April to November). The wind generally rises in the afternoon and early evening and falls off during the night. During the dry season, the wind is usually from the N during the early morning and backs to the SW by late afternoon. Dangerous winds sometimes revolve like squalls of intense force and are usually of very short duration. Heavy rains follow these dangerous winds, which generally come from the land side. Tornados may occur during the seasonal transition months of March/April and October/November.

Tides—Currents.—Tides rise 1.3m at springs and 1m at neaps.

The tidal currents at the anchorage set NE on the flood and SW on the ebb. They generally attain maximum rates of 1 knot; however, during July, August, and September, these currents may attain rates up to 3 knots.

It is reported (1993) that a slight eddy exists in the breakwater opening.

Approach to Monrovia

Depths—Limitations.—The harbor is formed by two converging breakwaters, each about 1 mile long, which extend SW and NW from the shore. The port lies on the W side of Bushrod Island which is separated from the mainland by Stockton Creek. The entrance channel, which leads E and then ESE to a turning basin, is 152m wide and is dredged to a depth of 14.3m. The basin is dredged to depths of 14.3m in its N part and 10.7m in its S part.

The general cargo quay, at the E side of the harbor, is 610m long. It can handle vessels of any length and beam up to 9.1m draft. It is reported (1993) that rubble lying alongside this quay has reduced the depth to 7.3m.

A fishing pier, situated on the inner side of the N breakwater, can handle vessels up to 73m in length and 4.9m draft. It is reported (1994) that a wreck lies close off this pier.

An oil bunkering jetty extends from the S breakwater and can handle vessels up to 213m in length and 9.6m draft.

The BMC Ore Pier, 270m long, can accommodate vessels up to 274m in length, 38m beam, and 13.7m draft at HW.

The crude oil pier consists of dolphins and can handle tank-

ers up to 213m long, with a draft of 12.2m. It has been reported that the berth is heavily silted up and no longer in use.

The NIOC Ore Pier is 274m long. It can accommodate vessels up to 304m in length, 34.7m beam, and 13.7m draft at HW. It is reported (1993) that this facility is closed.

The LMC Ore Pier is 251m long. It can accommodate vessels up to 253m in length, 39.6m beam, and 13.7m draft at HW. It is reported (1993) that this facility is closed.

It is reported (1990) that the largest vessel to enter the port was 120,000 dwt, 267m in length, and 13.7m draft.

The port has a free-zone status and cargo may be stored for transit.

A ship-breaking yard has been established along the shore, about 2 miles N of the harbor.

Aspect.—The Mesurado River enters the sea close S of the S breakwater. Its entrance has an uncertain channel which changes both in depths and position due to the W swell. Usually, the bar, which fronts the mouth, has depths of 0.9 to 1.8m. Two prominent road bridges span the river and Stockton Creek flows into it close NE of the E bridge.

A prominent military camp, composed of huts with red roofs, stands on Cape False, 1.5 miles SE of Cape Mesurado. A conspicuous water tower stands 2 miles SSE of End Point.

An Omega radio tower stands 9.5 miles E of Cape Mesurado and can be seen from a distance of 40 miles; it is painted with international orange and white bands and exhibits red and white obstruction lights.

The port installations and oil depot are prominent.

The entrance to the approach channel is marked by Lighted Buoy No. 1 which is moored about 1.2 miles WNW of the harbor entrance. The entrance fairway is indicated by a lighted range and marked by lighted buoys.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channel 16 and generally board in the vicinity of Lighted Buoy No. 1. It is reported (1993) that pilots may board up to 1 mile W of this position. Vessels should send an ETA at least 24 hours in advance.

It is reported that bulk carriers of 90,000 dwt and over, as well as loaded tankers will only be berthed during daylight hours.

Anchorage.—Anchorage can be taken, in depths of 12 to 16m, in an area, the limits of which are shown on the chart, centered 1 mile WSW of the S breakwater head. The holding ground is good, but vessels roll heavily.

In 1993, it was recommended that this anchorage be used during daylight only, and that at night vessels should remain at least 20 miles off the coast.

Caution.—Shoal water was reported (1989) to lie close N of the head of the S breakwater.

It is reported (1993) that the usable channel width between the breakwater heads has been reduced to 76m.

Several wrecks, some stranded, lie in the vicinity of the port and may best be seen on the chart.

Berths and channels within the port are liable to silt.

The harbor is sheltered from the trade winds, but not from the SW swell which sometimes causes a heavy scend.

A dangerous wreck is reported to lie about 0.8 mile NW of Cape Mesurado.

A shoal, with a least depth of 10.9m, lies about 3 miles WSW of Cape Mesurado.

It is reported (1994) that disused submarine cables lie close S of the promontory which forms Cape Mesurado.

It is reported that acts of piracy have taken place in the vicinity of the port. See paragraph 12.1 for further information.

Monrovia to Buchanan

12.9 The coast between Cape Mesurado and Buchanan, 53 miles ESE, is bordered by a sandy beach and backed by thick brush and trees. The town of Kingsray (King Grays Town) is situated 7.5 miles ESE of Cape Mesurado and two prominent radio masts, marked by obstruction lights, stand on a flat-topped hill, 46m high, 1 mile E of it.

Between Kingsray and the entrance to the Junk River, 20 miles ESE, three prominent summits stand about 3 miles inland from the coast. Crown stands 7.5 miles E of Kingsray and has two summits, the highest one rising to a height of 134m. Coxcomb stands 1.8 miles SE of Crown and has a wooded summit, 61m high. Several lagoons lie between these summits and the coast, and have shallow outlets to the sea.

Hooper Patch, a rock, lies about 3 miles WNW of the entrance to the Junk River. It has a least depth of 4.5m; the sea breaks on the E part. A narrow passage, with depths of 7.3 to 11m, leads between Hooper Patch and the coast. Several other shoals, with foul ground around them, lie between this rock and the entrance to the Junk River.

The **Junk River** (Farmington River) (6°08'N., 10°22'W.) is only used by surf boats. A tongue of sand, partly dry and partially covered by breakers, extends up to 1.5 miles W from Marshall Point, the N entrance point of the river. The entrance channel leads close around the S end of these breakers and constantly changes. The village of Marshall is situated 1 mile NW of Marshall Point. Within the bar, the depths increase and off the village lie depths of 6m. A large red-roofed warehouse stands on the W side of the village and is prominent. A light is shown from a large shed standing 0.2 mile SE of this warehouse.

The Junk River divides into two branches E of the village; one leads NW while the other leads E. The branch leading E is reported to be navigable for a distance of 18 miles and has depths of 3 to 9m.

12.10 Bassa Point (6°06'N., 10°22'W.), located 1.4 miles SE of the mouth of the Junk River, is dominated by a densely wooded hill, 51m high. This point has sandy beaches on either side and another prominent wooded hill, 82m high, stands 3.5 miles E of it.

A buoy is moored about 1.7 miles WNW of this point.

Vessels can anchor, in depths of 12 to 14m, off the entrance to the Junk River. The usual berth lies over a clear bottom of sand and mud, about 2 miles W of Bassa Point or 0.3 mile W of the above-mentioned buoy.

Saddle Hills, 326m high, stand 11 miles NNE of Bassa Point. They are the NW extremity of a high range of land which extends 24 miles SE to Mt. St. John. In good weather, the peaks of this range can be seen for 30 miles to seaward.

Between Bassa Point and Long Reef Point, 9 miles SE, several lagoons lie behind the coastal beach. A factory is situated at Middle Bassa, 3 miles NNW of Long Reef Point.

A barrier of reefs fronts Long Reef Point. It commences

about 1 mile N of the point and extends, parallel to the coast and up to 0.8 mile from it, for a distance of 4 miles SE. There is foul ground in the vicinity of this barrier and a detached patch, with a depth of 7.8m, lies about 2.3 miles S of the point.

The coast between Long Reef Point and the entrance to the St. John River, 9 miles ESE, is thickly wooded.

Niobe Reef, with depths of less than 1.8m, breaks heavily and extends about 1 mile S from a point, 2.7 miles WNW of the mouth of the St. John River. A rock, which breaks, and another rock, which breaks occasionally, lie about 0.5 mile E and 0.8 mile SE, respectively, of Niobe Reef.

The **St. John River** (5°55'N., 10°04'W.) is of considerable length, but can only be entered through a surfboat channel. The coastline near the entrance changes every season. This river mouth is also a common outlet for two other smaller rivers, the Mechlin River and the Benson River.

12.11 Grand Bassa Bay (Waterhouse Bay) (5°54'N., 10°05'W.) is entered between MacDowell Point, the S entrance point of the St. John River, and Grand Bassa Point, 2 miles S. It is encumbered with numerous detached rocks, reefs, and wrecks which may best be seen on the chart.

Grand Bassa Point is composed of sand and highly magnetic rock. A light is shown from a framework tower, 24m high, standing on the point. A prominent disused light tower, 11m high, stands close N of the light.

Dhuat Rocks, the highest of which is 3.7m high, extend up to 0.3 mile NW of the point. Yellow Will Reef, awash, lies about 0.6 mile NW of the point. A line of detached pinnacle rocks extends NW from Yellow Will Reef and the outermost one, which has a least depth of 4.1m, lies about 2 miles NW of Grand Bassa Point. An obstruction, position approximate, was reported (1956) to lie about 1 mile WNW of the point. Two dangerous wrecks lie about 0.8 mile NNW of Yellow Will Reef.

Harman Rock, awash, lies 0.3 mile NNW of Grand Bassa Point and Snapper Reef, which always breaks, lies about 0.7 mile farther N. Several detached rocks, awash, lie in a line which extends up to 0.5 mile S of this reef; numerous patches, with depths of less than 5m, lie in the vicinity.

Buchanan Oil Terminal (5°52'N., 10°04'W.), consisting of several mooring buoys, lies 0.5 mile NNE of Grand Bassa Point. A submarine pipeline extends SSE from the berth to the S shore of the bay. A channel, indicated by a range, leads in a SE direction to the berth. Several oil tanks, a water tank, and some radio masts stand on the shore near the root of the pipeline.

Good anchorage can be obtained, in a depth of 12m, mud, within Bassa Cove which lies immediately N of Yellow Will Reef and 0.7 mile NW of Grand Bassa Point. Small vessels may anchor about 200m nearer the shore.

Buchanan (5°52'N., 10°04'W.)

World Port Index No. 45950

12.12 The port of Buchanan is situated 0.7 mile SE of Grand Bassa Point. The harbor is enclosed by two breakwaters and was constructed for the shipping of iron ore.

Buchanan Home Page

http://www.nationalportauthorityliberia.org

Winds—Weather.—A constant breeze, accompanied by high humidity, is prevalent throughout most of the year. December and January are drier months. During the months of June, July, and September, the salinity in the harbor basin varies considerably, as these are months of heavy rainfall.

Tides—Currents.—Tides rise 1.2m at springs and 1m at neaps.

Depths—Limitations.—The central part of the harbor is dredged to a depth of 13m. Areas in the SE corner of the harbor and on the inner side of the W breakwater are dredged a depth of 10m.

Buchanan quay

The concrete ore-loading quay, situated in the NE part of the harbor, is 275m long and has a depth of 14m alongside. Vessels up to 290m in length can be handled. Vessels with drafts up to 11.9m can depart this quay at any time. Vessels with drafts of 12.6 to 12.9m can depart this quay depending upon the height of tide and the required underkeel clearance which is normally 1m.

A tanker berth is 126m long and has a depth of 10.1m alongside. Tankers up to 170m in length can be handled.

The commercial quay, on the inner side of the W breakwater, is 320m long and has a depth of 10.1m alongside. Vessels up to 9.1m draft can be handled.

Aspect.—The ore loader, situated 1 mile SE of Grand Bassa Point, is conspicuous.

A patch, with a depth 10.9m, lies about 1.2 miles SW of Grand Bassa Point and is marked by a lighted buoy moored close S. Another patch, with a depth of 10m, lies about 1.5 miles SW of the same point and is marked by a lighted buoy moored close N.

The entrance fairway is indicated by a lighted range which may best be seen on the chart.

The light structures standing at the head of the S and W breakwaters have been reported to be floodlit at night.

Pilotage.—Pilotage is compulsory. Pilots may be contacted on VHF channel 13 or 16 and board about 1.5 miles W of the harbor entrance. Pilots are available for ore vessels at any time and for general cargo vessels from 0700 to 2300. Vessels should send an ETA 96 hours, 72 hours, 48 hours, and 24 hours in advance.

Anchorage.—Anchorage may be taken, in depths of 18m to 22m, about 1.7 miles W of the S breakwater head. Anchorage may also be taken, in a depth of 16m, about 0.5 mile NW of the S breakwater head and N of the approach range.

Caution.—A wavemeter instrument is moored about 1.5 miles SW of the S breakwater head.

Dhuat Rocks, lying N of the port, should not be mistaken for the S breakwater of the port.

Several detached shoal patches lie in the approaches to the harbor and may best be seen on the chart.

Buchanan to Bafu Bay

12.13 The coast between Buchanan and Tobokani Point, located 4.5 miles SE of Grand Bassa Point, is thickly wooded and formed by rocky points and sandy bights.

Tobokani Point, 52m high, is low with a prominent clump of trees standing 0.5 mile NNE of it. Tobokani Rock, 4.3m high, lies near the outer edge of a rocky spit which extends up to 0.7 mile SW of the point. A rock, awash, and a patch, with a depth of 6.4m, lie about 0.5 mile WNW and 0.5 mile SSW, respectively, of Tobokani Rock.

A wreck, with a depth of 8.7m, lies about 2.7 miles SSW of Tobokani Point. A patch, with a depth of 16.4m, was reported (1982) to lie about 1.3 miles WSW of this wreck.

A dangerous sunken rock was reported (1972) to lie about 5 miles S of Tobokani Point.

Between Tobokani Point and Trade Town, 8.2 miles SE, the coast is mainly rocky with sandy bights between the points. A hill, 46m high, stands close within the entrance to the New Cess River, 2.5 miles SE of Tobokani Point. Cliffs, 46m high, front the coast to the SE of this river mouth.

Trade Town (5°43'N., 9°55'W.) consists of a large settlement with two prominent factories. A prominent hill, 76m high, stands 2 miles NE of the town. Tobacco Mount, a conical hill, stands 11 miles ENE of the town. It is 274m high and conspicuous from seaward.

Anchorage can be obtained, in a depth of 18m, mud, about 1.2 miles SW of Trade Town.

Trade Town Rock, which always breaks, lies about 0.5 mile offshore, 1.8 miles SSE of Trade Town.

The Little Kulloh River, lying 4.7 miles SE of Trade Town, is only accessible to boats. A hill, 61m high, and Monkey Peak, 47m high, stand 2 miles ESE and 2.5 miles SE, respectively, of the entrance to this river.

Between the Little Kulloh River and the Timbo River, 9 miles SE, the coast becomes lower than that to the NW and is formed by numerous rocky points and sandy bights. Several hills stand behind this featureless stretch of coast. A large black rock, connected to the coast by a reef, lies close off the village of Errick, 4.2 miles NW of the mouth of the Timbo River.

Between the Timbo River and the Cestos River, 12 miles SE, the coast is mostly low, thickly wooded, and is fronted by a sandy beach. Numerous rocks and patches of foul ground lie up to 1 mile off this stretch of coast.

12.14 Cestos Bay (5°27'N., 9°37'W.), into which the Cestos River flows, has a low and wooded shore. The depths in this bay are irregular in places and the bottom varies from sand and gravel to dark mud. Vessels passing along the coast are advised to stay in depths of over 25m in order to avoid all the dangers in this vicinity.

Cestos Point, the S entrance point of the bay, is low and bordered by foul ground. Cestos Reef extends up to 0.8 mile SW of the point and consists of rocks, up to 1.8m high, submerged rocks, and drying rocks.

Comber Rock, with a depth of 2.7m, and Schooner Rock, with a depth of 3.7m, lie about 1 mile and 1.3 miles SSW, respectively, of the point.

Spence Rock, which has a least depth of 2.3m and breaks occasionally, and Ship Rock, with a depth of 8.7m, lie 1.1 miles WSW and 1.2 miles W, respectively, of Cestos Point. Greer Rock, a pinnacle with a depth of 7.8m, lies about 1.7 miles WNW of the point.

Cestos Reef and the above-mentioned dangers are all very dangerous as they are steep-to and soundings give no warning of approach.

The Cestos River is entered between St. Georges Point, located 0.6 mile NNE of Cestos Point, and Isaac Point, 0.4 mile NE. It is obstructed by a shallow bar which shifts at times and breaks right across with much swell.

A conspicuous cotton tree stands on St. Georges Point and a radio tower, marked by obstruction lights, is situated close SE of it. Two factories stand in the settlement of the Cess River, close within Isaac Point. A conspicuous clump of trees, up to 54m high, stands 2 miles N of St. Georges Point.

Vessels can obtain anchorage, in a depth of 11m, about 1 mile WNW of St. Georges Point. Local knowledge is advised.

12.15 The coast between Cestos Point and the entrance to the Sehnkwehn River, 20 miles SE, is formed by a sandy beach which is backed by wooded land. It is intersected in places by several small rivers. Reefs and other dangers extend up to 2.5 miles offshore and vessels should give this stretch of coast a wide berth.

Sunk Rock, with a depth of 4.1m, lies about 1.7 miles offshore, 3 miles SE of Cestos Point. Pobama Rocks, which dry 0.6m, lie about 2.5 miles farther ESE.

Rock Cess Point (5°02'N., 9°30'W.) is bordered by Diabolitos Reef which extends up to 1 mile SW of it. Di Rock, 16m high, is the highest of several rocks which lie on this reef. A few small trees stand on its inshore side and it is conspicuous from the N or S as it stands out against the coastal land.

Flat Hill, 101m high, stands 4.7 miles ENE of Rock Cess Point.

A rock, with a depth of 4.6m, lies about 2.5 miles WNW of Rock Cess Point and a rocky patch, with a depth of 3.7m, lies 0.5 mile SE of it. Mutine Rock, a submerged rock, lies about 2.5 miles SSW of Rock Cess Point and breaks in a heavy swell. Several shoal heads, with depths of less than 5m, lie up to 0.5 mile NW and 1 mile NNW of this rock.

Baiya Island (Baiyah Islet), 18m high, lies about 1 mile offshore, 6.7 miles SE of Rock Cess Point. It has a summit, but a

few trees stand on the inshore side. Numerous rocks and shoals lie in the vicinity of this island and between the island and the coast. A rock, which breaks occasionally, lies about 1.2 miles SW of the island. Outer Rock, 1.8m high, lies 1 mile S of the island and another rock, 0.3m high, lies close W of it. Both of these rocks are fairly steep-to on their seaward sides.

12.16 The **Sehnkwehn River** (Sangwin River) (5°13'N., 9°21'W.) is entered between Sehnkwehn Point (Sangwin Point) and Wilson Point, 300m SSE. The bar, which fronts the entrance channel, has a depth of 2.4m and can usually be crossed by boats.

Sehnkwehn Point consists of a high, sandy spit and tree-covered prominent hills, 39m high and 49m high, stand 1 mile NW and 0.5 mile N, respectively, of it. A conspicuous clump of trees, 53m high, stands 2.5 mile NW of the river mouth.

A ledge of rocks extends up to 0.4 mile NW of Wilson Point and the entrance channel passes close NW of it.

Vessels can anchor, in depths of 20 to 22m, off the entrance to the river. There is good holding ground of mud and sand about 1.5 miles SW of Wilson Point. Vessels should not approach the entrance to the river within depths of less than 18m due to the irregular bottom.

12.17 Bafu Bay (Baffu Bay) (5°10'N., 9°18'W.) is entered between Wilson Point and Bafu Point, 4.5 miles SE. It has a low, sandy shore backed by thickly wooded countryside. The N part of this bay is foul; the Bafu River, which is very shallow, enters the SE part of this bay.

A radio tower, marked by obstruction lights, stands 2.5 miles ESE of Wilson Point.

A conspicuous clump of trees stands on Bafu Point. Submerged rocks, which break during a moderate swell, extend up to 0.5 mile N of Bafu Point. Rocks, 0.3 to 3m high, lie close off the N and W sides of the point. The depths up to 0.3 mile W of Bafu Point are irregular and vessels should avoid this vicinity.

A light is shown from a structure standing 1.7 miles NNE of Bafu Point.

Bafu Rock (Baffu Rock), lying about 2 miles NW of Bafu Point, has a depth of less than 1.8m and is the outermost danger in the N part of the bay.

A bank, with a least depth of 20m, was reported (1921) to lie about 15 miles SW of Bafu Point.

Vessels can obtain anchorage, in a depth of 13m, good holding ground of sand and mud, about 0.8 mile NNW of Bafu Point.

Bafu Point to Greenville

12.18 The coast between Bafu Point and Tasu Point (Tassu Point), 6.5 miles ESE, is low and thickly wooded. Numerous rocks lie close offshore and several streams, the mouths of which are obstructed by bars, enter the sea along this stretch of the coast. An islet, 9m high, lies 0.3 mile WNW of Tasu Point.

Say Rock, 4.3m high, lies 2 miles W of Tasu Point and shoal water extends up to about 300m W and N of it.

Tasu Rock, 8m high, lies on the N part of a steep-to reef, 1.5 miles SW of Tasu Point. Rocks, awash, and a submerged rock, lie about 0.4 mile and 0.6 mile NNW, respectively, of Tasu Rock.

Between Tasu Point and Grand Butu Point, 6 miles SE, the coast is covered with large rocks and the land is densely populated. Numerous submerged rocks extend up to 2.3 miles offshore along this stretch of coast.

Keoba Rock, 2.7m high, lies near the middle of a reef, 2.5 miles SSE of Tasu Point. Yule Rock, which dries 0.3m and always breaks, lies about 1.7 miles WSW of Grand Butu Point. Knight Rock, with a least depth of 4m and steep-to, and a submerged rock, lie about 1 mile W and 0.4 mile ENE, respectively, of Yule Rock.

Grand Butu Point (5°03'N., 9°08'W.), rocky and steep, is dominated by Grand Butu Hill which stands 1.3 miles E of it. This hill, 87m high, is conspicuous and has three summits.

Except for a few rocks lying close off Grand Butu Point, the coast is low and a clear sandy beach extends for 3 miles ESE to the NW end of Sinoe Bay. Generally, vessels may approach the coast with safety; however, the depths in the vicinity are irregular and there are occasional patches of rocky ground which necessitate care when anchoring.

12.19 Sinoe Bay (Sino Bay) (5°00'N., 9°03'W.) lies between Grand Butu Point and Blubara Point, 6 miles SE, and has a generally sandy shore. Its approaches are encumbered by numerous dangers and the depths are very irregular. Allen Rocks, Middle Reef, and North Reef lie in the N part of the bay which is mostly foul.

The Sinoe River (Sino River), which flows into the E side of the bay, can be entered by boats. It is fronted by a narrow bar with a depth of 1.8m.

Greenville (4°59'N., 9°03'W.)

World Port Index No. 45952

12.20 The port of Greenville (Ross Port) is situated in the S part of Sinoe Bay between Blubara Point and North Point, 0.5 mile NNE. The harbor is formed by a breakwater which extends W and then N from Blubara Point. The port has been reported closed (2005).

Greenville Home Page

http://www.nationalportauthorityliberia.org

Tides—Currents.—Tides rise 1.4m at springs and 1.1m at neaps.

Depths—Limitations.—Berth No. 1, situated along the inner side of the breakwater, is 178m long and has a depth of 8.1m alongside. Generally, vessels up to 156m in length and 7.3m draft can be handled. It is reported (1989) that vessels up to 160m in length have been accommodated.

Berth No. 2, situated along the inner side of the breakwater, is 70m long and has a depth of 5.5m alongside. Coastal tankers up to 62m in length and 4.8m draft can discharge here.

At times, vessels are berthed in a depth of 8.1m within the harbor basin and parallel to the breakwater quay in order to load floating logs.

When there is a heavy swell and it is difficult to berth alongside, vessels sometimes anchor and secure stern-to the breakwater. The holding ground in the harbor basin is good.

Aspect.—A sector light is shown from North Point. A light is shown from a tower, 8m high, standing 0.3 mile NE of South Point. A light is shown from the head of the breakwater. Lighted buoys mark the approach channel. An outer fairway lighted buoy is moored about 2 miles SW of the breakwater head.

A prominent tower, marked by obstruction lights, stands 1.2 miles N of North Point. Two white warehouses stand on the breakwater and are conspicuous.

Santrodeh Hill, 76m high, stands 2 miles E of the port and is the highest of four hills, all of which are easy to identify from seaward.

An obstruction was reported (1988) to lie about 4 miles WSW of the breakwater head.

Gibson Rock, submerged, lies about 3 miles WNW of Blubara Point and breaks in a heavy swell. Kennedy Rocks, a group of shoal heads with a least depth of 4.6m, lies about 2 miles W of Blubara Point. Several shoal patches, with depths of 6 to 9m, lie up to 0.7 mile NE of Kennedy Rocks.

Stevens Rock, with a depth of 5.5m, lies about 1 mile SW of Blubara Point. Several patches, with depths of 6 to 11m, lie between this rock and Kennedy Rocks. Shoal patches, with depths of 9.1m, lie about 0.5 mile S and 0.5 mile SE of Stevens Rock.

A shoal patch, with a depth of 7.1m, was reported (1963) to lie about 0.8 mile SSW of South Point.

A depth of 6.1m was reported (1971) to lie about 0.4 mile W of the breakwater head.

Numerous depths of less than 5m lie within 100m of the breakwater head.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channel 16 and generally board at the anchorage or in the vicinity of the outer fairway lighted buoy.

Anchorage.—Anchorage can be obtained, in depths of 12 to 15m, about 1 mile W of Blubara Point and within an anchorage area which is shown on the chart. Caution is advised as, although the bottom is generally composed of stiff black sand and mud, several small foul patches have been observed within the area. In addition, a patch, with a depth of 7.3m, was reported (1973) to lie in this area.

Caution.—The approach to the port is encumbered by numerous dangers and the depths are irregular. During the rainy season, April to November, a heavy swell may occur forcing vessels to anchor in the bay.

A dangerous wreck lies about 0.4 mile WSW of Blubara Point.

Greenville to the Dru River

12.21 The coast between Blubara Point and Seta Kru, 12 miles ESE, consists of a low sandy beach which is broken only by Kufuer (Devil Cliff), 2.3 miles ESE of Blubara Point. Kufuer is formed by a prominent rocky projection, 20m high.

Willy Creek runs parallel to the coast and a short distance inland. It connects the Sinoe River with the Plassa River, the mouth of which lies 8.2 miles ESE of Blubara Point. Mount Plassa is a small, round, wooded summit standing 3 miles NE of the entrance to the Plassa River. It is 89m high and stands between two other hills nearly as high.

The E part of the coast between Blubara Point and Seta Kru is fronted by foul ground and dangerous rocks which extend up to 3 miles seaward. The principal outer dangers include a patch, with a depth of 8.7m, lying about 4 miles W of the Plassa River mouth; a patch, with a depth of 9.6m, lying 3.8 miles SW of the river mouth; Kru Rock, a bare and irregularly-shaped mass of stones, which rises to a height of 4.6m about 2.3 miles W of Seta Kru; a patch, with a depth of 6.4m, lying about 0.7 mile W of Kru Rock; and a patch, with a depth of 9.1m, lying about 1.5 miles SW of Seta Kru.

Seta Kru (Settra Kru) (4°54'N., 8°51'W.), a village, is situated 3.7 miles ESE of the entrance to the Plassa River. It contains a prominent house and a tree, 58m high, which is one of the most conspicuous objects along this stretch of coast. Another tree, 56m high, stands at the village of Little Kru, 1.5 miles NW of Seta Kru and is also plainly visible from seaward.

Good anchorage can be obtained, in depths of 14 to 18m, sand, about 1.3 miles SSW of Seta Kru; however, nearer the coast the bottom becomes rocky.

The coast between Seta Kru and the mouth of the Dehwah River, 7 miles ESE, continues low and sandy. A large village stands on Neatano Point, located 0.5 mile SE of the mouth of the Dehwah River.

Numerous shoals and sunken rocks front this coast. The outermost danger is formed by a steep-to submerged rock, which breaks, lying about 1 mile W of Neatano Point.

12.22 King Willis Bay (King Wills Bay) (4°49'N., 8°44'W.) is formed by a bend in the coast between the mouth of the Dehwah River and King Willis Point, 2 miles SE. Nana Kru (Great Nanna Kru), a small village, stands 1.5 miles ESE of the mouth of the river. The approaches to the bay and the bay itself are encumbered with numerous rocks and shoals.

King Willis Point (King Williams Point), formed by a rocky projection, 6m high, is marked by a clump of prominent palm trees. A prominent hill, 64m high to the tops of the trees, stands 2 miles N of the point.

Depths of less than 9m extend up to 0.8 mile W of the point and it is fronted by several rocks and reefs.

Thekla Bolen Rock, with a depth of 6.4m; Alert Rock, a 4.6m pinnacle; and Sperling Rock, a 2.3m pinnacle which occasionally breaks, lie in a group between 1.7 and 2.8 miles WSW of King Willis Point.

Wrey Rock, with a depth of 9.1m, and Boehmer Reef, with a depth of 6.4m, lie 1 mile W and 0.5 mile SW, respectively, of King Willis Point. Tinson Reefs, a narrow ridge with depths of 6 to 9m, and Herald Rock, a 7.8m pinnacle, lie 0.8 mile WSW and 0.7 mile NW, respectively, of Wrey Rock.

Cameroon Ledges, with a least depth of 3.2m, lies about 0.8 mile W of King Willis Point.

Anchorage can be obtained, in depths of 12 to 14m, sand with good holding ground, about 1 mile WSW of King Willis Point.

12.23 The coast between King Willis Point and **Wappi Point** (4°46'N., 8°36'W.), 8.5 miles ESE, consists of sandy beaches which are fronted in places by rocky ledges. These beaches are also intersected by the mouths of several small rivers which are connected to inland lagoons. Several moderately-high hills stand 2 to 2.5 miles inland along this part of the coast.

Uro Point, the S entrance point of the West Uro River, is lo-

cated 3.5 miles ESE of King Willis Point. Foul ground, which dries 0.6m at its extremity, lies within 1 mile W of this point.

Swallow Rocks, which are submerged and usually break, lie about 2 miles SW of Uro Point. A patch, with a depth of 8.2m, and another patch, with a depth of 7.8m, lie about 0.8 mile WSW and 0.7 mile ESE, respectively, of Swallow Rocks. A stranded wreck lies 1.5 miles SSW of Uro Point.

A bank, with a least depth of 12.8m, and a shoal, with a depth of 11m, lie about 3.5 and 4 miles SSE, respectively, of Uro Point.

Between Uro Point and the East Uro River, 3 miles ESE, reefs extend as far as 1 mile offshore. The mouth of the East Uro River is hidden from seaward by large granite boulders; the large village of Subono stands 1 mile W of its entrance. Vessels can obtain anchorage, in a depth of 18m, sand, about 1.7 miles S of this village.

A reef, which extends up to 1 mile WSW of Wappi Point, has numerous above-water rocks lying on it. One of which is 9m high and prominent. Flat Island, 5m high, lies on the outer part of a large area of foul ground, 1.3 miles S of Wappi Point, A shoal, with a depth of 8.7m, and a patch, with a depth of 12.8m, lie about 1.3 miles SW and 1.2 miles SE, respectively, of Flat Island.

Caution.—Most of the rocks in this vicinity are pinnacles and soundings give no warning of their vicinity. In addition to the charted dangers, there may also be others and vessels navigating in this locality must use extreme caution.

12.24 Baddu Point (4°41'N., 8°28'W.) is located 9 miles ESE of Wappi Point. The coast between is low and sandy, with few distinguishing features and only occasional patches of rock. A heavy surf breaks along this part of the coast and there is only a few places where a landing can be made.

Rocks, up to 4m high, front a rocky point on which the village of Little Nifu stands, 1.5 miles ESE of Wappi Point. A chain of shallow shoals extends up to 1.5 miles S of this village.

Great Nifu (4°45'N., 8°32'W.), located 2 miles ESE of Little Nifu, is a large village which can be identified by two prominent white houses. Submerged rocks and foul ground, with depths of less than 11m, extend up to 1.5 mile S of the point lying close S of the village.

The Dru River to Cestors Point

12.25 The **Dru River** (4°43'N., 8°31'W.) is entered 2 miles ESE of Great Nifu. It is fronted by a bar, with a depth of 1.8m, and has depths up to 3.7m inside the entrance. Druta Rock, 6m high, is formed by a large and conspicuous block of stone and stands 1 mile W of the river entrance. Two shoal patches, with depths of less than 5m, lie about 0.5 mile S of this rock.

A reef extends up to 0.8 mile SW of Baddu Point. Several above-water rocks lie on this reef and Dead Islet, 11m high, is the largest.

Kata Point (4°40'N., 8°27'W.) is located 1.5 miles SE of Baddu Point. A conspicuous white house, with a red roof, stands on this point.

Baddu Shoals extend up to 2.3 miles W of Dead Islet and consist of several submerged heads which are marked by breakers. Vessels are warned to observe great caution when navigating within 3 miles of this stretch of the coast.

Monkey Rock, 2.7m high, lies 1.3 miles S of Kata Point and is conspicuous. Several shoals, with depths of 4 to 9m, lie between Baddu Shoals and Monkey Rock. A rock, which always breaks, and a patch, with a depth of 10m, lie about 0.3 mile and 2 miles W, respectively, of Monkey Rock.

Castle Rock, 10m high, lies on the outer end of the coastal reef, 2.5 miles E of Monkey Rock. It is conspicuous from seaward against the background of a sandy beach. A submerged rock lies about 0.6 mile W of this rock and several shoals, with depths of 5 to 9m, extend up to 1 mile W of it.

A prominent stranded wreck is reported to lie about 1 mile SSW of Castle Rock. A prominent radio mast is reported to stand along the shore, 2.5 miles NE of Monkey Rock. Anchorage can be obtained, in a depth of 21m, about 0.5 mile SSE of Monkey Rock.

12.26 The coast between the E end of the coastal reef lying within Castle Rock and the entrance to Picnicess Creek (Pickaninny Sesters River), 3.5 miles ESE, consists of a sandy beach and can be safely approached. The latter river can be only entered by boats or canoes when the bar is smooth. The W entrance point is formed by a low sandy spit and the E entrance point, on which stands a small village, is bold and rocky.

Subbubo Point (4°36'N., 8°18'W.) is located 3.6 miles SE of Picnicess Creek. The coast between is indented by sandy bights and is bordered by rocks and boulders.

Picnicess (Pickaninny Sesters), a moderate-sized town, is situated 1.4 miles ESE of the entrance to the river; a conspicuous clump of trees stands in its NW part. Shoals, with depths of 3 to 9m, extend up to 1 mile SW of the town.

Several patches, with depths of 9m or less, lie within 1.8 miles of the coast between Castle Rock and Subbubo Point. In addition, several depths of less than 15m lie over 2 miles offshore.

Pashu Rock, 4m high, lies 1.5 miles S of the entrance to Picnicess Creek and is conspicuous. Several shoals, with depths of 9 to 13m, lie up to 1.5 miles W, 1 mile SW, and 1 mile SE of this rock.

Magrane Rocks, formed by two submerged heads, lie 1 mile SW of Subbubo Point. A patch, with a depth of 9.1m, lies about 0.6 mile SSE of these heads.

Numerous dangers lie N of the alignment of Pashu Rock and Subbubo Point.

Anchorage can be obtained, in a depth of 26m, about 1 mile SSE of Pashu Rock.

Between Subbubo Point and Cestors Point, 3 miles SE, the coast is formed by a low sandy beach which is backed by trees. Foul ground, with numerous shoals and rocks, extends up to 0.8 mile off this part of the coast.

Cestors Point to Cape Palmas

12.27 Cestors Point (Sesters Point) (4°34'N., 8°15'W.) is formed by a small rocky projection. Sesters Hill, 64m high, stands close NE of the point. It is conspicuous and has a long and flat summit covered with trees.

Carpenter Rock, 5m high and steep-to, lies at the outer edge of the foul ground which extends up to 1 mile SSE of the point. This conspicuous rock is grey-colored and the sea always

breaks heavily on it. Benin Rock, with a depth of 8.2m, lies about 0.5 mile SW of it.

Grand Cess (Grand Sesters), an extensive village, extends 1 mile ESE along the coast from the entrance to the Grand Cess River, 1.5 miles E of Cestors Point. The coast in the vicinity of this village is high and sandy. A store stands on the coast near the middle of the village and can be identified by its red roof.

Factory Islet, 7m high, lies 0.8 mile ESE of the entrance to the Grand Cess River. It lies off a rocky point and is the largest of a group of large rocks. A shoal, with a depth of 7.3m, was reported (1933) to lie about 0.7 mile SSW of this islet. A patch, with a depth of 6.9m, lies 0.5 mile S of the islet.

Vessels are advised to anchor, in depths of over 18m, as the bottom in this vicinity is rocky in many places of less depth. A convenient berth is in a depth of 22m, sand, about 1.2 miles SE of Carpenter Rock.

12.28 Ranger Point (4°33'N., 8°12'W.), located 2 miles E of Factory Islet, is formed by a conspicuous black, rocky point on either side of which lies a high sandy beach. A small village is situated on this point and a conspicuous clump of trees, 51m high, stands 1 mile NE of it.

Between Ranger Point and the entrance to the Puleba River, 8 miles E, the coast is low, densely wooded, and bordered by a sandy beach which is clear of off-lying rocks. Several isolated clumps of trees, visible from seaward, stand a short distance inland from this part of the coast.

The **Puleba River** (4°02'N., 8°04'W.) is entered between low sand banks; its bar is seldom passable. The town of Wedabo (Wadebo) stands on both sides of the entrance to this river. Two conspicuous red and white houses are situated near the W end of the town.

Four small and rounded hills stand between 2.5 and 6 miles N of the entrance to the river; however, they are difficult to distinguish and are often hidden by mist, especially in the early morning. Farther inland, Niama Hill (Sugarloaf), 224m high, stands 15 miles N of the river entrance and is prominent.

Between the entrance to the Puleba River and Garawe Point, 7.5 miles ESE, the coast continues sandy and wooded. Inland from the coast, two conspicuous groves of trees stand 3 and 4 miles E of the river entrance.

The Poor River, located 4.5 miles E of the Puleba River, is accessible to boats and open only during the rainy season. Lindsay Rock, with a depth of 6.4m, lies 0.7 mile SSE of this river entrance. A stranded wreck lies about 0.5 mile ESE of Lindsay Rock.

Landing is possible in a surfboat, during moderate weather, on any part of the coast between Ranger Point and Garawe Point, except at the bar fronting the Puleba River.

Up to 3 miles offshore between Ranger Point and Garawe Point, a current has been observed to set SE with a velocity of about 0.7 knot. A weak countercurrent has occasionally been experienced. Nearer the land, the current is reported to be weak and irregular.

12.29 Garawe Point (Garraway Point) (4°30'N., 7°56'W.) is high and rocky with large rocks, up to 3m high, extending as far as 0.3 mile W of it. The town of Garawe (Garraway), mostly hidden by trees, is situated 0.5 mile NE of the point.

Solitary Rock lies 1.3 miles WSW of Garawe Point. It has a depth of 1.2m and always breaks. Tryh Rocks, formed by two groups of rocks up to 4m high, lies midway between Solitary Rock and the point. Long Patch, a narrow reef with rocks up to 6m high, is the continuation E of Tryh Rocks. Several shoals, with a depth of 6.9m at their outer end, extend up to 0.5 mile S of Long Patch; a patch, with a depth of 12.8m, lies about 2.3 miles farther SSW.

The Garawe River (Garraway River), entered immediately N of Garawe Point, is always accessible to canoes and to ordinary boats during moderate weather. The N side of the entrance is formed by a long, low sand spit on which a small village is situated. The best entrance channel leads between this spit and Fetiche Rock, a large above-water rock which lies near the middle of the entrance. Foul ground extends between this large rock and Garawe Point.

Vessels can anchor, in depths of 22 to 24m, sandy bottom, off almost any part of the coast between Ranger Point and Garawe Point. Anchorage can be taken, in a depth of 20m, about 2 miles SW of Garawe Point.

12.30 The coast between Garawe Point and Fishtown Point, 8 miles SE, is low, sandy, and backed by trees. It is fronted by numerous off-lying shoals and vessels should give it a berth of at least 2.5 miles.

A shallow lagoon, lying close inland; a conspicuous clump of trees, 45m high to the tops of the trees, is located midway along this section of the coast.

Carl Woerman Rock, with a depth of 2.7m, lies about 1.8 miles SSE of Garawe Point. This rock was not observed to break during the dry season.

Dia Shoals, lying 3.5 miles farther ESE, consists of two rocky shoal areas which extend up to 2 miles offshore. Maxwell Rock, lying in the outer shoal area, always breaks.

Fishtown Point (4°25'N., 7°50'W.), 67m high, is formed of black rock. The village of Fishtown stands in the middle of a coconut plantation on the point. Two conspicuous cotton trees show above the plantation. A stranded wreck lies about 0.5 mile ESE of the point.

Fishtown Reef, with above-water rocks lying on it, extends up to 0.8 mile WSW of the point. Johnston Rock, with a depth of 3.7m, lies about 2 miles WNW of the point.

Cape Shoals, consisting of submerged rocks and above-water rocks up to 0.6m high, lies about 2.3 miles SW of Fishtown Point and is surrounded by foul ground. The sea breaks heavily on all these rocks; several detached shoal heads extend nearly 1 mile NNE of the main group. A stranded wreck is reported to lie on these shoals.

Etna Passage (Aetna Passage), which leads between Cape Shoals and Fishtown Reef, is 0.7 mile wide. A patch, with a depth of 9.6m, lies nearly in mid-channel at the E end of this passage.

Outer Patch (4°22'N., 7°55'W.), with a depth of 10.5m and steep-to, lies 6.5 miles WSW of Fishtown Point and is the outermost of dangers extending SW of the point. This patch is occasionally marked by a slight eddy.

Coley Rock, steep-to with a depth of 2.1m, lies 4.5 miles SW of Fishtown Point. A patch, with a depth of 7.3m, lies close WNW of this rock. Several rocky patches lie between Cape Shoals and Coley Rock. Finch Rock, with a depth of 5.5m, is the shallowest and a stranded wreck is reported to lie on it.

A rocky patch, with a depth of 11.9m, lies about 2.5 miles S of Fishtown Point.

Near Cape Shoals and Coley Rock, a current has been observed that usually sets E and SE with a velocity of 0.7 knot. Occasionally it sets W, but it is then uncertain in direction and weak.

Farther offshore, in depths of 45m or more, the current has been observed to set E and parallel to the coast, with a velocity of 1 knot.

12.31 The coast and the interior land to the E of Fishtown Point become more broken and more readily identified. The general flatness of the land is relieved by several small hills.

Kabla Table Hill, which has a sparsely-wooded double summit, stands 3.5 miles ENE of Fishtown Point. It rises to a height of 94m and is conspicuous. When seen from the W, it is reported to have the appearance of a camel's hump. The other hills in this vicinity are not conspicuous and are often obscured by mist.

Rocktown Point (4°23'N., 7°47'W.), located 3 miles SE of Fishtown Point, is a black and rocky projection, 8m high. A small sandy beach lies close N of it. The village of Rocktown stands in a coconut plantation, close N of the point. A conspicuous cotton tree rises above the coconut palms in the plantation.

A patch, with a depth of 5m, lies 0.5 mile offshore, midway between Fishtown Point and Rocktown Point.

Rocktown Reef, with above-water and submerged rocks, extends up to 0.8 mile SW of Rocktown Point. The outer rock on this reef is 0.6m high and many of them break.

Billy Rocks, formed by a chain of rocky heads, lies 0.7 mile S of Rocktown Point. The W of these heads has a least depth of 5m. Two shallow shoal heads, which always break, lie within 1 mile E of Billy Rocks. A patch, with a depth of 12.8m, lies about 2 miles S of Rocktown Point.

Anchorage can be obtained, in a depth of 20m, sand, about 1.2 miles SSW of Rocktown Point. Much of the bottom in this vicinity is rocky and care is necessary when anchoring.

12.32 Cape Palmas (Harper Point) (4°22'N., 7°44'W.) (World Port Index No. 45955), located 3.5 miles ESE of Rocktown Point, is formed by a rocky peninsula, 19m high. It is connected to the mainland by a low and sandy isthmus. The town of Harper stands on the peninsula and the isthmus and the town of Grand Town stands close E of it. The port is reported (2009) to be closed to shipping.

In the immediate vicinity of the cape, the land is low and marshy. Shepherds Lake, a narrow salt water lagoon, extends several miles in an E direction from close E of Grand Town. The Hoffman River enters the sea close N of the cape.

Russwurm Island, 8m high and rocky, is joined to the S side of the cape by a causeway and is difficult to distinguish. A rock lies at the seaward extremity of the foul ground which extends from the E end of the island. This rock is 4m high and the sea breaks heavily on it.

Cape Palmas Home Page

http://www.nationalportauthorityliberia.org

Winds—Weather.—During the rainy season, from May through September, loading and unloading operations are very hazardous as 1.8 to 3m high swells plague the port and the surrounding coast. Extreme waves make the port completely unusable for at least 4 days per month. During the dry season, the seas normally have swells ranging from 0.9 to 1.5m.

The period from June to October corresponds to the Antarctic winter and is the time of most severe wave conditions. These wind generated waves approach the port predominantly from the S and SW.

Tides—Currents.—Tides rise 1.4m at springs and 1.2m at neaps.

At times, the current sets strongly along the coast just outside the anchorage. It usually sets E, but occasionally W and may attain a rate of 1 knot.

Depths—Limitations.—The port consists of an open roadstead anchorage for ocean-going vessels and a jetty for the use of coasters.

A breakwater extends WNW from the NW end of Russwurm Island and a jetty extends parallel to and close E of it. This jetty has a berth, 55m long, which has a depth of 6.4m alongside at HW and a depth of 4.8m at LW. Coasters of up to about 2,000 dwt can be handled at the jetty and vessels up to 6,000 dwt can anchor in the roadstead.

Timber, in the form of log rafts, and cargo in lighters are towed out to larger vessels at the anchorage.

The Hoffman River has an entrance, less than 100m wide, which is encumbered by several drying rocks. The bar fronting the mouth of the river has least depth of 0.7m.

Aspect.—Cape Palmas Light is shown from a tower, 22m high, standing near the W extremity of the cape. The light tower and several buildings standing in the vicinity of the cape are conspicuous.

Cape Palmas Light

A conspicuous water tower, marked by lights, stands 1.2 miles ENE of the cape. A conspicuous summit, 70m high, stands 3.5 miles ENE of the cape. It is surmounted by Cuddington College, a large and conspicuous building with a black roof.

Congo Rock lies about 1.2 miles W of the cape. It has a depth of 5m and seldom breaks. An obstruction was reported (1983) to lie about 0.5 mile NNE of this rock.

Recorder Rock, with a depth of 8.7m, lies 1.3 miles WSW of the cape and is the outermost danger. A buoy is reported to be moored close S of this rock. Henderson Rock, a 7.3m patch, and Bull Rock, a 9.1m patch, lie 300m NNE and 0.3 mile NE, respectively, of Recorder Rock.

Outer Rock, with a least depth of 2.7m, lies near the outer end of a chain of rocks which extend up to 0.6 mile WSW of the cape. Cape Rock, lying in the middle of this chain, dries 1.2m and always breaks. Yoruba Rock, with a least depth of 5.9m, lies about 0.5 mile W of the cape.

Brenton Rock, with a depth of 5m, is the outermost of several rocky shoals which extend up to 0.4 mile WSW of Russwurm Island. A buoy is reported to be close S of this rock.

Pilotage.—Pilots are not available.

Anchorage.—Vessels can anchor, in a depth of 11m, sand, between 0.3 and 0.6 mile WNW of Cape Palmas Light. Small vessels can find some shelter from the swell in a depth of 7m, sand, between 0.3 and 0.4 mile NW of the light. The holding ground is good and vessels generally lie heading into the swell.

Anchorage can also be obtained, in a depth of 16m, about 0.5 mile S of the cape.

Directions.—Vessels approaching from the W should keep in depths of over 25m before heading NE towards the anchorage. From a position lying about 0.2 mile W of Henderson Rock, a NE course may be shaped, taking care to pass NW of Bull Rock and Recorder Rock.

Vessels approaching from the E should give Newill Rock and Brenton Rock a berth of at least 0.5 mile and should not attempt to pass between the cape and Brenton Rock, Outer Rock, or Yoruba Rock.

Caution.—A vessel reported (1987) grounding in an attempt to pass between Russwurm Island and Three Foot Rock. A dangerous obstruction has been charted in the area where the vessel reported having incurred extensive hull damage. A stranded wreck lies close W of this position.

FRENCH

FRENCH	English
A	
abri, abrite	shelter, sheltered
aiguille	needle
aimante	magnetic
amer	landmark, beacon
amont	upstream, landmark
anse	bay, creek
appontement	wharf, pier, quay
argile	clay
atterrissage	making land, landfall
aval	downstream, seaward
avant port	outer port
azur	blue
B	
babord	port
baie	bay, gulf
balisage	beaconage
balise	beacon
banc	bank, sandbank
barre	bar
basse	shoal
basse mer	low water
bassin	basin, dock
bassin a flot	wet basin or dock
bassin d'echouage	tidal basin where vessels ground
bateau de sauvetag	lifeboat
blanc	white
bleu, bleue	blue
bois	wood
bouche	mouth of a river
bouee	buoy
bouee a cloche	bell buoy
bouee a sifflet	whistle buoy
bouee lumineuse	light buoy
boussole	compass
brise-lames	breakwater
brisant, brisants	shoals, breakers
brouillard	fog, mist
brume	fog
C	
caboteur	coaster
cale de radoub	marine railway
cap	cape, headland
champ-de-tir	firing range
chapelle	chapel
charbon	coal
chasse	a rapid discharge of water from a reservior in order to clear out a channel
chateau	castle
chaussee	bank, causeway
chemin de fer	railroad
cheminee	chimney
chenal	channel
clocher	steeple
coffre	mooring buoy
colline	hill
compas	compass
coquilles	shells
cote	coast
courant	current, stream
courant de jusant	ebb tidal stream
crique	creek
crue	freshet or flood
D	
darse	basin
detroit	strait, narrow
digue	breakwater, mole
douane	customhouse
droit	right (side)
due d'albe	dolphin
E	
echelle	scale
echelle de maree	tide gauge
ecluse	lock of a canal or basin
ecueil	rock, breaker
eglise	church
encablure	cable's length
entree	entrance, mouth of a river
epave	wreck
epi	small jetty, groin
escarpe	bluff
etale	(of tide) slack, (of wind) settled
etang	lake
etiage	low-water mark of a river
etier	a creek which can receive small vessels or a conduit
F	
falaise	cliff
fanal	harbor lighthouse
feu	light
feu permanent	a light constantly burning and unwatched
fin,e	fine
fleche	spire
fleuve	river, stream
flot	flood
foc	jib (sail)
fond	bottom
forme de radoub	drydock
fosse	ditch, a deep
G	
galets	shingle
gare	station

FRENCH	English
gauche	left (side)
golfe	gulf
goulet	narrow entrance
gravier	gravel
greve	sandy beach
gril de carenage	gridiron
gris	gray
gros	coarse
guet	watch-house

H

haut-fond	a shoal
haute mer	high water
houle	swell

I

ile	island, isle
ilot	islet

J

jaune	yellow
jetee	jetty
jusant	ebb

L

lac	lake

M

madrague	tunny net
marais	swamp, marsh
maree	tide
maree descendante	falling tide
maree montante	rising tide
massif	main group of mountains
mat	mast
mole	mole, pier
molle	soft
mortes eaux	neap tides
mouillage	anchorage
moulin	mill
musoir	pierhead

N

niveau	level
noeud	knot
noir, noire	black
nouveau, nouvel	new

O

occidental	western
onde	wave
oriental	eastern
ouest	west

FRENCH	English

P

passe	pass, fairway, channel
patente de sante	bill of health
pertuis	opening or strait
petit	small
phare	lighthouse
pic	peak
pierre	stone
pignon	gable
pin	pine or fir tree
plage	shore, beach
plateau	tableland, or flat below water
pleine mer	high water
pointe	point
pont	bridge, deck
presq'ile	peninsula

Q

quai	quay, wharf

R

rade	road, roadstead
rafale	squall
raz (bas breton)	a violent tidal stream in a narrow passage
recif	reef
roche	rock
rocher	rock
rouge	red
ruisseau	rivulet

S

sable	sand
salines	salt-water lagoons, salt works
seche	dry shelf, flat
seuil	sill (as of a dock)
sud	south

T

temps	time, weather
terre-plein	leveled ground, platform
tour	tower
tourelle	small tower, turret
tribord	starboard

U

usine	factory

V

vase	mud
vent	wind
vert	green
vieux, vieil, vieille	old, ancient
ville	town
vive-eau	spring tide

SPANISH

SPANISH	English
A	
abrigo	shelter
aduana	customhouse
aguas muertas	neap tides
aguas vivas	spring tides
aguja	needle
albufera	tidal lake
aldea	small village, a hamlet
alfaque	sandbank, bar
almadraba	tunny fishery
alto	height
amarillo	yellow
arena	sand
arrabal	suburb
arrecife	reef
arroyo	rivulet
astillero	dockyard
atalaya	an elevated place from which a considerable view may be obtained
B	
babor	port
bahia	bay
bajamar	low water
bajo	shoal
banco	bank
barra	bar at the mouth of a river or harbor
barrio	suburb, district of a town
blanco	white
bote salvavidas	lifeboat
boya	buoy
brujula	compass
bruma	fog, haze
C	
cabezo	summit of a hill
cabo	cape or headland
cala	creek or small bay
caleta	cove
camino de hierro	railway
campanario	steeple, belfry
canal	channel or strait
capilla	chapel
carabineros	a post of military coast guards
carbon de piedra	coal
carta de sanidad	bill of health
casa	house
cascajo	gravel
caserio	series of houses
caseta	small house
castillo	castle
carrazon	dark, cloudy weather
cerro	hill
chica	small
concha	a shell
contrastes	winds blowing from opposite directions
cubierta	deck
cueva	cave
D	
darsena	dock or basin
dique	dock, dike
dique seco	drydock
E	
ensenada	bay or creek
ermita	hermitage
escollo	rock
espigon	a kind of wharf or pier
este	east
estero	small creek
estrecho	strait
estribor	starboard
F	
fanal	lighthouse
fango	mud
faro	lighthouse
ferrocarril	railway
fondeadero	anchorage
fraile	friar
freo	strait
fuente	fountain; spring of water
fuerte	fort
G	
garita	lookout house
golfo	gulf
grande	great
gris	gray
grao	strand, shore
I	
iglesia	church
isla	island
isleta	islet
L	
lago	lake
laguna	lagoon
laja	flat rock
limo	mud
lugar	village or small town
luz	light
M	
malecon	dike
marea	tide
marea creciente	flood tide

SPANISH	English
marea menguante	ebb tide
meridional	southern
mesa	tableland
molino	mill
montana	mountain
monte	mount
muelle	mole or jetty

N

negro	black
niebla	fog
norte	north

O

oeste	west
ola	wave
oriente	east; east wind

P

pardo	gray
pena	rock or large stone
penon	rock or rocky mountain
pequena	small
picacho	summit
pico	peak
piedra	rock
piloto	pilot
piloto practico	a harbor pilot (practico is often used alone)
placer	sandbank, cay
playa	beach
pleamar	high water
poniente	west; west wind
promontorio	headland, promontory
pueblo	town; a village
puente	bridge
puerto	port
punta	point

Q

quinta	country house

R

reclada	making the land
restinga	reef
ria	the mouth of a river
ribera	the shore; the bank of a river
rio	river
roca	rock
rojo	red

S

salina	saltpan
sanidad	health
seno	gulf or bay
septentrional	northern
sierra	mountain ridge
sud, sur	south

T

temporal	storm
terral	land wind
tiempo	weather
torre	tower

V

variacion	variation
vela	sail
vendaval	strong sea wind
verde	green
viejo	old
viento	wind
vigia	a lookout; doubtful shoals
villa	town

PORTUGUESE

PORTUGUESE	English
A	
ancoradouro	anchorage
area, areia	sand
B	
bahia	bay
baixo	shoal
balisa	beacon
banco	bank
barra	bar
boca	mouth; an entrance
bombordo	port
boia	buoy
branco	white
C	
cabeco	the top of a hill
cabo	cape; also a cable
canal	channel or strait
capella	chapel
castello	castle
chamine	chimney
D	
doca	dock
doca secca	drydock
E	
enseada	bay
espigao	sharp point of land without trees
F	
farol or pharol	lighthouse; a light
foz	the mouth of a river
fundeadouro	anchorage
I	
igreja	church
ilha	an island
ilhota	an islet
L	
laje	ledge
luz	light
M	
meridional	southern
moinho	windmill
molhe	mole of pier
N	
negro	black
P	
pedro	rock or stone
pharo	lighthouse
plano inclinado	patent slip
ponta	point
pontal	point or promontory
ponte	bridge
porto	port
povoacao	village
praia	beach
R	
restinga	reef
rio	river
rocha	rock
rocher	rock or rocky place
S	
septentrional	northern
serra	mountain ridge
T	
torre	tower
V	
verde	green
vermelho	red

ARABIC

ARABIC	English
A	
abu, bu	father, chief
adel, aleb	sloping hill
ain	spring, well, fountain
anak	cliff
arish	dune
B	
bab	gate, strait
bahr	river, sea
baida	desert
beni	son of; mountain spurs or ridges
bheira	lake
bir	well
bogaz	entrance channel
buy, burj	fort, tower, or castle
E	
el	the
F	
fasht	reef
H	
halat	drying sand bank
hassar	rock
J	
jebel, jibel, gibel	mountain or hill
jezirat	island
K	
kad	shoal
kalat	castle
kasba	citadel
kebir	large
kef	rocky point
khor	creek
kudiat	small hill
M	
marabut	monument or tomb
marsa, mersa, marza	bay, cove, harbor, or port
masjed	mosque
mosque	mohammedan church
muzik	strait
N	
nahr	river
R	
ras	cape or point
rif	coast
S	
sebkha	salt lake
seghir	little
shab	rocky shoal
sherm	cove
chasse	applied as marabut to tombs of saints and devout men
T	
tarf	cape
U	
umm	mother
W	
wady, wadi	valley or ravine
wed or uad	a river

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 Chart Information diagram for the Sector. Plot the approximate position of the feature on this diagram and note the approximate chart number.

To use as an Index of features described in the text note the paragraph number at the right. To locate this feature on the best scale chart use the Gazetteer procedure above.

Index—Gazetteer

	Position °	'	°	'	Sec. Para
A					
ACOR BANK	37	12 N	28	58 W	7.8
AGADIR	30	25 N	9	38 W	9.27
ALCATRAZ REEF	10	35 N	15	25 W	11.27
ALLAHINE RIVER	13	04 N	16	45 W	11.15
AMPERE SEAMOUNT	35	00 N	12	48 W	8.15
ANGRA DE CABALLO	24	04 N	15	35 W	10.9
ANSE DE BENODET	47	51 N	4	07 W	1.20
ANSE DE L'AIGUILLON	46	17 N	1	10 W	2.25
ANSE DU POULDU	47	45 N	3	32 W	1.24
ANSE SPARTEL	35	46 N	5	56 W	9.3
ARCACHON	44	40 N	1	10 W	3.9
ARCIPRES GRANDE	23	44 N	15	57 W	10.9
ARQUIPELAGO DOS ACORES	39	42 N	31	07 W	7.1
ARQUIPELAGO DOS BIJAGOS	11	15 N	16	00 W	11.20
ASILAH	35	28 N	6	02 W	9.3
ATALAYA DE MALPICA	43	19 N	8	49 W	4.34
AVANT-GOULET DE BREST	48	18 N	4	40 W	1.8
AVEIRO	40	39 N	8	44 W	5.44
AVILES	43	35 N	5	55 W	4.3
AYAMONTE	37	13 N	7	24 W	6.10
B					
BADDU POINT	4	41 N	8	28 W	12.24
BAFFU BAY	5	10 N	9	18 W	12.17
BAFU BAY	5	10 N	9	18 W	12.17
BAHIA DE ANGRA DE CINTRA	23	00 N	16	15 W	10.12
BAHIA DE CADIZ	36	35 N	6	20 W	6.20
BAHIA DE GORREI	22	50 N	16	19 W	10.13
BAHIA DE RIO DE ORO	23	37 N	15	59 W	10.10
BAIA DA MORDEIRA	16	48 N	24	47 W	8.73
BAIA DA PALMEIRA	16	45 N	22	59 W	8.74
BAIA DE CASCAIS	38	41 N	9	24 W	5.56
BAIA DE LAGOS	37	06 N	8	37 W	6.4
BAIA DE PORTO SANTO	33	03 N	16	20 W	8.9
BAIA DE PRAIA	36	56 N	25	06 W	7.31
BAIA DE SAO LOURENCO	36	59 N	25	03 W	7.28
BAIA DO TARRAFAL	15	17 N	23	46 W	8.86
BAIA DO TARRAFAL	16	34 N	24	22 W	8.69
BAIE DE BOURGNEUF	47	05 N	2	15 W	2.11
BAIE DE DOUARNENEZ	48	09 N	4	25 W	1.12
BAIE DE LA FOREST	47	52 N	3	53 W	1.21
BAIE DE QUIBERON	47	30 N	3	00 W	1.35
BAIE DE SANGAREYA	9	40 N	13	42 W	11.32
BAIE DE ST. JEAN DE LUZ	43	24 N	1	41 W	3.14
BAIE DU POULIGUEN	47	16 N	2	23 W	2.2
BAIE IMSOUANE	30	50 N	9	49 W	9.25
BAIXA DO MORROS	39	21 N	31	11 W	7.6
BAIXO DE JOAO VALENTE	15	49 N	23	09 W	8.81
BAIXO JOAO LEITAO	15	49 N	23	09 W	8.81
BAJO CASTRO VERDE	43	33 N	3	13 W	3.31
BAJO EL SERRON	43	38 N	6	24 W	4.6
BAJOS DE BALDAYO	43	20 N	8	42 W	4.34
BAJOS DE LEON	36	29 N	6	18 W	6.25
BAJOS DE LOS MEIXIDOS	42	46 N	9	12 W	5.5
BAJOS DELGADOS	43	37 N	8	18 W	4.26
BALD CAPE	13	23 N	16	48 W	11.10
BANANA ISLANDS	8	07 N	13	13 W	11.46
BANC D'ARGUIN	20	10 N	16	50 W	10.19
BANC DE GUERANDE	47	11 N	2	40 W	2.4
BANCO DE BERMEO	43	41 N	8	15 W	4.26
BANCO DO NOROESTE	17	15 N	25	29 W	8.58
BANCO LAS BASONAS	42	38 N	9	06 W	5.9
BANJUL	13	27 N	16	34 W	11.11
BASSA POINT	6	06 N	10	22 W	12.10
BASSE GARRIGUES	20	17 N	17	13 W	10.18
BASSIN D'ARCACHON	44	42 N	1	09 W	3.8
BAYONNE	43	30 N	1	29 W	3.12
BEC D'AMBES	45	02 N	0	36 W	3.5
BEG AN AUD	47	32 N	3	10 W	1.29
BEG EL LAN	47	28 N	3	08 W	1.30
BEG ROHU	47	31 N	3	07 W	1.35
BELLE ILE	47	20 N	3	11 W	1.31
BENODET	47	52 N	4	07 W	1.20
BENTI	9	10 N	13	13 W	11.39
BERRUECO GRANDE	36	27 N	6	03 W	6.20
BICO DA CALHA	38	40 N	9	15 W	5.57
BIJOUGA ISLANDS	11	15 N	16	00 W	11.20
BISAGOS ISLANDS	11	15 N	16	00 W	11.20
BISSAU	11	51 N	15	35 W	11.22
BISSAU	11	52 N	15	38 W	11.19
BLAYE	45	07 N	0	40 W	3.5
BOFFA	10	10 N	14	02 W	11.31
BOKE	10	56 N	14	18 W	11.29
BOLAMA	11	35 N	15	28 W	11.23
BONANZA	36	48 N	6	20 W	6.17
BONTHE	7	32 N	12	30 W	12.4
BONTHE	7	45 N	12	58 W	12.4
BORDEAUX	44	51 N	0	34 W	3.6
BOY DA LARGO	43	23 N	8	25 W	4.33
BREST	48	23 N	4	30 W	1.10
BUCHANAN	5	52 N	10	04 W	12.12
BUCHANAN OIL TERMINAL	5	52 N	10	04 W	12.11
BURELA	43	39 N	7	21 W	4.15
C					
CABO AJO	43	31 N	3	35 W	3.35
CABO BARBAS	22	19 N	16	41 W	10.13
CABO BLANCO	43	34 N	6	51 W	4.8
CABO BOJADOR	26	08 N	14	30 W	10.5
CABO BURELA	43	40 N	7	21 W	4.14
CABO BUSTO	43	34 N	6	28 W	4.6
CABO CARVOEIRO	39	21 N	9	24 W	5.50
CABO CEBOLLERO	43	25 N	3	19 W	3.32
CABO CORRUBEDO	42	35 N	9	05 W	5.9
CABO CORVEIRO	21	48 N	16	59 W	10.14
CABO DA ROCA	38	47 N	9	29 W	5.53
CABO DE LA NAVE	42	55 N	9	18 W	4.40
CABO DE LATA	43	30 N	3	49 W	3.37
CABO DE MAR	43	28 N	4	55 W	3.42
CABO DE MATA	12	10 N	16	19 W	11.18
CABO DE SAN ADRIAN	43	21 N	8	50 W	4.34
CABO DE SAN LORENZO	43	34 N	5	37 W	3.46

	Position °	'	°	'	Sec. Para
CABO DE SAN SEBASTIAN	43	34 N	6	57 W	4.9
CABO DE SANTA CATALINA	43	23 N	2	31 W	3.25
CABO DE SANTA MARIA	36	58 N	7	52 W	6.6
CABO DE SAO VICENTE	37	01 N	9	00 W	6.2
CABO DE SINES	37	57 N	8	53 W	5.62
CABO DE TORRES	43	34 N	5	42 W	3.47
CABO DEL HOME	42	15 N	8	52 W	5.27
CABO DESCOJONADA	27	55 N	15	50 W	8.41
CABO ESPICHEL	38	25 N	9	13 W	5.57
CABO ESTAY	42	11 N	8	49 W	5.29
CABO FALSO BOJADOR	26	15 N	14	25 W	10.5
CABO FINISTERRE	42	53 N	9	16 W	5.2
CABO HIGUER	43	24 N	1	47 W	3.15
CABO LASTRES	43	32 N	5	18 W	3.44
CABO LEVEN	24	29 N	15	10 W	10.8
CABO MACHICHACO	43	27 N	2	45 W	3.26
CABO MAYOR	43	30 N	3	47 W	3.36
CABO MONDEGO	40	11 N	8	54 W	5.45
CABO NACHTIGAL	28	30 N	11	21 W	9.32
CABO NEGRO	43	37 N	5	55 W	4.2
CABO NON	29	16 N	10	18 W	9.30
CABO ORIAMBRE	43	24 N	4	20 W	3.40
CABO ORTEGAL	43	45 N	7	53 W	4.21
CABO PENA GRANDE	25	05 N	14	51 W	10.8
CABO PENAS	43	39 N	5	51 W	4.2
CABO PRIETO	43	27 N	4	50 W	3.41
CABO PRIOR	43	34 N	8	19 W	4.25
CABO PRIORINO CHICO	43	28 N	8	20 W	4.26
CABO QUEJO	43	30 N	3	33 W	3.35
CABO RASO	38	43 N	9	29 W	5.54
CABO REBURDINO	42	46 N	9	03 W	5.6
CABO ROCHE	36	17 N	6	08 W	6.27
CABO SARDAO	37	36 N	8	49 W	5.64
CABO SILLEIRO	42	07 N	8	54 W	5.28
CABO TORINANA	43	03 N	9	18 W	4.39
CABO UDRA	42	20 N	8	50 W	5.21
CABO VIDIO	43	35 N	6	15 W	4.5
CABO VIDRIAS	43	35 N	6	01 W	4.4
CABO VILLANO	43	10 N	9	13 W	4.37
CABO VILLANO	43	26 N	2	57 W	3.27
CACHEU	12	05 N	16	30 W	11.18
CADIZ	36	32 N	6	18 W	6.24
CAMARA DE LOBOS	32	39 N	16	59 W	8.6
CAMBERENE	14	46 N	17	25 W	10.26
CANAL DE CANHABAQUE	11	14 N	15	37 W	11.26
CANAL DE ORANGO	11	00 N	15	49 W	11.25
CANAL DO GEBA	11	41 N	16	00 W	11.21
CANAL PRINCIPAL	36	34 N	6	18 W	6.21
CANO DE SANCTI PETRI	36	24 N	6	12 W	6.26
CANTO DA CARNEIRA	39	43 N	31	05 W	7.2
CAP BEDDOUZA	32	33 N	9	17 W	9.18
CAP BLANC	20	46 N	17	03 W	10.16
CAP BLANC DU NORD	33	10 N	8	37 W	9.16
CAP CANTIN	32	33 N	9	17 W	9.18
CAP D'AGLOU	29	42 N	9	59 W	9.28
CAP DE BICHES	14	43 N	17	18 W	11.5
CAP DE FEDALA	33	43 N	7	24 W	9.9
CAP DE LA CHEVRE	48	10 N	4	33 W	1.11, 1.13
CAP DE MAZAGAN	33	16 N	8	31 W	9.14
CAP DE MOHAMMEDIA	33	43 N	7	24 W	9.9
CAP DRA	28	44 N	11	05 W	9.31
CAP DRAA	28	44 N	11	05 W	9.31
CAP ESPARTEL	35	47 N	5	56 W	9.2
CAP FERRET	44	37 N	1	15 W	3.7
CAP HADID	31	42 N	9	41 W	9.22
CAP JUBY	27	57 N	12	55 W	10.2
CAP KOUNDIDE	10	13 N	14	27 W	11.28
CAP MANUEL	14	39 N	17	26 W	11.3
CAP RHIR	30	38 N	9	53 W	9.26
CAP ROUGE	14	38 N	17	11 W	11.5
CAP ROXO	12	20 N	16	43 W	11.18
CAP SAFI	32	22 N	9	17 W	9.19
CAP SAINTE-ANNE	20	41 N	16	41 W	10.18
CAP SIM	31	23 N	9	50 W	9.24
CAP SKIRING	12	25 N	16	46 W	11.18
CAP SPARTEL	35	47 N	5	56 W	9.2
CAP TAFELNEY	31	06 N	9	50 W	9.25
CAP TIMIRIS	19	22 N	16	32 W	10.20
CAP TIMIRIS	19	23 N	16	32 W	10.19
CAP UARSIG	29	16 N	10	18 W	9.30
CAP VERGA	10	13 N	14	27 W	11.28
CAP VERT	14	43 N	17	30 W	11.2
CAP YUBI	27	57 N	12	55 W	10.2
CAPBRETON	43	39 N	1	27 W	3.10
CAPE MESURADO	6	19 N	10	49 W	12.7
CAPE MOUNT	6	45 N	11	23 W	12.6
CAPE PALMAS	4	22 N	7	44 W	12.32
CAPE SHILLING	8	05 N	13	09 W	11.45
CAPE SHILLING	8	10 N	13	10 W	12.2
CAPE SIERRA LEONE	8	30 N	13	18 W	11.41
CAPE ST. ANN	7	34 N	12	57 W	12.2
CAPE ST. MARY	13	29 N	16	40 W	11.10
CAPE TRAFALGAR	36	11 N	6	02 W	6.28
CAPE VERDE	14	43 N	17	30 W	11.2
CASABLANCA	33	36 N	7	37 W	9.12
CASTILLO DE SAN SEBASTIAN	36	32 N	6	19 W	6.21
CAYAR	14	55 N	17	07 W	10.26
CESTORS POINT	4	34 N	8	15 W	12.27
CESTOS BAY	5	27 N	9	37 W	12.14
CHAUSSEE DE BOEUFS	46	56 N	2	26 W	2.3
CHAUSSEE DE SEIN	48	03 N	4	55 W	1.14
CHAUSSEE DE SEIN LIGHTBUOY	48	04 N	5	08 W	1.14
CHAUSSEE DE TEIGNOUSE	47	28 N	3	12 W	1.30
CHAUSSEE DES PIERRES VERTES	48	23 N	5	03 W	1.3
CHAUSSEE DU BENIGET	47	25 N	3	15 W	1.32
CLINE POINT	8	30 N	13	12 W	11.42
CONAKRY	9	31 N	13	43 W	11.36
CONCARNEAU	47	52 N	3	55 W	1.20, 1.22
CONCEPCION BANK	29	58 N	12	42 W	8.55
CONCHA DE GIJON	43	33 N	5	40 W	3.47
CONCHA DE LUARCA	43	33 N	6	32 W	4.6
CONIL	36	18 N	6	08 W	6.27
CONTIS LIGHT	44	06 N	1	19 W	3.10
COPPOLANI	18	19 N	16	03 W	10.20
CORO	10	07 N	14	11 W	11.31
CORRUBEDO	42	34 N	9	04 W	5.9
CORVO ISLAND	39	42 N	31	07 W	7.2
COUREAU D'OLERON	45	51 N	1	11 W	2.35
COUREAU DE BELLE-ILE	47	24 N	3	06 W	1.30

D

	Position °	'	°	'	Sec. Para
DACIA SEAMOUNT	31	09 N	13	38 W	8.55
DAKAR	14	41 N	17	26 W	11.4
DAKHLA	23	37 N	15	59 W	10.10
DJEREIDA	18	19 N	16	03 W	10.20
DONGES	47	18 N	2	04 W	2.8
DOUARNENEZ	48	06 N	4	20 W	1.12
DRU RIVER	4	43 N	8	31 W	12.25

E

	Position °	'	°	'	Sec. Para
EL AARAICH	35	12 N	6	09 W	9.5
EL BANGUERO	25	46 N	14	38 W	10.6
EL CABINO	26	25 N	14	11 W	10.4
EL JADIDA	33	16 N	8	30 W	9.15
EL JORF LASFAR	33	10 N	8	37 W	9.16
ENDEAVOR BANK	7	56 N	13	18 W	12.3
ENSEADA DE SESIMBRA	38	26 N	9	06 W	5.59
ENSENADA DE BARRANA	42	37 N	8	54 W	5.13
ENSENADA DE BAYONA	42	07 N	8	51 W	5.28
ENSENADA DE BUEU	42	20 N	8	47 W	5.21
ENSENADA DE CAMBADOS	42	31 N	8	49 W	5.15
ENSENADA DE CANDAS	43	35 N	5	46 W	3.49
ENSENADA DE CANGAS	42	15 N	8	47 W	5.27
ENSENADA DE CARNOTA	42	49 N	9	08 W	5.5
ENSENADA DE CORRUBEDO	42	34 N	9	03 W	5.9
ENSENADA DE DEVA	43	18 N	2	21 W	3.22
ENSENADA DE LA LANZADA	42	27 N	8	54 W	5.19
ENSENADA DE LASTRES	43	31 N	5	16 W	3.44
ENSENADA DE LIMENS	42	15 N	8	49 W	5.27
ENSENADA DE LUANCO	43	37 N	5	47 W	3.49
ENSENADA DE MOANA	42	17 N	8	43 W	5.27
ENSENADA DE PALMEIRA	42	35 N	8	57 W	5.13
ENSENADA DE RIANJO	42	39 N	8	50 W	5.16
ENSENADA DE SAN CIPRIAN	43	42 N	7	26 W	4.17
ENSENADA DE SAN FRANCISCO	42	45 N	9	04 W	5.6
ENSENADA DE SAN SIMON	42	19 N	8	38 W	5.31
ENSENADA DE SANTA EUGENIA	42	33 N	8	59 W	5.13
ENSENADA DE TAZONES	43	33 N	5	24 W	3.45

	Position °	'	°	'	Sec. Para
ENSENADA DE VILLAGARCIA	42	36 N	8	47 W	5.17
ENSENADA DEL GROVE	42	28 N	8	51 W	5.14
ENSENADA DEL ORZAN	43	23 N	8	25 W	4.33
ENSENADA PUEBLA CARAMINAL	42	36 N	8	56 W	5.13
ENSENADA SAN JULIAN MUSQUES	43	21 N	3	07 W	3.29
ESSAOUIRA	30	31 N	9	47 W	9.23
ESTRECHO DE LA BOCAYNA	28	49 N	13	52 W	8.47
ESTUARY OF RIO CACHEU	12	05 N	16	30 W	11.18
ESTUARY OF RIO GEBA	11	52 N	15	38 W	11.19
ETEL	47	39 N	3	12 W	1.28
EZARO BAY	42	54 N	9	09 W	5.4
F					
FAIAL ISLAND	38	35 N	28	42 W	7.7
FALSE CAPE MOUNT	6	42 N	11	21 W	12.7
FARO	37	01 N	7	55 W	6.8
FIO DO MONTE VERMELHO	15	03 N	24	23 W	8.89
FISHTOWN POINT	4	25 N	7	50 W	12.30
FONDEADERO DE LOS GIGANTES	28	16 N	16	51 W	8.32
FREETOWN	8	30 N	13	13 W	11.43
FUM EL WAD	27	12 N	13	23 W	10.2
FUNCHAL	32	38 N	16	54 W	8.5
G					
GARAWE POINT	4	30 N	7	56 W	12.29
GARRAWAY POINT	4	30 N	7	56 W	12.29
GAVIOTA OIL PLATFORM	43	30 N	2	41 W	3.26
GEBA APPROACH LIGHTED BUOY	11	45 N	16	42 W	11.21
GEORGETOWN	13	34 N	14	47 W	11.13
GETTYSBURG SEAMOUNT	36	30 N	11	35 W	8.15
GOLF DU MORBIHAN	47	33 N	2	55 W	1.36
GOLFO DE CINTRA	23	00 N	16	15 W	10.12
GOLFO DE FOZ	43	37 N	7	15 W	4.10
GRACIOSA ISLAND	39	01 N	28	00 W	7.14
GRAND BASSA BAY	5	54 N	10	05 W	12.11
GRAND BUTU POINT	5	03 N	9	08 W	12.18
GREAT NIFU	4	45 N	8	32 W	12.24
GREENVILLE	4	59 N	9	03 W	12.20
H					
HARPER POINT	4	22 N	7	44 W	12.32
HIERRO	27	47 N	17	54 W	8.20
HORTA	38	32 N	28	37 W	7.8
HUELVA	37	15 N	6	57 W	6.13
HUELVA OFFSHORE OIL TERMINAL	37	05 N	6	55 W	6.13
I					
ILE AUX MOUTONS	47	47 N	4	02 W	1.19
ILE D'AIX	46	01 N	1	10 W	2.28
ILE D'OLERON	46	00 N	1	22 W	2.22
ILE D'OUESSANT	48	28 N	5	05 W	1.2
ILE D'YEU	46	43 N	2	21 W	2.14
ILE DE GROIX	47	38 N	3	27 W	1.25
ILE DE HOEDIC	47	20 N	2	52 W	1.33
ILE DE HOUAT	47	23 N	2	58 W	1.32
ILE DE LA MADELEINE	14	39 N	17	28 W	11.3
ILE DE MOLENE	48	24 N	4	58 W	1.3
ILE DE NOIRMOUTIER	46	59 N	2	14 W	2.11
ILE DE PENFRET	47	43 N	3	57 W	1.19
ILE DE RE	46	12 N	1	26 W	2.21
ILE DE SEIN	48	03 N	4	52 W	1.14
ILE DES OISEAUX	13	40 N	16	40 W	11.10
ILE DU PILIER	47	03 N	2	22 W	2.3
ILE DUMET	47	25 N	2	37 W	1.38
ILE GONZALEZ	10	28 N	14	39 W	11.28
ILE KASSA	9	29 N	13	45 W	11.35
ILE LONGUE	48	18 N	4	31 W	1.10
ILE MATAKONG	9	17 N	13	25 W	11.37
ILE ROUME	9	28 N	13	48 W	11.35
ILE TAMARA	9	30 N	13	49 W	11.34
ILE VERTE	47	46 N	3	48 W	1.23
ILES DE GLENAN	47	42 N	4	00 W	1.19
ILHA BERLENGA	39	25 N	9	30 W	5.51
ILHA BRAVA	14	51 N	24	43 W	8.93
ILHA BUGIO	32	26 N	16	29 W	8.12
ILHA DA BOA VISTA	16	05 N	22	50 W	8.76
ILHA DA MADEIRA	32	45 N	17	00 W	8.2
ILHA DE MAIO	15	15 N	23	10 W	8.82
ILHA DE MELO	10	59 N	15	17 W	11.27
ILHA DE PORTO SANTO	33	05 N	16	20 W	8.8
ILHA DE SANTA LUZIA	16	47 N	24	46 W	8.66
ILHA DE SANTO ANTAO	17	05 N	25	10 W	8.57
ILHA DE SAO NICOLAU	16	37 N	24	20 W	8.69
ILHA DE SAO TIAGO	15	03 N	23	40 W	8.84
ILHA DE SAO VICENTE	16	50 N	25	00 W	8.61
ILHA DESERTA GRANDE	32	32 N	16	31 W	8.12
ILHA DO FOGO	14	57 N	24	21 W	8.88
ILHA DO SAL	16	49 N	22	55 W	8.71
ILHA PASSAROS	11	49 N	15	36 W	11.21
ILHA ROXA	11	10 N	15	47 W	11.26
ILHA SELVAGEM GRANDE	30	09 N	15	52 W	8.13
ILHA SELVAGEM PEQUENA	30	02 N	16	01 W	8.14
ILHAS DESERTAS	32	33 N	16	31 W	8.11
ILHAS SELVAGENS	30	09 N	15	52 W	8.13
ILHEU BRANCO	16	40 N	24	41 W	8.67
ILHEU CHAO	32	35 N	16	33 W	8.11
ILHEU DE CAIO	11	50 N	16	19 W	11.18
ILHEU DE CIMA	14	58 N	24	39 W	8.92
ILHEU DE CIMA	33	03 N	16	17 W	8.8
ILHEU DE FERRO	33	02 N	16	25 W	8.10
ILHEU DE FORA	30	02 N	16	03 W	8.14
ILHEU DE FORA	32	44 N	16	39 W	8.4
ILHEU DO PESSEGUEIRO	37	50 N	8	48 W	5.64
ILHEU DO POILAO	10	52 N	15	43 W	11.25
ILHEU DO POILAO	10	52 N	15	44 W	11.25
ILHEU DOS PASSAROS	11	49 N	15	36 W	11.21
ILHEU DOS PASSAROS	16	55 N	25	01 W	8.63
ILHEU MOLE	32	52 N	17	10 W	8.2
ILHEU RASO	16	37 N	24	35 W	8.68
ILHEUS DA MADELENA	38	32 N	28	33 W	7.10
ILHEUS DAS CABRAS	38	38 N	27	09 W	7.19
ILHEUS DAS FORMIGAS	37	16 N	24	46 W	7.27
ILHEUS DO ROMBO	14	58 N	24	40 W	8.92
ISLA AQUECHE	43	27 N	2	46 W	3.26
ISLA DE ALEGRANZA	29	24 N	13	30 W	8.54
ISLA DE AROSA	42	33 N	8	52 W	5.15
ISLA DE FARO	42	13 N	8	54 W	5.25
ISLA DE FUERTEVENTURA	28	30 N	14	00 W	8.42
ISLA DE HIERRO	27	45 N	18	00 W	8.20
ISLA DE IZARO	43	26 N	2	41 W	3.25
ISLA DE LA GOMERA	28	06 N	17	14 W	8.21
ISLA DE LA PALMA	28	40 N	17	52 W	8.17
ISLA DE LANZAROTE	29	00 N	13	40 W	8.48
ISLA DE MONTANA CLARA	29	18 N	13	32 W	8.53
ISLA DE SAN ANTON	43	19 N	2	12 W	3.21
ISLA DE SAN MARTIN	42	12 N	8	54 W	5.25
ISLA DE SAN NICOLAS	43	22 N	2	29 W	3.24
ISLA DE SANTA CLARA	43	19 N	2	00 W	3.18
ISLA DE SANTA MARINA	43	28 N	3	44 W	3.35
ISLA DE TENERIFE	28	10 N	16	36 W	8.24
ISLA GRACIOSA	29	15 N	13	30 W	8.53
ISLA LOBOS	28	45 N	13	49 W	8.47
ISLA MALLA-ARRIA	43	18 N	2	09 W	3.20
ISLA ONZA	42	21 N	8	56 W	5.19
ISLA REDONDA	43	22 N	8	28 W	4.33
ISLA SALVORA	42	28 N	9	01 W	5.11
ISLA TAMBO	42	25 N	8	43 W	5.22
ISLAS CIES	42	13 N	8	54 W	5.25
ISLAS DE BAYONA	42	13 N	8	54 W	5.25
ISLAS DE SAGRES	42	30 N	9	03 W	5.11
ISLAS DE SAN PEDRO	43	23 N	8	27 W	4.33
ISLAS ONS	42	22 N	8	56 W	5.19
ISLAS SISARGAS	43	22 N	8	50 W	4.35
ISLOTE BOEIRO	42	11 N	8	55 W	5.25
ISLOTE DE SANCTI PETRI	36	23 N	6	13 W	6.26
ISLOTE GORMA	42	35 N	8	48 W	5.18
IZON	44	57 N	0	22 W	3.5
J					
JORF LASFAR	33	08 N	8	38 W	9.17
JUNK RIVER	6	08 N	10	22 W	12.9

	Position °	'	°	'	Sec. Para
K					
KAMSAR	10	30 N	14	44 W	11.28
KAOLACK	14	08 N	16	05 W	11.8
KARABANE	12	34 N	16	46 W	11.16
KASSET RIVER	10	54 N	15	08 W	11.27
KATA POINT	4	40 N	8	27 W	12.25
KENITRA	34	16 N	6	40 W	9.7
KEREON	48	26 N	5	02 W	1.3
KING WILLIS BAY	4	49 N	8	44 W	12.22
KING WILLS BAY	4	49 N	8	44 W	12.22
KLINE	8	30 N	13	12 W	11.42
KUNTAUR	13	40 N	14	53 W	11.12
L					
L'ABERILDUT	48	28 N	4	45 W	1.4
L'ADOUR	43	32 N	1	31 W	3.11
L'ELORN RIVER	48	23 N	4	24 W	1.10
L'HERBAUDIERE	47	01 N	2	18 W	2.13
L'IROISE	48	12 N	5	00 W	1.7
LA COTINIERE	45	55 N	1	20 W	2.22
LA GIRONDE	45	35 N	1	10 W	3.2
LA ISLETA	28	10 N	15	25 W	8.35
LA PALLICE	46	10 N	1	14 W	2.29
LA PARQUETTE	48	16 N	4	44 W	1.7
LA RHUNE	43	18 N	1	38 W	3.11
LA ROCHELLE-PALLICE	46	10 N	1	14 W	2.29
LA ROCHELLE-VILLE	46	09 N	1	09 W	2.30
LA SEUDRE	45	48 N	1	09 W	2.35
LA TETE DE ROCHEIN	10	04 N	16	36 W	11.28
LA VILAINE	47	30 N	2	30 W	1.39
LAAYOUNE	27	06 N	13	25 W	10.3
LAJAS DE CABO ROCHE	36	17 N	6	09 W	6.27
LAJAS DE CONIL	36	13 N	6	06 W	6.28
LAJES	38	24 N	28	16 W	7.12
LAJES	39	23 N	31	10 W	7.5
LAJES DO PICO	38	24 N	28	16 W	7.12
LARACHE	35	12 N	6	09 W	9.5
LAREDO	43	25 N	3	25 W	3.32
LAS ESTELAS	42	09 N	8	52 W	5.29
LAS PALMAS	28	08 N	15	25 W	8.36
LE CHATEAU D'OLERON	45	53 N	1	11 W	2.35
LE GUILVINEC	47	48 N	4	17 W	1.18
LE VERDON	45	33 N	1	02 W	3.4
LEOPARD ISLAND	8	41 N	13	15 W	11.41
LES PLATRESSES	48	26 N	4	51 W	1.4
LES SABLES D'OLONNE	4	30 N	1	48 W	2.18
LEVENNEC	48	04 N	4	48 W	1.14
LIGHTBUOY BXA	45	38 N	1	29 W	3.2
LIGHTBUOY PA	46	06 N	1	42 W	2.26
LISBOA	38	42 N	9	10 W	5.58
LISBON	38	42 N	9	10 W	5.58
LOCTUDY	47	50 N	4	10 W	1.20
LOFFA RIVER	6	34 N	11	04 W	12.7
LORIENT	47	44 N	3	22 W	1.26
LOS MARRAJOS	36	19 N	6	11 W	6.27
M					
MADALENA	38	32 N	28	32 W	7.11
MAFRA PALACE	38	56 N	9	20 W	5.52
MANNA POINT	6	53 N	11	27 W	12.6
MANO POINT	6	53 N	11	27 W	12.6
MARANS	46	19 N	1	05 W	2.25
MARIGOT AUX HUITRES	12	39 N	16	47 W	11.15
MARIGOT DE MARINGOUINS	16	36 N	16	26 W	10.23
MATAKONG ISLAND	9	17 N	13	25 W	11.37
MAZAGAN	33	16 N	8	30 W	9.15
MBOUR	14	24 N	16	58 W	11.6
MEDANO DE SANTIAGO	26	55 N	13	29 W	10.4
MELLACORE	9	06 N	13	19 W	11.38
MELLACORE LIGHTED BUOY	9	05 N	13	28 W	11.38
MELLO ISLAND	10	59 N	15	17 W	11.27
MEN TENSEL	48	26 N	5	02 W	1.3
MINDELO	16	53 N	25	00 W	8.64
MOGADOR	30	31 N	9	47 W	9.23
MOHAMMEDIA	33	43 N	7	24 W	9.10
MONROVIA	6	21 N	10	48 W	12.8
MONTE CAMBRE	43	17 N	8	42 W	4.34
MONTE CAMPELO	43	36 N	8	12 W	4.25
MONTE DA GUIA	38	31 N	28	38 W	7.7
MONTE DE LA DECEPCION	23	55 N	15	48 W	10.9
MONTE DE SANTA TECLA	41	53 N	8	52 W	5.32
MONTE DE SANTONA	43	27 N	3	26 W	3.33
MONTE ENJA	42	42 N	8	59 W	5.7
MONTE GALERA	42	48 N	9	05 W	5.6
MONTE JAIZQUIVEL	43	21 N	1	51 W	3.16
MONTE MONDIGO	43	31 N	7	08 W	4.10
MONTE NEME	43	16 N	8	44 W	4.34
MONTE SAN FELIX	41	26 N	8	43 W	5.37
MONTE SAN LOIS	42	46 N	8	55 W	5.8
MONTE SAN LORENZO	42	19 N	8	44 W	5.21
MONTE URDABURN	43	14 N	1	54 W	3.16
MONTE URDABURU	43	14 N	1	54 W	3.18
MONTE VERDE	16	52 N	24	56 W	8.61
MONTEDOR	41	45 N	8	52 W	5.33
MONTOIR	47	18 N	2	08 W	2.7
MORBIHAN	47	33 N	2	55 W	1.36
MORGAT	48	10 N	4	33 W	1.13
MOTTES D'ANGEL	18	39 N	16	08 W	10.20
MOULAY BOU SELHAM	34	53 N	6	18 W	9.6
MUROS	42	47 N	9	03 W	5.6
N					
NANTES	47	13 N	1	33 W	2.10
NDIAGO	16	10 N	16	31 W	10.23
NOIRMOUTIER EN L'ILE	47	00 N	2	15 W	2.13
NORTHWEST PATCHES	7	58 N	13	34 W	12.3
NOUAKCHOTT	18	02 N	16	01 W	10.21
NOYA	42	47 N	8	53 W	5.8
O					
OFIR	41	31 N	8	47 W	5.37
OLHAO	37	01 N	7	50 W	6.8
OPORTO	41	09 N	8	37 W	5.42
ORONTES BANK	8	05 N	13	49 W	12.3
OS FARILHOES	39	29 N	9	32 W	5.51
OUED CHEBEIKA	28	18 N	11	32 W	9.33
OUED MELLAH	33	42 N	7	25 W	9.11
OUED SOUS	30	22 N	9	37 W	9.28
OUTER PATCH	4	22 N	7	55 W	12.30
P					
PASSAGE DE LA TEIGNOUSE	47	26 N	3	05 W	1.32
PASSAGE DU BENIGUET	47	24 N	3	00 W	1.32
PAUILLAC	45	13 N	0	45 W	3.4
PAUL DO MAR	32	45 N	17	13 W	8.7
PEDRO ALVARES LIGHT	11	38 N	15	42 W	11.23
PEN MEN	47	39 N	3	30 W	1.25
PENAS DE AYA	43	17 N	1	47 W	3.11
PENINSULA DEL CABO BLANCO	21	00 N	17	03 W	10.15
PENINSULA DEL GROVE	42	28 N	8	54 W	5.12
PEPEL	8	34 N	13	04 W	11.44
PERTUIS DE MAUMUSSON	45	48 N	1	15 W	2.34
PICO DE LA VELA	43	43 N	7	30 W	4.18
PICO ISLAND	38	30 N	28	20 W	7.10
PIEDRAS DE LOS BRUYOS	42	44 N	9	09 W	5.5
PILIER	47	03 N	2	21 W	2.1
PIRIAC TANKER TERMINAL	47	21 N	2	34 W	1.41
PLANTAIN ISLAND	7	55 N	13	00 W	12.2
PLATEAU DE LA BASSE JAUNE	47	43 N	3	51 W	1.19
PLATEAU DE LA HELLE	48	26 N	4	54 W	1.4
PLATEAU DE ROCHEBONNE	46	10 N	2	27 W	2.20
PLATEAU DES BIRVIDEAUX	47	29 N	3	17 W	1.30
PLATEAU DU FOUR	47	17 N	2	38 W	1.34
POINT RHOUZIA	32	15 N	9	16 W	9.21
POINTE D'AZEMMOUR	33	22 N	8	18 W	9.14
POINTE D'EL HANK	33	37 N	7	39 W	9.11
POINTE D'OUKKACHA	33	37 N	7	34 W	9.11
POINTE DE BEG-AR-VECHEN	47	48 N	3	44 W	1.23
POINTE DE BEG-MORG	47	47 N	3	40 W	1.24
POINTE DE CHASSIRON	46	03 N	1	25 W	2.22
POINTE DE CHAUVEAU	46	09 N	1	17 W	2.27
POINTE DE CHEMOULIN	47	14 N	2	18 W	2.2
POINTE DE CONGUEL	47	28 N	3	05 W	1.30

	Position °	'	°	'	Sec. Para
POINTE DE CORSEN	48	25 N	4	48 W	1.4
POINTE DE DAR BOU AZZA	33	32 N	7	49 W	9.14
POINTE DE FEUNTEUN-AOD	48	02 N	4	42 W	1.16
POINTE DE GAVRES	47	41 N	3	22 W	1.27
POINTE DE GROSSE TERRE	46	42 N	1	58 W	2.15
POINTE DE KERMORVAN	48	22 N	4	47 W	1.6
POINTE DE L'AIGUILLE	46	29 N	1	48 W	2.17
POINTE DE L'HERBAUDIERE	47	02 N	2	18 W	2.11
POINTE DE LA COUBRE	45	42 N	1	14 W	2.36
POINTE DE LA NEGADE	45	28 N	1	10 W	3.7
POINTE DE LA TORCHE	47	50 N	4	21 W	1.16
POINTE DE LA TOUR	32	20 N	9	17 W	9.19
POINTE DE LERVILY	48	00 N	4	34 W	1.16
POINTE DE NOTRE DAME DE MONTS	46	53 N	2	09 W	2.15
POINTE DE PENMARC'H	47	48 N	4	22 W	1.17
POINTE DE SAINT JACQUES	47	29 N	2	48 W	1.38
POINTE DE SANGOMAR	13	50 N	16	46 W	11.6
POINTE DE ST. GILDAS	47	08 N	2	15 W	2.3
POINTE DE ST. MATHIEU	48	20 N	4	46 W	1.6
POINTE DE TALUT	47	42 N	3	27 W	1.24
POINTE DE TREVIGNON	47	47 N	3	51 W	1.23
POINTE DES ALMADIES	14	45 N	17	32 W	11.2
POINTE DES BALEINES	46	15 N	1	34 W	2.21
POINTE DES CHATS	47	37 N	3	25 W	1.25
POINTE DES CORBEAU	46	41 N	2	17 W	2.14
POINTE DES DAMES	47	01 N	2	13 W	2.12
POINTE DU BUTTE	46	44 N	2	24 W	2.14
POINTE DU CASTELLI	47	22 N	2	34 W	1.38
POINTE DU CROISIC	47	18 N	2	33 W	1.40
POINTE DU GRAND MONT	47	30 N	2	51 W	1.36
POINTE DU GROUIN DU COU	46	21 N	1	28 W	2.19
POINTE DU MILLIER	48	06 N	4	28 W	1.13
POINTE DU PETIT MINOU	48	20 N	4	37 W	1.9
POINTE DU PORTZIC	48	22 N	4	32 W	1.9
POINTE DU RAZ	48	02 N	4	44 W	1.14
POINTE DU TOULINGUET	48	17 N	4	38 W	1.7
POINTE GOMBARU	14	30 N	17	05 W	11.6
POINTE GORO	10	07 N	14	11 W	11.31
POINTE KEMBUTO	10	38 N	14	42 W	11.28
POINTE OBSERVATION	10	04 N	14	05 W	11.31
POINTE SAINTE ANNE	43	23 N	1	45 W	3.15
POINTE ST. MARTIN	43	30 N	1	33 W	3.13
POINTE TRISTAO	10	48 N	14	59 W	11.28
PONTA ANTONIA	16	14 N	22	50 W	8.81
PONTA ARLETE	11	46 N	16	06 W	11.21
PONTA BARCA	39	06 N	28	03 W	7.15
PONTA BOA NOVA	41	12 N	8	43 W	5.39
PONTA CAIS	15	20 N	23	12 W	8.82
PONTA CALHETA	16	34 N	24	01 W	8.69
PONTA CAMALEAO	11	03 N	15	53 W	11.20
PONTA DA ATALAIA	37	19 N	8	52 W	5.64
PONTA DA CALHA	38	40 N	9	15 W	5.57
PONTA DA CANAVIEIRA	33	02 N	16	24 W	8.10
PONTA DA CARAPACHO	39	01 N	27	57 W	7.14
PONTA DA CAVEIRA	39	25 N	31	08 W	7.5
PONTA DA COLUNA	16	55 N	25	00 W	8.65
PONTA DA CRUZ	33	06 N	16	19 W	8.8
PONTA DA ERICEIRA	38	58 N	9	25 W	5.52
PONTA DA FERRARIA	37	52 N	25	51 W	7.23
PONTA DA GALERA	37	42 N	25	31 W	7.25
PONTA DA GARCA	37	43 N	25	22 W	7.26
PONTA DA ILHA	38	25 N	28	02 W	7.12
PONTA DA JANELA	15	04 N	23	47 W	8.86
PONTA DA LAJE	38	40 N	9	19 W	5.56
PONTA DA LAMPAROEIRA	39	04 N	9	25 W	5.52
PONTA DA PECA	16	55 N	25	18 W	8.59
PONTA DA PIEDADE	37	05 N	8	40 W	6.4
PONTA DA RIBEIRA	37	51 N	25	09 W	7.23
PONTA DA RIBEIRINHA	38	36 N	28	36 W	7.7
PONTA DA SERRETA	38	46 N	27	23 W	7.16
PONTA DA TUMBA	17	07 N	24	58 W	8.60
PONTA DA VERMELHARIA	16	29 N	24	19 W	8.70
PONTA DE ALFANZINA	37	05 N	8	26 W	6.6
PONTA DE LOBO	15	00 N	23	26 W	8.84
PONTA DE MANGRADE	17	03 N	25	22 W	8.58
PONTA DE SAGRES	36	59 N	8	57 W	6.3
PONTA DE SANTA CATARINA	32	42 N	16	46 W	8.4
PONTA DE SAO JORGE	32	50 N	16	54 W	8.3
PONTA DE SAO MATEUS	38	39 N	27	17 W	7.21
PONTA DELGADA	37	44 N	25	41 W	7.23
PONTA DELGADA	39	31 N	31	12 W	7.3
PONTA DO ALBARNAZ	39	31 N	31	14 W	7.6

	Position °	'	°	'	Sec. Para
PONTA DO ALCATRAZ	14	50 N	24	19 W	8.91
PONTA DO ARNEL	37	49 N	25	08 W	7.26
PONTA DO CALHAU	16	52 N	24	52 W	8.62
PONTA DO CASTELO	36	55 N	25	01 W	7.28
PONTA DO CINTRAO	37	51 N	25	29 W	7.23
PONTA DO FACHO	39	31 N	9	09 W	5.49
PONTA DO GARAJAU	32	38 N	16	51 W	8.4
PONTA DO LOBAIO	36	59 N	25	11 W	7.29
PONTA DO MALMERENDO	37	48 N	25	13 W	7.29
PONTA DO MORRINHO VERMELHO	16	48 N	24	47 W	8.73
PONTA DO MORRO DA AREIA	16	05 N	22	59 W	8.79
PONTA DO NORTE	37	01 N	25	04 W	7.29
PONTA DO OSSO DA BALEIA	15	13 N	23	14 W	8.83
PONTA DO PARGO	32	49 N	17	16 W	8.2
PONTA DO PESCADEIRO	14	49 N	24	23 W	8.91
PONTA DO RABO DE JUNCO	16	42 N	22	59 W	8.73
PONTA DO RECANTO DA PRAINHA	16	55 N	24	56 W	8.65
PONTA DO ROQUE	16	05 N	22	42 W	8.80
PONTA DO SAO MATEUS	38	25 N	28	27 W	7.10
PONTA DO SINO	16	35 N	22	56 W	8.73
PONTA DO SOL	16	14 N	22	57 W	8.77
PONTA DO SOL	17	12 N	25	06 W	8.58
PONTA DO TELHEIRO	37	03 N	8	59 W	5.65
PONTA DO TOPO	38	33 N	27	46 W	7.13
PONTA DOS PIQUINHOS	16	48 N	24	47 W	8.66
PONTA DOS ROSAIS	38	45 N	28	19 W	7.13
PONTA GRANDE DA CIDADE	14	54 N	23	38 W	8.86
PONTA JALUNGA	14	53 N	24	41 W	8.93
PONTA LESTE	16	34 N	24	01 W	8.69
PONTA MACHADO	16	49 N	25	05 W	8.63
PONTA MOREIA	15	20 N	23	45 W	8.87
PONTA NEGRA	39	40 N	31	07 W	7.2
PONTA NHA GERTRUDE	16	49 N	23	00 W	8.75
PONTA NHO MARTINHO	14	48 N	24	43 W	8.95
PONTA NORTE	16	51 N	22	56 W	8.72
PONTA SAN LORENCO	15	00 N	23	26 W	8.84
PONTA TOMBALI	11	20 N	15	30 W	11.26
PONTAL	37	12 N	8	55 W	5.65
PONTAL DA NAZARE	39	36 N	9	05 W	5.48
PONTEVEDRA	42	26 N	8	39 W	5.22
PORNIC	47	07 N	2	06 W	2.13
PORT D'AMITIE	18	00 N	16	02 W	10.22
PORT D'AUDIERNE	48	01 N	4	32 W	1.16
PORT DE CROUESTY	47	32 N	2	54 W	1.37
PORT DE VANNES	47	39 N	2	45 W	1.37
PORT DU PALAIS	47	21 N	3	09 W	1.31
PORT GOULPHAR	47	18 N	3	14 W	1.31
PORT HALIGUEN	47	29 N	3	06 W	1.35
PORT JOINVILLE	46	48 N	2	21 W	2.14
PORT MARIA	47	29 N	3	08 W	1.30
PORT NAVALO	47	33 N	2	55 W	1.37
PORT TUDY	47	39 N	3	27 W	1.25
PORTIMAO	37	08 N	8	32 W	6.5
PORT-LYAUTEY	34	16 N	6	40 W	9.7
PORTO DA FIGUEIRA DA FOZ	40	09 N	8	52 W	5.46
PORTO DA FURNA	14	53 N	24	41 W	8.94
PORTO DA PRAIA	14	55 N	23	31 W	8.85
PORTO DE ANGRA DO HEROISMO	38	39 N	27	13 W	7.20
PORTO DE LEIXOES	41	11 N	8	42 W	5.40
PORTO DE PEDRO LUME	16	45 N	22	54 W	8.72
PORTO DE PONTA DELGADA	37	44 N	25	40 W	7.24
PORTO DE POVOA DE VARZIM	41	23 N	8	46 W	5.38
PORTO DE SANTA MARIA	16	36 N	22	54 W	8.73
PORTO DE SAO FILIPE	14	54 N	24	30 W	8.90
PORTO DE SETUBAL	38	31 N	8	53 W	5.60
PORTO DE SINES	37	57 N	8	52 W	5.63
PORTO DE VIANA DO CASTELO	41	41 N	8	50 W	5.34
PORTO DO CAIS DO PICO	38	32 N	28	19 W	7.11
PORTO DO MAIO	15	08 N	23	13 W	8.83
PORTO DO SAL REI	16	09 N	22	57 W	8.78
PORTO DOS CARVOEIROS	17	01 N	25	04 W	8.60
PORTO DOS MOSTEIROS	15	02 N	24	20 W	8.91
PORTO GRANDE	16	53 N	25	00 W	8.64
PORTO INGLES	15	08 N	23	13 W	8.83
PORTO NOVO	17	01 N	25	04 W	8.60
PORTO NOVO	38	41 N	27	03 W	7.19
PORTO VILA NOVA DE MILFONTES	37	43 N	8	47 W	5.64
PRAIA DA VITORIA	38	43 N	27	03 W	7.18
PREGUICA	16	34 N	24	17 W	8.70
PRESQU'ILE DE ST. LAURENT	48	31 N	4	46 W	1.4
PRESQU'ILE DU CAP BLANC	21	00 N	17	03 W	10.15
PRESQU'ILE DU CAP VERT	14	42 N	16	27 W	10.26

	Position °	'	°	'	Sec. Para
PRINCESS ALICE BANK	37	58 N	29	18 W	7.8
PUERTO DE AAIUN	27	06 N	13	25 W	10.3
PUERTO DE ARRECIFE	28	57 N	13	33 W	8.50
PUERTO DE BERMEO	43	25 N	2	43 W	3.25
PUERTO DE BILBAO	43	20 N	3	01 W	3.28
PUERTO DE CASTRO URDIALES	43	23 N	3	13 W	3.30
PUERTO DE COMILLAS	43	23 N	4	17 W	3.39
PUERTO DE CUDILLERO	43	34 N	6	09 W	4.5
PUERTO DE ELANCHOVE	43	24 N	2	38 W	3.25
PUERTO DE GIJON	43	34 N	5	42 W	3.48
PUERTO DE GRAN TARAJAL	28	12 N	14	01 W	8.45
PUERTO DE GUETARIA	43	18 N	2	12 W	3.21
PUERTO DE LA CORUNA	43	22 N	8	24 W	4.32
PUERTO DE LA CRUZ	28	25 N	16	33 W	8.25
PUERTO DE LA ESTACA	27	47 N	17	54 W	8.20
PUERTO DE LA GUARDIA	41	54 N	8	52 W	5.32
PUERTO DE LA LUZ	28	08 N	15	25 W	8.36
PUERTO DE LEQUEITIO	43	22 N	2	30 W	3.24
PUERTO DE LLANES	43	25 N	4	45 W	3.41
PUERTO DE MARIN	42	24 N	8	42 W	5.23
PUERTO DE MOTRICO	43	19 N	2	23 W	3.23
PUERTO DE ONDARROA	43	19 N	2	25 W	3.23
PUERTO DE PASAJES	43	19 N	1	55 W	3.17
PUERTO DE RIBADESELLA	43	28 N	5	04 W	3.43
PUERTO DE SAN CIPRIAN	43	42 N	7	28 W	4.17
PUERTO DE SAN ESTEBAN	43	34 N	6	05 W	4.4
PUERTO DE SANTA MARIA	36	36 N	6	14 W	6.23
PUERTO DE SANTANDER	43	27 N	3	49 W	3.36
PUERTO DE SANTONA	43	26 N	3	28 W	3.33
PUERTO DE SEVILLA	37	22 N	6	00 W	6.18
PUERTO DE TAPIA	43	34 N	6	57 W	4.9
PUERTO DE VEGA	43	34 N	6	39 W	4.7
PUERTO DE VIGO	42	14 N	8	44 W	5.30
PUERTO DEL ROSARIO	28	30 N	13	51 W	8.46
PUERTO SHERRY	36	35 N	6	15 W	6.23
PULEBA RIVER	4	02 N	8	04 W	12.28
PUNTA ARABICOBAJA	43	20 N	2	01 W	3.18
PUNTA ARINAGA	27	53 N	15	23 W	8.39
PUNTA ATALAYA DE CAYON	43	19 N	8	35 W	4.34
PUNTA ATALAYERO	43	20 N	1	58 W	3.18
PUNTA BALLOTA	43	26 N	4	05 W	3.39
PUNTA BECERRO	28	01 N	17	15 W	8.23
PUNTA CABEIRO	42	44 N	8	59 W	5.8
PUNTA CABICASTRO	42	23 N	8	50 W	5.20
PUNTA CALERA	28	06 N	17	21 W	8.23
PUNTA CAMERO	43	46 N	7	38 W	4.19
PUNTA CANDELARIA	43	43 N	7	51 W	4.23
PUNTA CANDOR	36	38 N	6	24 W	6.19
PUNTA CARREIRO	42	44 N	9	05 W	5.5
PUNTA CASTRO	42	42 N	9	02 W	5.7
PUNTA CASTRO	43	41 N	7	24 W	4.16
PUNTA CORBEIRA	43	34 N	7	07 W	4.13
PUNTA CORDERO	25	21 N	14	49 W	10.7
PUNTA COUSO	42	18 N	8	51 W	5.24
PUNTA CUMPLIDA	28	50 N	17	47 W	8.19
PUNTA CUSINADOIRO	43	01 N	9	17 W	4.40
PUNTA DE ABONA	28	09 N	16	25 W	8.30
PUNTA DE ANAGA	28	33 N	16	07 W	8.27
PUNTA DE CATASOL	43	13 N	9	02 W	4.37
PUNTA DE FUENCALIENTE	28	27 N	17	50 W	8.17
PUNTA DE GUADAMOJETE	28	24 N	16	19 W	8.29
PUNTA DE LA BARCA	43	07 N	9	13 W	4.38
PUNTA DE LA BUITRA	43	06 N	9	15 W	4.39
PUNTA DE LA ESTACA DE BARES	43	47 N	7	41 W	4.20
PUNTA DE LA MORENA	36	37 N	6	21 W	6.20
PUNTA DE LA SALINETA	27	58 N	15	23 W	8.38
PUNTA DE LA SIERRA	43	29 N	5	08 W	3.44
PUNTA DE LA VACA	43	38 N	5	47 W	3.49
PUNTA DE LA VALA	43	01 N	9	17 W	4.40
PUNTA DE LAGE	43	14 N	9	01 W	4.36
PUNTA DE LAS NIEVES	28	06 N	15	43 W	8.41
PUNTA DE LAS SINAS	42	35 N	8	50 W	5.17
PUNTA DE MASPALOMAS	27	44 N	15	36 W	8.40
PUNTA DE MONTE FARELO	43	08 N	9	13 W	4.37
PUNTA DE PECHON	43	24 N	4	29 W	3.40
PUNTA DE PESEBRE	28	07 N	14	29 W	8.44
PUNTA DE SAN CRISTOBAL	28	06 N	17	06 W	8.21
PUNTA DE SAN EMETERIO	43	24 N	4	32 W	3.40
PUNTA DE SAN VICENTE	42	29 N	8	56 W	5.14
PUNTA DE SANTA CATALINA	36	35 N	6	16 W	6.21
PUNTA DE SOMOCUEVA	43	28 N	3	57 W	3.37
PUNTA DE TAMAIMO	28	17 N	16	52 W	8.32
PUNTA DE TAZONES	43	33 N	5	24 W	3.46
PUNTA DE TENO	28	20 N	16	55 W	8.25
PUNTA DEL AGUILA	43	28 N	3	27 W	3.35
PUNTA DEL CABRITO	43	36 N	5	46 W	3.49
PUNTA DEL CASTRO	42	32 N	9	00 W	5.13
PUNTA DEL CORRAL	25	36 N	14	41 W	10.7
PUNTA DEL CORRALEJO	28	45 N	13	52 W	8.47
PUNTA DEL CUADRO	43	44 N	7	57 W	4.22
PUNTA DEL CUERNO	43	34 N	6	36 W	4.7
PUNTA DEL ESPINO	28	01 N	17	12 W	8.22
PUNTA DEL LIMO	43	46 N	7	54 W	4.22
PUNTA DEL OLIVO	43	33 N	5	25 W	3.46
PUNTA DEL ORGANO	28	13 N	17	15 W	8.21
PUNTA DEL PERRO	36	44 N	6	26 W	6.15
PUNTA DEL PESCADOR	23	31 N	15	59 W	10.11
PUNTA DEL PICACHO	37	08 N	6	50 W	6.12
PUNTA DEL RABANAL	43	24 N	3	13 W	3.31
PUNTA DEL RONCUDO	43	17 N	9	00 W	4.36
PUNTA DEL ROQUE BERMEJO	28	35 N	16	08 W	8.26
PUNTA DEL SEIJO BLANCO	43	21 N	8	21 W	4.31
PUNTA DEL SOCORRO	28	19 N	16	21 W	8.29
PUNTA ESQUITON	43	36 N	6	16 W	4.6
PUNTA FARIONES	29	15 N	13	28 W	8.49
PUNTA FROUSEIRA	43	37 N	8	11 W	4.25
PUNTA GARFANTA	43	30 N	3	31 W	3.35
PUNTA GORDA	28	43 N	14	01 W	8.43
PUNTA GUERA	20	49 N	17	06 W	9.28
PUNTA HERMINIO	43	23 N	8	24 W	4.31
PUNTA JANDIA	28	04 N	14	30 W	8.44
PUNTA LANGOSTEIRA	43	22 N	8	30 W	4.33
PUNTA LANTAILLA	28	14 N	13	57 W	8.45
PUNTA LIMA	28	56 N	13	37 W	8.51
PUNTA MALANDAR	36	48 N	6	22 W	6.16
PUNTA MELENARA	27	59 N	15	22 W	8.37
PUNTA MONTANA AMARILLA	28	00 N	16	39 W	8.31
PUNTA NADOR	35	12 N	6	10 W	9.4
PUNTA NARIGA	43	17 N	9	00 W	4.36
PUNTA ORCHILLA	27	43 N	18	09 W	8.20
PUNTA ORELLUDA	42	01 N	8	53 W	5.32
PUNTA PAPAGAYO	28	50 N	13	46 W	8.48
PUNTA PECHIGUERA	28	51 N	13	52 W	8.48
PUNTA QUEIXAL	42	44 N	9	05 W	5.6
PUNTA RASCA	28	00 N	16	42 W	8.31
PUNTA RESTINGA	27	38 N	17	59 W	8.20
PUNTA RONCADOIRA	43	44 N	7	31 W	4.18
PUNTA SARDINA	28	10 N	15	42 W	8.34
PUNTA TAMADISTE	28	35 N	16	16 W	8.26
PUNTA TINOSA	28	55 N	13	40 W	8.52
PUNTA TOSTON	28	45 N	13	53 W	8.43
PUNTA UMBRIA	37	11 N	6	58 W	6.12

R

	Position °	'	°	'	Sec. Para
RABAT	34	02 N	6	50 W	9.8
RADE DE CROISIC	47	20 N	2	33 W	1.40
RADE DE L'ILE D'AIX	46	00 N	1	12 W	2.31
RADE DE TROUSSES	45	58 N	1	13 W	2.31
RANGER POINT	4	33 N	8	12 W	12.28
RAZ DE SEIN	48	03 N	4	47 W	1.15
RECIFS ALCATRAZ	10	35 N	15	25 W	11.27
RESTINGA	39	01 N	27	57 W	7.14
RIA DE ARES	43	25 N	8	13 W	4.30
RIA DE AROSA	42	28 N	8	58 W	5.10
RIA DE BETANZOS	43	22 N	8	14 W	4.30
RIA DE BETANZOS	43	25 N	8	18 W	4.29
RIA DE CAMARINAS	43	07 N	9	13 W	4.38
RIA DE CEDEIRA	43	30 N	8	04 W	4.24
RIA DE CORCUBION	42	55 N	9	11 W	5.3
RIA DE CORME Y LAGE	43	15 N	8	59 W	4.36
RIA DE EL FERROL	43	28 N	8	19 W	4.27
RIA DE FOZ	43	34 N	7	15 W	4.13
RIA DE HUELVA	37	10 N	6	56 W	6.12
RIA DE LA CORUNA	43	22 N	8	22 W	4.31
RIA DE LA HIGUERITA	37	11 N	7	20 W	6.11
RIA DE MUROS	42	44 N	9	03 W	5.6
RIA DE NAVIA	43	34 N	6	43 W	4.8
RIA DE PONTEVEDRA	42	22 N	8	50 W	5.20
RIA DE RIBADEO	43	33 N	7	02 W	4.11
RIA DE SAN VICENTE BARQUERA	43	23 N	4	23 W	3.40
RIA DE SANTA MARTA	43	43 N	7	51 W	4.21
RIA DE SUANCES	43	27 N	4	02 W	3.38

	Position °	'	°	'	Sec. Para
RIA DE VIGO	42	13 N	8	51 W	5.26
RIA DE VILLAVICIOSA	43	32 N	5	23 W	3.45
RIA DE VIVERO	43	43 N	7	36 W	4.18
RIA DEL BARQUERO	43	46 N	7	40 W	4.19
RIA FORMOSA	36	59 N	7	53 W	6.7
RIO ABONO	43	34 N	5	34 W	3.49
RIO ANCORA	41	49 N	8	52 W	5.33
RIO AVE	41	20 N	8	45 W	5.39
RIO CACINE	11	02 N	15	09 W	11.27
RIO CAVADO	41	32 N	8	47 W	5.36
RIO COMPONY	10	49 N	14	51 W	11.27
RIO DE LAS PIEDRAS	37	12 N	7	05 W	6.11
RIO DE ORIO	43	17 N	2	07 W	3.20
RIO DEL PUENTE DEL PUERTO	43	07 N	9	10 W	4.38
RIO DOURO	41	09 N	8	40 W	5.41
RIO GUADALQUIVIR	36	47 N	6	24 W	6.15
RIO GUADIANA	37	10 N	7	24 W	6.10
RIO GUADIANA	37	11 N	7	25 W	6.1
RIO KATCHCK	10	54 N	15	08 W	11.27
RIO MINHO	41	52 N	8	52 W	5.32
RIO MINO	41	52 N	8	52 W	5.32
RIO NUNEZ	10	30 N	14	44 W	11.28
RIO ODIEL	37	13 N	6	56 W	6.12
RIO PONGO	10	03 N	14	04 W	11.31
RIO TEJO	38	40 N	9	18 W	5.55
RIO TINTO	37	13 N	6	56 W	6.12
RIVER TAGUS	38	40 N	9	18 W	5.55
RIVIERE BLISS	12	46 N	16	47 W	11.15
RIVIERE CASAMANCE	12	34 N	16	46 W	11.16
RIVIERE DE CRAC'H	47	34 N	3	01 W	1.36
RIVIERE DIOMBAS	13	45 N	16	39 W	11.9
RIVIERE KALISSEYE	12	42 N	16	47 W	11.15
RIVIERE MELIKHOURE	9	06 N	13	19 W	11.38
RIVIERE SALOUM	13	51 N	16	45 W	11.7
ROBERTSPORT	6	45 N	11	22 W	12.7
ROCA CABRON	23	55 N	15	48 W	10.9
ROCA DEL ESTE	29	16 N	13	20 W	8.55
ROCHEBONNE	46	10 N	2	27 W	3.2
ROCHEFORT	45	56 N	0	58 W	2.33
ROCK CESS POINT	5	02 N	9	30 W	12.15
ROCKTOWN POINT	4	23 N	7	47 W	12.31
ROQUE DE DENTRO	28	35 N	16	09 W	8.26
ROQUES DE ANAGA	28	36 N	16	09 W	8.26
ROTA NAVAL BASE	36	37 N	6	19 W	6.22
ROTA NAVAL FUEL DEPOT	36	37 N	6	19 W	6.22

S

	Position °	'	°	'	Sec. Para
SAFI	32	19 N	9	15 W	9.20
SAINT GILLES CROIX DE VIE	46	42 N	1	57 W	2.16
SAINT NAZAIRE	47	16 N	2	12 W	2.6
SAINTLOUIS	16	02 N	16	30 W	10.24
SAN PEDRO RIVER	13	04 N	16	45 W	11.15
SAN SEBASTIAN	43	19 N	2	00 W	3.19
SAN SEBASTIAN DE LA GOMERA	28	05 N	17	06 W	8.22
SANGWIN RIVER	5	13 N	9	21 W	12.16
SANTA CRUZ	39	05 N	28	00 W	7.15
SANTA CRUZ	39	27 N	31	07 W	7.4
SANTA CRUZ DE LA PALMA	28	40 N	17	45 W	8.18
SANTA CRUZ DE TENERIFE	28	28 N	16	14 W	8.28
SANTA MARIA ISLAND	36	58 N	25	06 W	7.28
SANTA MARTA DE ORTIGUEIRA	43	41 N	7	51 W	4.21
SAO JORGE ISLAND	38	40 N	28	05 W	7.13
SAO MIGUEL	37	46 N	25	24 W	7.22
SEHNKWEHN RIVER	5	13 N	9	21 W	12.16
SEINE SEAMOUNT	33	45 N	14	22 W	8.15
SENO DE CORCUBION	42	53 N	9	13 W	5.3
SERRA DA ARRIBIDA	38	30 N	9	00 W	5.59
SERRA DA FRANQUEIRA	41	30 N	8	39 W	5.37
SESTERS POINT	4	34 N	8	15 W	12.27
SETA KRU	4	54 N	8	51 W	12.21
SETTRA KRU	4	54 N	8	51 W	12.21
SHEBAR ENTRANCE	7	32 N	12	32 W	12.5
SHENGE POINT	7	55 N	12	58 W	12.2
SHERBRO RIVER	7	45 N	12	58 W	12.4
SHERBRO STRAIT	7	32 N	12	32 W	12.5
SHOALS OF ST. ANN	7	41 N	13	10 W	12.3
SIDI EL HAJ BOU DERBALA	33	50 N	7	09 W	9.9
SIDI IFNI	29	23 N	10	11 W	9.29
SIDI RHOUZIA	32	15 N	9	16 W	9.21
SIERRA LEONE RIVER	8	30 N	13	10 W	11.41
SINOE BAY	5	00 N	9	03 W	12.19
SINU BAY	5	00 N	9	03 W	12.19
SKARCIES RIVERS	8	53 N	13	17 W	11.40
SKHIRAT	33	52 N	7	03 W	9.9
SN1 LIGHTED BUOY	47	00 N	2	40 W	2.5
SOCOA COASTGUARD STATION	43	24 N	1	41 W	3.11
SOLIFOR POINT	13	20 N	16	49 W	11.14
SOMMET DU MENEZ-HOM	48	13 N	4	14 W	1.12
SOUTA	12	42 N	16	47 W	11.15
SOUTH BREAKER	10	41 N	16	08 W	11.25
ST. GUENOLE	47	49 N	4	23 W	1.17
ST. JEAN DE LUZ	43	23 N	1	40 W	3.14
ST. JOHN RIVER	5	55 N	10	04 W	12.10
ST. MARTIN DE RE	46	13 N	1	22 W	2.24
ST. PAUL RIVER	6	22 N	10	48 W	12.7
SUBBUBO POINT	4	36 N	8	18 W	12.26

T

	Position °	'	°	'	Sec. Para
TABLE D' OUKACHA	33	37 N	7	34 W	9.11
TAN-TAN	28	30 N	11	21 W	9.32
TAVIRA	37	08 N	7	39 W	6.9
TAZACORTE	28	38 N	17	56 W	8.19
TERCEIRA ISLAND	38	43 N	27	10 W	7.16
THAUKA CREEK	7	48 N	12	48 W	12.4
THE SENEGALMOUTH-SAINTLOUIS	16	02 N	16	30 W	10.24
THUAKA CREEK	7	48 N	12	48 W	12.4
TONNAY-CHARENTE	45	56 N	0	53 W	2.33
TORRE DE BELEM	38	42 N	9	13 W	5.58
TORRE NUEVA	36	14 N	6	04 W	6.28
TRADE TOWN	5	43 N	9	55 W	12.13
TURTLE ISLANDS	7	36 N	13	02 W	12.2

U

	Position °	'	°	'	Sec. Para
USHANT	48	28 N	5	05 W	1.2

V

	Position °	'	°	'	Sec. Para
VELAS	38	40 N	28	12 W	7.13
VICTORIA	10	50 N	14	33 W	11.29
VILA DA PRAIA	39	03 N	27	58 W	7.15
VILA DO PORTO	36	56 N	25	09 W	7.30
VILA FRANCA DO CAMPO	37	42 N	25	26 W	7.25
VILA NOVA	39	41 N	31	06 W	7.2
VILA REAL DE SANTO ANTONIO	37	11 N	7	25 W	6.10
VILLA DE RIBADEO	43	32 N	7	02 W	4.12
VILLANUEVA DE AROSA	42	34 N	8	40 W	5.15

W

	Position °	'	°	'	Sec. Para
WAPPI POINT	4	46 N	8	36 W	12.23

Y

	Position °	'	°	'	Sec. Para
YAWRI BAY	8	05 N	13	00 W	12.2
YELIBUYA SOUND	8	53 N	13	17 W	11.40

Z

	Position °	'	°	'	Sec. Para
ZIGUINCHOR	12	31 N	16	16 W	11.17
ZUMAYA	43	18 N	2	15 W	3.22