

PUB. 123
SAILING DIRECTIONS
(ENROUTE)



SOUTHWEST COAST OF
AFRICA



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FIFTEENTH EDITION

Preface

Pub. 123, Sailing Directions (Enroute) Southwest Coast of Africa, Fifteenth Edition, 2014, is issued for use in conjunction with Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean. The companion volume is Pubs. 124.

Digital Nautical Chart 1 provides electronic chart coverage for the area covered by this publication.

This publication has been corrected to 16 August 2014, including Notice to Mariners No. 33 of 2014.

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: 571-557-5455
3. DSN: 547-5455
4. DNC web site: <http://msi.nga.mil/NGAPortal/DNC.portal>
5. Maritime Domain web site: <http://msi.nga.mil/NGAPortal/MSI.portal>
6. E-mail: navsafety@nga.mil
7. Mailing address: Maritime Safety Office
National Geospatial-Intelligence Agency
Mail Stop N64-SH
7500 Geoint Drive
Springfield VA 22150-7500

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 Data Update (PDU) from the NGA Maritime Domain web site.

NGA Maritime Domain Website
<http://msi.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 meridional angle as the designated course. Vessels following the directives must allow for every influence tending to cause deviation from such track, and navigate so that the designated course is continuously being made good.

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

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 web site.

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

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.

Canadian Hydrographic Service Sailing Directions.

Various port handbooks.

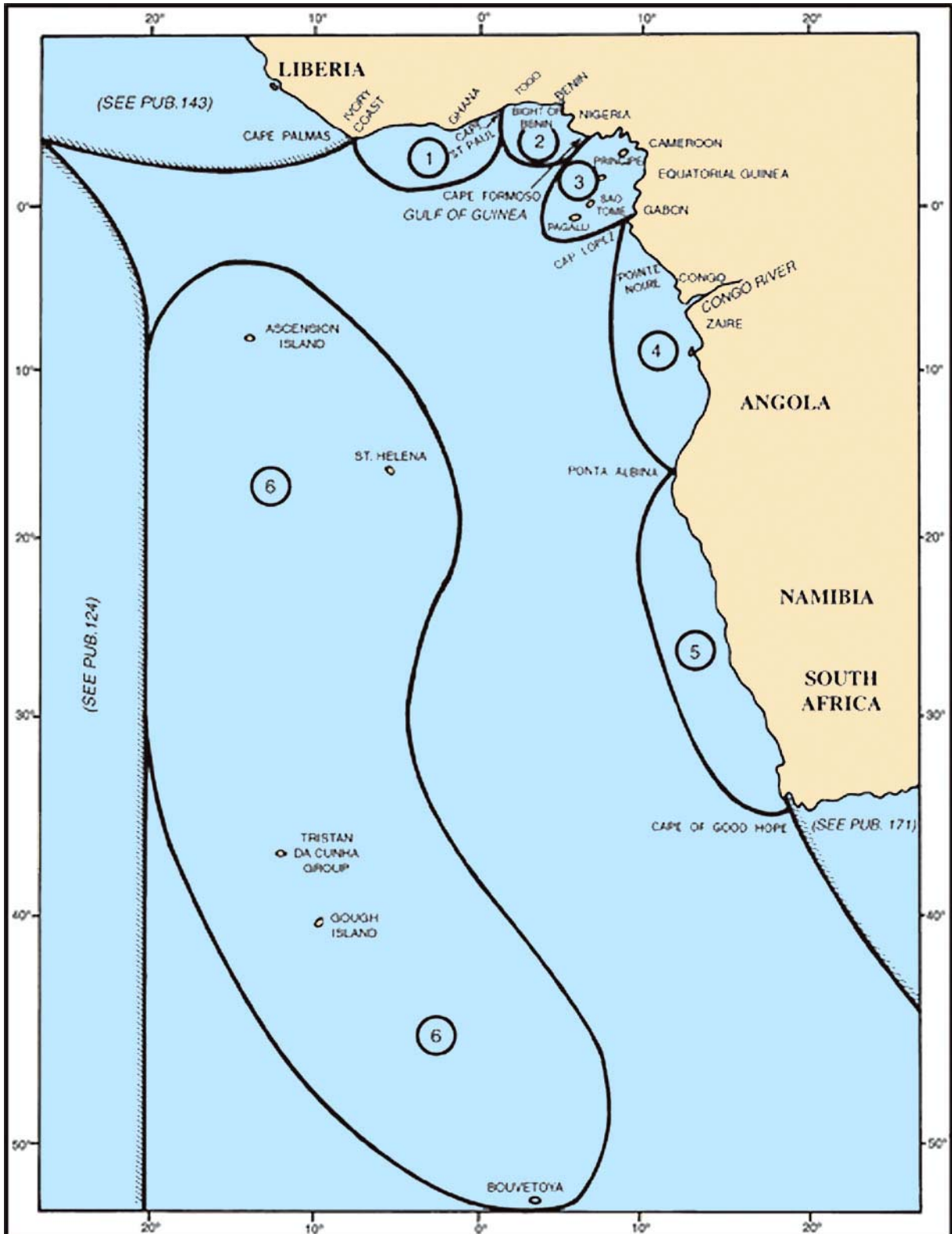
Reports from United States naval and merchant vessels and various shipping companies.

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 site:

Simon Baillie-Cooper and the Lighthouses of South Africa Home Page (<http://www.lighthouses.co.z>)



SECTOR LIMITS—PUB. 123

Conversion Tables

Feet to Meters

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

Fathoms to Meters

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

Meters to Feet

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

Meters to Fathoms

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

Abbreviations

The following abbreviations may be used in the text:

Units

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

Directions

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

Vessel types

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

Time

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

Water level

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

Communications

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

Navigation

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

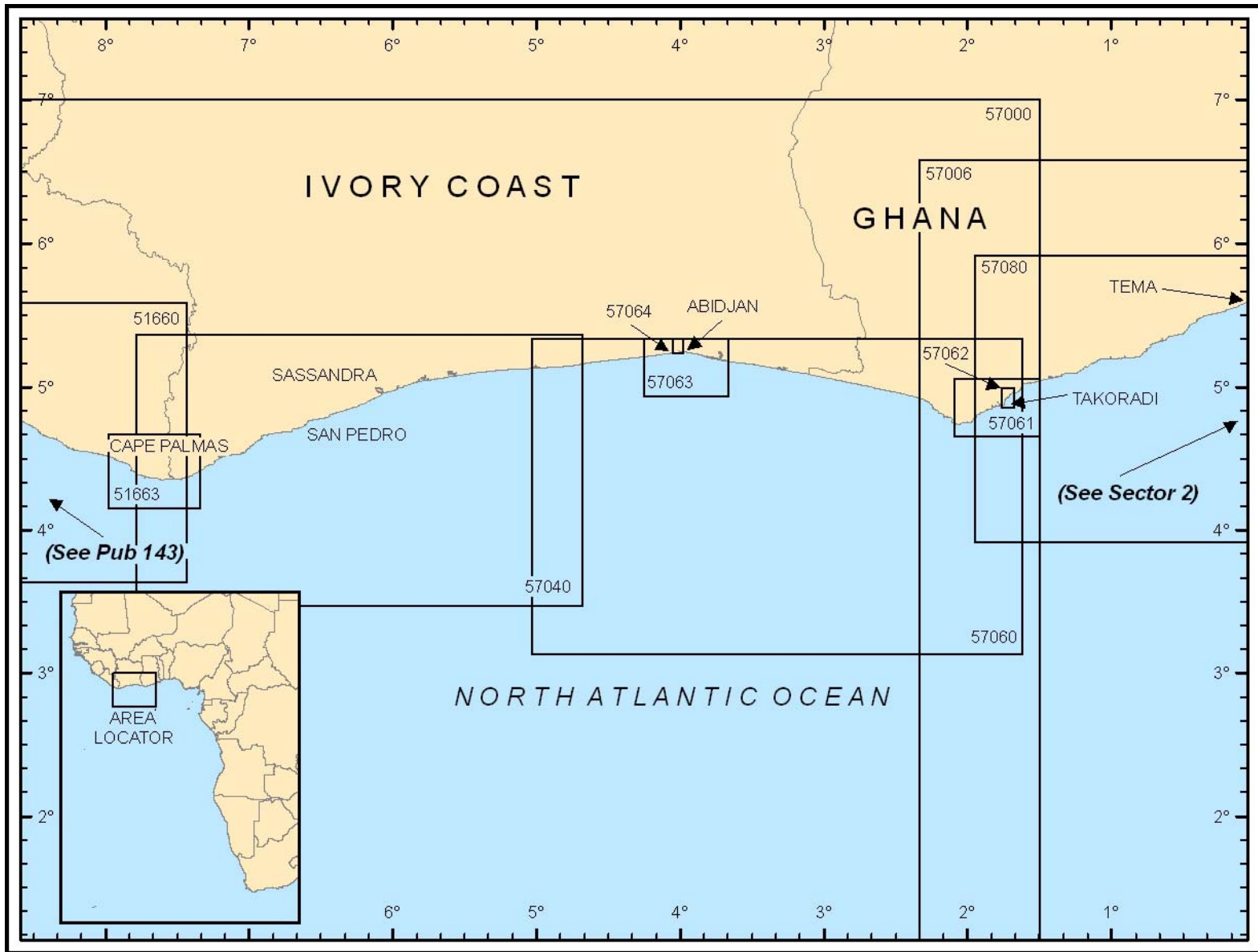
Miscellaneous

The following abbreviations may be used in the text:

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

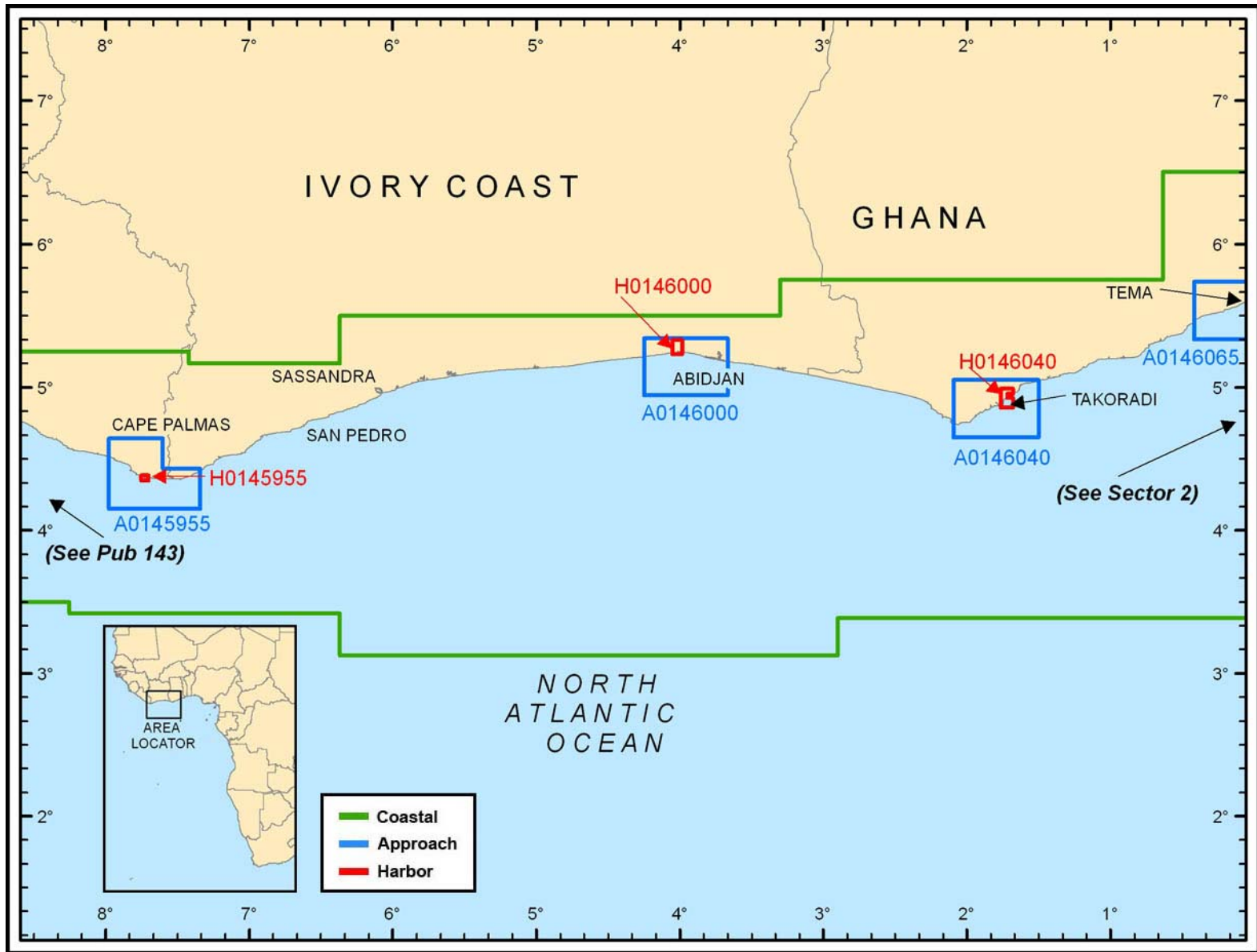
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Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).

SECTOR 1 — CHART INFORMATION



Additional DNC library coverage may be found in NGA DNC 01 (Limited Distribution) disc within the README\GRAPHICS folder.

SECTOR 1 — DNC LIBRARY INFORMATION

SECTOR 1

IVORY COAST AND GHANA—CAPE PALMAS TO CAPE SAINT PAUL

Plan.—This sector describes the coasts of Liberia, Ivory Coast (Cote D'Ivoire), and Ghana between Cape Palmas and Cape Saint Paul. The descriptive sequence is from W to E.

General Remarks

1.1 The coast described in this sector is bordered by reefs and relatively elevated as far as the W approaches to Cape Three Points (4°45'N., 2°05'E.), a distance of about 230 miles. It is fronted by a low, sloping, and sandy beach backed by tall vegetation. The W part of the coast, between Cape Palmas (4°22'N., 7°44'W.) and Cape Three Points, is high, rocky, and rises gradually to the interior. The E part of this coast is low, sandy, and backed by a number of lagoons. Several rivers discharge through this stretch of the coast, but are of little navigational value. The shoreline, which is subject to a dangerous surf, consists mostly of a sandy beach backed by tall brushwood.

Winds—Weather.—The SE trade wind system is the basic and most extensive wind regime in the area. Between 5°S and 30°S, winds blow from the SE quadrant just about all year round. These trade winds are most strongly developed between 10°S and 25°S, where their frequency approaches 85 per cent. The average strength of these winds ranges from force 3 to 4 in the waters of the N part to force 4 to 5 in the waters lying between 20°S and 30°S.

Within 100 miles of the coast, between Mayumba (3°24'S., 10°39'E.) and Cape Town, the SE trades are deflected and blow parallel to the coast, which results in a predominance of S winds. To the N of 20°N and to the W of 10°W, in accordance with the counterclockwise flow around the South Atlantic Anticyclone, the winds take on a more E component.

The Doldrums, which is associated with the equatorial trough, is a band of light and variable winds. For most of the year, this band is located in the N part of the area, but from late February through March, it reaches the portion of the area lying N of the Equator. During these months, winds to the N of the Equator are calm for about 40 per cent of the time.

The most significant of the local wind regimes in the area is the Southwest Monsoon. This large scale sea breeze occurs in the N sections over the Gulf of Guinea and extends 100 to 200 miles inland. It is strongest from June through August, but is prevalent all year round. The monsoon is a deflection of the SE trade winds toward the heated continental interior. Its influence is felt up to 10°S and it acts very much like a land-sea breeze regime. At Douala (4°03'N., 9°41'E.), for example, while SW winds are prevalent during the afternoon, their frequency drops to 5 per cent in the early morning hours.

The Harmattan, a wind of continental origin, is hot, dry, and blows from the NE quadrant. It reaches the shores of the Gulf of Guinea and extends seaward. This wind is prevalent from December through early March and is usually laden with fine dust, which can seriously impair visibility in the form of haze. The Harmattan is found mainly between Cape Palmas and

Douala.

A local wind occurring to the N of the Congo River is known as a tornado. This should not be confused with the phenomenon, known by the same name, which occurs in the United States. African tornados are violent wind squalls which often accompany thunderstorms. They are most frequent from January to early May and from September to November. Tornados can originate either on the land and move seaward or over the water and move onshore.

The barometer gives no warning, but a dark bank of cumulonimbus clouds, with tops reaching 6,000m or more, usually indicates the approach of a tornado. At the base of the cloud bank, there is generally a roll of low clouds and the atmosphere becomes still and oppressive as it approaches. A sudden wind squall, with gusts of 50 knots or more, occurs as the roll of low clouds passes overhead. Then, a few minutes later, rain begins and is accompanied by thunder and lightning. The rain is often very heavy and may reduce visibility to practically zero. The wind usually lasts for less than one hour, but the rain may continue longer. These tornados may be local or they may have the characteristics of a squall line, 100 miles or more wide. Occasionally, these tornados occur without any rain and are known appropriately as dry tornados.

Gales are infrequent over most of the area. Along the coast and to the N of the Equator, they occur on 1 to 6 days annually. From the Equator to Walvis Bay, gales occur on less than 1 day per year. At Walvis Bay, gales can be expected on 14 days annually; 7 of these days occur in October while 4 of these days occur in July and August.

To the S and into the subtropics, gale frequencies increase. At Cape Town, gales occur on an annual average of 22 days, with most from December through March. Over the ocean area, gales are infrequent to the N of 25°S. They occur for an average of 3 per cent of the time from April through September between 25°S and 30°S. The frequency of the gales increases rapidly to the S of 30°S and from May through September they occur for 10 to 20 per cent of the time between 30°S and 35°S. During this same period, gales occur for 12 to 25 per cent of the time between 35°S and 40°S. To the S of 40°S, data is too sparse for an accurate analysis.

All sea areas lying near the shores of the continents and larger islands are influenced by land and sea breezes. Modification of the prevailing winds by onshore winds during the afternoon and offshore winds during the early morning causes corresponding increases or decreases in sea heights. Gravity winds usually result when dense cold air, which accumulates on the continental highlands, flows rapidly down the slopes and out over the sea. They can produce high waves for a short distance from the shore.

Tides—Currents.—The Guinea Current is felt in the vicinity of Cape Palmas and as far E as Pointe Tafou. It disappears about 100 miles ENE of this latter point and then resumes weakly to the E of Abidjan. The currents generally begin about 80 miles E of Abidjan and set inshore between this location

and Cape Three Points.

The currents in the vicinity of Cape Three Points are variable in both strength and direction. A current setting E, with a rate as high as 3 knots, has been reported.

Vessels heading W from Cape Saint Paul to Cape Three Points are advised to stay as close to the coast as safety permits. Such vessels usually encounter only a weak current with a rate of 0.4 knot. However, vessels taking the direct route generally encounter a current, which at times attains a rate of 3 knots.

Depths—Limitations.—Depths in the approaches to this coast are deep and clear of dangers. The 200m curve lies generally parallel to the coast and between 13 and 23 miles offshore. The only exception is Le Trou Sans Fond, in the approaches to Abidjan (see paragraph 1.13), where the 30m curve lies almost parallel to the coast and between 1 mile and 6 miles offshore. There are no known dangers outside of the 200m curve.

Caution.—Vessels should not approach within 2.5 miles of the coast between Cape Palmas and the Cavalla River (4°22'N., 7°32'W.). The depths lying off the coast are very irregular, particularly in the vicinity of Growa Point (4°21'N., 7°37'W.) and Cavalla Point (4°21'N., 7°36'W.).

Numerous fishing boats may be encountered in the waters lying adjacent to the coasts described in this sector.

When transiting near the coasts described in this sector, a sharp lookout should be kept for canoes.

Acts of piracy have occurred in the waters described within this sector but they have generally taken place at the anchorages or in the approaches to the ports. Vessels should not allow any unauthorized craft to come alongside.

Oil and gas development areas and fields, with associated rigs, platforms, riser pipes, wellheads, submarine pipelines, terminal buoys, and storage vessels, may be encountered off the coasts described in this sector.

The West African Gas Pipeline runs from 7.5 miles NE of Takoradi, Ghana through the coastal waters of Togo and Benin to 6.75 miles ESE of Badagri, Nigeria. There are several areas with connections along this route. The pipeline, which can best be seen on the chart, has been buried in some areas but not in others. Caution is advised when navigating these areas and anchoring is prohibited within 1 mile of the pipeline.

Some of the well heads may protrude more than 5m above the sea bed and may be unmarked. Some of the platforms and structures may be disused, abandoned, and unlit. In many cases, the submarine pipelines are not buried in the sea bed and depths over them may be reduced by as much as 2m. In addition, many temporary structures and objects associated with oil and gas exploration may not be charted.

Cape Palmas to Abidjan

1.2 Cape Palmas (4°22'N., 7°44'W.), 19m high, is a rocky peninsula connected to the mainland by a low and sandy isthmus. Russwurm Island, 8m high, lies close S of the cape and is connected to it by a causeway. This island is covered with verdure and is difficult to distinguish against the cape. The town of Harper stands on the isthmus.

For a description of the approaches to the cape; the small harbor, known as Harper Point; and the nearby roadstead an-

chorage, which is used for the export of logs and rubber, see Pub. 143, Sailing Directions (Enroute) West Coast of Europe and Northwest Africa.

A light is shown from a prominent tower, 22m high, standing close to the W extremity of Cape Palmas.

Between the cape and Growa Point, 6.7 miles E, the coast consists of a high sandy beach. A conspicuous mass of black rock lies on the beach about 2.5 miles E of the cape.

A shallow lagoon lies close behind the sandy foreshore and extends parallel to it for about 3.5 miles. The village of Buddu is situated near the E end of this lagoon. During the rainy season, the lagoon breaks through to the sea and flows out between the groups of houses standing in the village.

Newill Rock, with a least depth of 6m, lies 0.7 mile offshore, about 1.7 miles ESE of Cape Palmas. Athol Rock, with a least depth of 6.4m, lies 1.9 miles offshore, about 3 miles WSW of Growa Point. Two rocky heads, with depths of 6.4 and 9.1m, lie about midway between Newill Rock and Athol Rock.

A shoal patch, with a depth of 16.5m, was reported (1967) to lie about 4.5 miles SSE of Cape Palmas.

A prominent hill, 70m high, rises 1.2 miles inland, about 3.3 miles ENE of Cape Palmas. A conspicuous college building, white with a black roof, stands on this hill.

Growa Point (4°21'N., 7°37'W.) is a long, low, and rocky projection. Growa Reefs, on which the sea breaks heavily, extend up to about 0.8 mile SW and 0.4 mile S from this point. During good weather, landing is possible in the vicinity of the point, but a surf boat is necessary. The town of Growa, also known as Whole Graway, stands about 1 mile NW of the point.

Helene Woerman Rock, with a least depth of 3.7m, lies about 2.5 miles SW of Growa Point. This steep-to rock, which was reported not to break in the dry season (November to March), forms the outermost danger along this part of the coast.

A shoal patch, with a depth of 10m, lies about 1.7 miles SSW of Growa Point and another patch, with a least depth of 9m, lies between it and Growa Reefs. Harvey Rock, on which the sea always breaks, lies 1.3 miles offshore, about 1.2 miles WSW of Growa Point. Several rocky patches, with depths of 5 to 10m, lie within 0.5 mile of Harvey Rock.

Cavalla Point (4°21'N., 7°36'W.), fronted by rocks, is situated 1.2 miles E of Growa Point. A village stands among trees 0.5 mile NE of the point.

An isolated shoal patch, with a least depth of 9.1m, lies about 1 mile SSW of Cavalla Point.

Foul ground, with several above-water rocks, extends up to 0.8 mile from the coast between Growa Point and Cavalla Point. Cavalla Ledge, formed by a group of shoals, lies centered 1 mile offshore, about 2.8 miles ESE of Cavalla Point. The shallowest shoal of this group, with a depth of less than 2m, breaks and lies at the NW end.

1.3 The Cavally River (4°22'N., 7°32'W.) indents the coast 4 miles E of Cavalla Point. It is navigable up to about 40 miles above the entrance by small power vessels. The first rapids are located about 80 miles above the mouth.

The boundary between Liberia and the Ivory Coast (Cote D'Ivoire) is situated in the vicinity of the Cavally River.

Two umbrella trees stand close together on the W side of the entrance and a small house, with a tiled roof, is situated close

W of them. The entrance channel, which is about 90m wide between the sand banks, is constantly changing. Sunken rocks lie close offshore at the W side of this channel and the bar, which fronts the entrance, has the reputation of being the most dangerous along this part of the coast. The village of Blieron is situated on the E side of the entrance. The Custom house, a prominent white building with a red roof and a flagstaff, is situated in the village.

Anchorage may be obtained, in a depth of 15m, sand and mud, about 1 mile S of the Customhouse.

Willett Hill, a prominent flat-topped hill, rises 3 miles N of the entrance to the river and has a conspicuous knob, 94m high, standing close W of its center. In clear weather, this knob is reported to be visible from up to 18 miles seaward.

Between the Cavally River and Pointe Tafou, 10.5 miles ENE, the coast is low, sandy, and backed by a dense forest. It is broken occasionally by clumps of trees up to 60m high.

A rounded, sandy point is located 2.7 miles E of the mouth of the Cavally River and is fronted by extensive reefs, which extend up to about 0.8 mile seaward. Several rocks, up to 3.7m high, lie in the vicinity of these reefs. A stranded wreck, reported to be radar conspicuous (1987), lies in the vicinity of these rocks.

A hill, with treetops 55m high, rises close N of this sandy point and is prominent.

Subra Meno Point (4°22'N., 7°27'W.) is located 4.5 miles ENE of the mouth of the Cavally River and forms the W entrance point of the Tahauru River. A stranded wreck, reported to be radar conspicuous (1968), lies on a group of rocks about 0.4 mile S of the river mouth.

An isolated shoal patch, with a depth of 9m, is reported (1966) to lie about 2.7 miles SE of Subra Meno Point.

The village of Biahuin stands 2.5 miles ENE of Subra Meno Point. A group of rocks, which breaks, lie about 0.7 mile S of this village.

Pointe Tafou (4°25'N., 7°22'W.) is a low and rocky point located at the W side of the entrance to the Tafou River. This river is small and used only by canoes. It was reported (1969) that the entrance had silted up and only the beach was in use.

A light is shown from a tower, 14m high, standing on Pointe Tafou; a radio mast is situated 0.2 mile WSW of it. The town of Tabou is situated close within the entrance on the N bank of the river. A mission building, with a prominent clock tower, stands in the town.

It is reported (1971) that a vessel grounded about 0.3 mile S of the light. Therefore, a preferred anchorage lies, in a depth of 15m, about 0.8 mile SE of the light.

1.4 Pointe Basha (4°28'N., 7°15'W.), fringed by reefs, is located 7.5 miles NE of Pointe Tafou. The coast between consists of a sandy beach backed by densely-wooded country.

Point Tabou, low and fronted by foul ground, is located 2.7 miles NE of Pointe Tafou. The large village of Segre stands 1.4 miles NE of this point. Anchorage may be obtained in a depth of 24m, sand and mud, about 1 mile SE of the village. The bottom is foul in any lesser depths.

Pointe Basha, which shelters a roadstead anchorage, is surmounted by a rock resembling the outline of a fort when seen from the W. A buoy is moored 1.6 miles ENE of this point.

Grand Basha, a village, stands on the N side of the entrance

to the River Houo, 1 mile N of Pointe Basha. It may be identified by a prominent long and low house with a gray roof. Pointe Boubele, the SW entrance point of the river, is marked by two beacons. A post, with a triangular daymark, stands 0.9 mile NNE of Pointe Boubele, but it is situated near the shore and not easily distinguished. A wharf, used by lighters, fronts the shore close N of Pointe Boubele and is reported to be radar conspicuous.

Anchorage may be obtained in depths of 12 to 16m about 1 mile E of Pointe Boubele. The bottom consists of sand, broken shells, and gravel, with good holding ground. This roadstead is used for exporting timber.

The coast continues ENE for 13 miles from Pointe Basha to Pointe Poor. A long and narrow lagoon lies close behind the beach, which fronts the coast for the last 8.2 miles. The sandy beach barrier that separates this lagoon from the sea is covered with trees, but occasional bare spots show where the waters burst through in the rainy season.

Pointe Ouappou (Point Wappu), rocky and 20m high, is located 3.5 miles NE of Pointe Boubele. The village of Wappu stands on this point and the mouth of the River Tuhobre lies close WSW of it.

Pointe Poor (4°32'N., 7°03'W.) is low, rocky, and fringed by rocks extending up to about 0.3 mile seaward. The mouth of the River Nebano lies close N of this point. Pointe Klama, fronted by rocks, is located 1.5 miles ENE of Pointe Poor. A conspicuous gray rock stands about 0.5 mile N of this point. A hill, 90m high, rises 2 miles NNW of this point.

A stranded wreck, reported (2002) to be no longer conspicuous, lies close ENE of Pointe Klama.

Poste de Bereby (Point Sagree) (4°34'N., 7°01'W.), located 0.7 mile NNE of Pointe Klama, is one of the few places along this part of the coast where landing is possible. A village stands on the point. Two moderately-high mountains rise 8 and 12 miles NNW of this point and provide good landmarks. Anchorage can be taken in a depth of 22m, sand, about 0.5 mile SE of the point.

Pointe Ible, surmounted by a building, is located 1 mile NE of Poste de Bereby. A pinnacle rock, with a depth of 6m, lies about 0.4 mile S of this point.

1.5 Pointe Kadabou (4°39'N., 6°54'W.) is located 8.5 miles NE of Poste de Bereby. The coast between consists of a succession of sandy bights divided by rocky points. The land behind the beach consists of an extensive forest, which rises gradually to wooded hills.

From about 1 mile NE of Poste de Bereby, an extensive chain of reefs lies parallel to the coast and extends for about 4.5 miles. Ilot Devil, with a black base, lies 2.3 miles SW of Pointe Kadabou. This islet is 13m high and has a flat summit which has been whitened by numerous sea birds settling on it. A shoal, which breaks, lies 0.3 mile NNE of this islet.

Pointe Kadabou consists of a bold and rocky cliff, 35m high, which can easily be recognized by a white rock standing near its summit. The village of Basa (Grande Berebi) is situated on this point and several reddish houses, with a group of palm trees, are prominent from seaward. Two hills, rising close together, stand 3 miles WNW of the village and are 95m high.

It is reported (1993) that the stranded wreck of a ro-ro ferry lies near Basa (Grande Berebi).

It is reported (1995) that a tug grounded in the vicinity of Basa (Grande Berebi) and has been abandoned as a constructive total loss.

A roadstead, used mostly for loading timber, lies at the head of the bight entered N of Pointe Kadabou. A river, with a lagoon at its entrance, empties into the head of this bight. Anchorage may be obtained in a depth of 11m about 0.5 mile E of Pointe Kadabou or in a depth of 14m about 1 mile ESE of the point.

Gumara Reefs (Turpin Rock), with depths of less than 1m, lie 0.5 mile NNE of Pointe Kadabou. Roche Katoum, a granite rock, lies about 1 mile NE of Pointe Kadabou. It is 11m high and fringed by shoals on its W and NE sides. The top of this rock is covered with white guano, but it becomes brown during the rainy season. Several other shoals and obstructions lie in the vicinity of this rock and Gumara Reefs.

Pointe Tahu (4°42'N., 6°42'W.), fronted by reefs, is located 13 miles ENE of Pointe Kadabou. It is low and wooded. A factory stands close W of the point. The coast between this point and Point Kadabou consists mostly of sandy beaches and is wooded with numerous villages. The River Nema enters the sea through a lagoon about 3.2 miles W of Pointe Tahu. The shore is rocky and steep-to in places. Numerous rocks, both above and below-water, lie off this stretch of coast and it should be given a wide berth.

A dangerous rock (existence doubtful) is reported to lie about 2 miles S of Pointe Tahu.

The coast from Pointe Tahu continues ENE for 6 miles to the harbor of San-Pedro. It is generally sandy, low, and backed by a lagoon. The shore is fronted by numerous shoals and other dangers and should be given a wide berth.

1.6 San-Pedro (4°44'N., 6°37'W.) (World Port Index No. 45963) is a partly-sheltered harbor used mostly for the export of timber. It is situated in a lagoon about 1 mile SW of the mouth of the River San-Pedro.

San-Pedro Home Page

<http://www.sanpedro-portci.com>

Winds—Weather.—The harbor is exposed to E and NE winds and seas. At such times, a heavy swell may also be experienced at the quays.

Tides—Currents.—The tides rise about 1.5m at springs and 1.1m at neaps.

The tidal currents attain rates of 0.5 to 1 knot at the entrance, but are less inside the harbor. A strong undertow may be felt within the harbor between June and September.

Depths—Limitations.—The harbor is protected by two breakwaters. It is entered through a channel, 137m wide, which is dredged to a depth of 12m.

There are three principal quays. The W quay has 586m of berthing space. It can be used by vessels of up to 10.2m draft.

The S quay, 154m long, has a dredged depth of 9m alongside. It can be used by vessels up to 150m in length and 8.5m draft.

Six mooring buoys are situated in depths of 10 to 11m within the N part of the harbor. They form berths, which may be used by vessels of 100 to 200m in length, with drafts of 8.5 to

10.5m.

A cement dolphin berth, 200m long, is situated on the NW side of the harbor. It has a depth of 11m alongside and can accommodate vessels up to 195m in length and 10.5m draft.

A tanker berth is located on the W side of the E quay. It can accommodate vessels up to 90m in length and 5.5m draft. A turning basin, 400m in diameter, lies in the center of the harbor and is dredged to a depth of 11m.

Aspect.—Two prominent multi-story buildings, the E of which is taller, stand on the coast close WSW of the harbor entrance. A conspicuous telecommunications tower, 59m high, stands 0.6 mile W of the E breakwater head. It is topped by a mast and marked by an obstruction light.

San-Pedro Light, is shown from a framework tower, 27m high, standing on the E end of the summit of a hill, which rises 1 mile NE of the harbor entrance.

A lighted range, which may best be seen on the chart, indicates the entrance channel.

A prominent building and a silo stand 0.9 mile and 1.3 mile, respectively, WSW of San-Pedro Light. A conspicuous tank farm is situated about 0.4 mile SW of San-Pedro Light.

An aeronautical radio beacon, situated in approximate position 4°46.2'N, 6°39.0'W, is reported (1995) to operate between 0700 and 1830 hours daily. Requests for night operation may be made through Abidjan radio.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channel 12 and board about 1.5 miles S of the W breakwater.

Regulations.—Vessels should send their ETA 24 hours in advance, with a confirmation 3 hours before arrival. If the vessel is over 200m in length, the draft should be included in the messages.

Generally, vessels may enter by day only, but can depart by day or at night.

Contact Information.—San-Pedro pilots can be contacted, as follows:

1. Telephone: 225-34-711791
2. Facsimile: 225-34-711791

San-Pedro port can be contacted, as follows:

1. Telephone: 225-34-717200
2. Facsimile: 225-34-717215
3. E-mail: pasp@pasp.ci

Anchorage.—Vessels may anchor, while awaiting a pilot, in a depth of 18m, sand, good holding ground, about 0.8 mile SSE of the W breakwater head. Anchorage is not recommended to the W of the meridian passing through the head of the W breakwater.

Caution.—It is reported (1996) that the dredged areas within the harbor are no longer maintained and depths are less than charted in many places.

1.7 Between San-Pedro and Sassandra, 34 miles ENE, the coast generally consists of cliffs backed by mountains, some peaks of which are conspicuous. Collines Temple, 158m high, rises 7 miles NE of San-Pedro and marks the W end of a coastal mountainous chain which extends ENE for 27 miles.

The River San-Pedro enters the sea about 0.3 mile NE of San-Pedro Light. This river is shallow and its mouth is only 15m wide.

Pointe Mono (Pointe Drewin) (4°48'N., 6°26'W.) is located

ed 10 miles ENE of San-Pedro Light and 5 miles E of Collines Temple. This point, 19m high, is prominent, rocky, and wooded. It is fringed by several rocks on the NE side. A hill, 60m high, rises 0.4 mile W of the point. Landing can be made on the gently sloping beach which lies in a sheltered inlet, close W of the point. Anchorage may be obtained in a depth of 11m about 0.3 mile E of the point.

Two small rivers, the mouths of which are obstructed by sand bars, enter the sea 0.7 mile NNE and 1.2 miles NE of pointe Monoho.

Pointe Enframa (4°52'N., 6°13'W.) is located 14 miles ENE of Pointe Monoho. The coast between is formed by a succession of small rocky points with sandy beaches extending between them. The shore is fringed, in places, by reefs. Pointe Abrapa is situated 6.4 miles WSW of Pointe Enframa. It is marked by a white cliff, but is not easily identified.

The villages of Basa and Lolieko are situated 6.2 miles and 7.5 miles, respectively, ENE of Pointe Enframa.

1.8 Sassandra (4°57'N., 6°05'W.), a small harbor, is dominated on the W side by an abrupt headland which is 53m high and covered with luxuriant vegetation. The town stands between this headland and the entrance to the River Sassandra, 0.8 mile NNE. The headland is fringed by rocks on which the sea breaks. It forms the E end of a chain of hills known as Hautes Terres de Drewin. The river is obstructed by a shallow bar and is used only by small boats. It expands close above the mouth into a large lagoon, in which lies Ile Fisolagpo.

A light is shown from a tower, 10m high, standing on the top of the cliffs of the headland; however, it is reported that the lights of the town are usually seen before this aid.

It is reported (1983) that the harbor is permanently closed.

A school stands near the coast, 0.7 mile SW of Sassandra. It is conspicuous, well-lighted, and reported to be visible from up to about 15 miles seaward. A conspicuous hospital, consisting of a large white building with a gray roof, stands on a rocky spur, 45m high, and overlooks the town.

1.9 The coast extending to the E of Sassandra is flat for 3.5 miles and fronted by a steep, sandy beach. It is then hilly for the next 2.5 miles. The hills attain heights of about 110m and are broken by ravines.

Pointe Brouko (Pointe Mortality) (4°59'N., 5°58'W.) is located 7 miles ENE of Sassandra. Several villages are situated in this vicinity. The point is prominent, bold, and steep-to.

From a point on the shore located about 7 miles ENE of Pointe Brouko, a series of red cliffs begin and extend for 18 miles to Fresco. A beach stretches to the E of Fresco and is bordered by a row of trees in the middle of which is a wood.

Between Fresco and Grand-Lahou, 34 miles E, the coast is low and thinly wooded. It is bordered by a sandy beach, on which the heavy surf frequently makes communication with the shore impossible. A narrow lagoon, resembling a canal, runs parallel to the coast close behind the beach.

1.10 Grand-Lahou (5°09'N., 5°00'W.) stands on the W side of the entrance to the Bandama River. This town can be identified by two prominent houses, one with a black and the other with a red roof, standing at the W end.

Mont Lahou, 106m high, rises 5 miles N of the town and is

covered by trees.

A light, equipped with a racon, is shown from a tower, 13m high, standing in the town.

The entrance to the river is very narrow and is fronted by a dangerous bar. It is sheltered by a prominent mole projecting E from the W entrance point. The yellowish water from the river can be seen to the E of the mouth and up to nearly 2 miles offshore.

Anchorage may be taken in a depth of 15m, sand and mud, about 0.5 mile SSE of the light. The holding ground is good, but vessels roll heavily. This roadstead is reported (1989) to be seldom used.

Foxtrot Platform (5°02'N., 4°41'W.), an oil and gas platform, is situated 20 miles ESE of Grand-Lahou and about 7 miles E of Lion Terminal. A submarine pipeline extends NNE from this platform to the shore.

Between Grand-Lahou and Abidjan, 61 miles E, the coast is bordered by a sandy beach. Numerous villages are situated along the shore, but are difficult to identify. Lagune Eerie lies behind this stretch of the coast. This lagoon extends in a W to E direction for about 65 miles and contains numerous islands.

Grande Jack (5°11'N., 4°28'W.) is situated 32 miles E of Grand-Lahou. This village can be identified by the mass of foliage in the background and a prominent house, with a white roof, standing close E of it.

It is reported (2003) that a light is shown from a tower standing on the coast about 4.5 miles W of Grande Jack.

Jacqueville (5°12'N., 4°23'W.) is situated 37 miles E of Grand-Lahou and 5 miles E of Grande Jack. It can be identified by a group of white houses, two water towers, and a church. The entire length of the village is fronted by palms.

A dangerous wreck lies about 0.7 mile offshore, 5 miles E of Jacqueville.

A wreck with an unsurveyed depth of at least 20m lies SW of Jacqueville and W of the charted abandoned oil field in position 5°03.8'N, 4°34.5'W.

1.11 Espoir Terminal (5°03'N., 4°27'W.) (World Port Index No. 46008), located about 9 miles S of Jacqueville, consists of a platform and a Floating Production Storage and Off-loading (FPSO) Vessel. Oil and gas submarine pipelines extend NW from this facility to the shore.

Depths—Limitations.—The terminal has a depth of 110m alongside and can handle tankers up to 350,000 dwt. Vessels are berthed in tandem, bow to stern, with the FPSO.

Pilotage.—Pilotage is compulsory. The pilot will advise the boarding position after VHF contact has been established with the terminal. Pilots usually board about 3 miles ENE of the FPSO. The pilot can be contacted on VHF channel 14 and the FPSO control room can be contacted on VHF channels 16 and 69.

Regulations.—Vessels should send their initial ETA to the CNR Offshore Representative on departure from the previous port (or immediately on departure if the port is less than 72 hours from the terminal). Vessels must send ETA messages 72 hours, 48 hours, and 24 hours prior to arrival.

The first message should contain the following:

1. Vessel name, call sign, and INMARSAT numbers.
2. Cargo requirements.
3. Maximum loading rate.
4. Arrival draft fore and aft.

5. Last port of call.
6. Confirmation of clean bill of health.
7. Any sickness onboard.
8. Distance (in meters) from bow to loading manifold.
9. Length.
10. A statement that vessel can perform closed loading.
11. Confirmation that the vessel is equipped with a bow stopper able to receive 76mm chain.
12. Local agent's name and details.

The CNR Offshore Representative must be notified should the vessel's ETA change by 6 hours or more following the 72-hour and 48-hour notice or by 1 hour or more following the 24-hour notice.

Berthing is available 0600 to 1500 local time. Vessels arriving after 1500 will be berthed the following day. Vessels may depart at any time.

Contact Information.—The CNR Offshore Representative may be contacted, as follows:

1. Telephone: 44-1224-331900
2. Facsimile: 44-1224-331902
3. E-mail: offshorerep.ei@cnrinternational.com

Anchorage.—A designated anchorage area for tankers is centered about 4 miles NE of the FPSO.

Caution.—A restricted area, with a radius of 2 miles, is centered on the terminal. Vessels must receive permission to enter this area.

A restricted area, which may best be seen on the chart, lies centered about 10 miles S of Jacqueline. Due to the existence of underwater obstructions, anchoring and fishing are prohibited within this area.

1.12 Baobab Terminal (4°58'N., 4°33'W.) (World Port Index No. 45970) is located about 13 miles offshore, 29 miles ESE of Grand-Lahou. It consists of a Floating Production Storage and Off loading (FPSO) vessel, which is turret-moored in a depth of 970m. The terminal can handle vessels up to 60,000 dwt. Submarine pipelines extend about 2.5 miles ENE and SE from the FPSO (Baobab Ivoirien MV10) to production manifolds.

Pilotage is compulsory. Pilots can be contacted on VHF channel 74 and board about 2 miles from the terminal. Vessels berth during daylight hours only but may depart at any time. Tankers moor in tandem, bow to stern, with the FPSO.

Vessels should send their ETA to the Baobab Marine Terminal at least 7 days in advance, if at sea, or as soon as orders are received to proceed to the terminal. Vessels should send their ETA to the Baobab Marine Terminal and Abidjan Port Authority 72 hours, 48 hours, and 24 hours prior to arrival. Additional notification should be given if the ETA reported on the 72-hour or 48-hour message changes by 4 hours or more.

A designated anchorage area, with a radius of 1 mile, lies centered about 11.5 miles NE of the terminal.

A circular restricted area, with a radius of 2 miles, is centered on the terminal. Vessels must receive permission to enter this area.

Tankers moored at the terminal must fly the flag of the Republic of Ivory Coast.

Caution.—Small craft, with no lights, may be encountered in the vicinity of the anchorage and FPSO.

Abidjan (5°15'N., 4°01'W.)

World Port Index No. 46000

1.13 Abidjan is the former capital and principal port of the Ivory Coast. It provides a large sheltered harbor. The city is an industrial center and also a major railroad terminal.

Abidjan Home Page

<http://www.portabidjan.ci>

Winds—Weather.—The wind usually blows from the SW with frequent calms, especially during the dry seasons. A dry wind blows occasionally from ENE between December and February. Hurricanes are frequent, particularly in April, May, October, and November. The weather in this vicinity consists of four seasons, as follows:

1. A long dry season from December to April.
2. A long rainy season from May to the middle of July.
3. A short dry season from the middle of July to September or October.
4. A short rainy season from September or October to November.

A swell from the SW, which never quite subsides, generally attains a height of 0.3m and causes rollers along the beach in the vicinity of the port. This swell has been reported to occasionally attain a height of 1.8m during June, July, and August.

Tides—Currents.—The tides rise about 1.2m at springs and 0.9m at neaps.

At springs, the ebb tidal current attains a rate of about 6 knots at the seaward end of Canal de Vridi. The flood current is weaker and at neaps and during the rainy season, it is imperceptible.

At the entrance of Canal de Vridi, the tidal currents sometimes set toward the W bank with strong eddies. At such times, vessels should use care as they may encounter difficulties in maneuvering, particularly heavily-loaded tankers.

Depths—Limitations.—Le Trou Sans Fond (5°13'N., 3°58'W.), also known as The Bottomless Pit, is a funnel-shaped submarine canyon which penetrates the coastal bank in the approaches to Abidjan for a distance of about 11 miles. It has a width of about 3.5 miles and a depth of over 820m at a distance of 9 miles offshore. This canyon still has a depth of 200m about 1.3 miles offshore, while at the head, close to the edge of the beach, it has a depth of 40m. The bottom consists mostly of soft bluish mud but there is some coral rock at depths between 345 and 370m.

The port is entered through Canal de Vridi which is about 1.5 miles long. This canal has a width of 370m, except at the seaward end where it is only about 200m wide. The canal has a dredged depth of 13.5m (1992).

Vessels can transit through the canal only when the tidal current is setting at a rate of less than 2 knots. At neaps, this occurs anytime. At springs, this occurs from 1 hour before to 1 hour after HW and from 1 hour before to 30 minutes after LW. Large vessels are advised to arrive at the entrance to the canal at HW.

Overhead power cables, with a minimum vertical clearance of 66m, span the canal, 0.6 mile NW of the entrance.

Two tanker berths are situated near the middle of the E bank of the canal. They are equipped with breasting dolphins and mooring buoys and have a depth of 10m alongside. Tankers of up to 210m in length and 9.1m draft can be accommodated.

A fertilizer pier, 90m long, is located close E of the NE end of the canal. It can accommodate vessels of up to 130m in length and 7.9m draft.

South Quay, 0.8 mile long, extends N from a point located 0.5 mile NE of the N end of the canal and includes a container terminal. It provides nine berths and has depths up to 12.5m alongside. A ro-ro pier is situated S of South Quay. It is 200m long and has a depth of 12.5m alongside.

A fishing vessel basin is situated N of South Quay. It has 1,050m of berthing space with depths of 5 to 7m alongside. West Quay, 0.8 mile long, extends NW from the fishing basin. It provides ten berths and has a depth of 10m alongside. North Quay, 0.4 mile long, extends NE from West Quay. It provides five berths and has a depth of 10m alongside.

Banana Wharf, 350m long, lies N of North Quay. It provides two berths and has a depth of 7m alongside.

There are also several mooring buoy berths located within the inner harbor.

There are facilities for general cargo, ro-ro, container, timber, reefer, bulk, tanker, and fishing vessels. Vessels of up to 250m in length and 11.5m draft can be accommodated. However, the maximum draft for entry is sometimes reduced to 9m during periods of heavy swell. The maximum draft for outbound vessels is 11.5m.

Aspect.—Lighted ranges, which may best be seen on the chart, indicate the approach channel leading into the entrance of Canal de Vridi. The E and W entrance points of the canal are marked by lights.

Lighted Buoy R (5°12'N., 4°00'W.), equipped with a racon, is moored about 1.5 miles S of the entrance to the canal. Lighted Buoy AN is moored about 1.2 miles SE of the entrance to the canal; vessels should pass E of it.

Port Bouet Light is shown from a conspicuous tower, 34m high, standing 2.5 miles E of the entrance to the canal.

A prominent signal station, with a radio mast, stands on the E entrance point of the canal. A tank farm, several flares, and a refinery, all prominent, are situated about 1 mile NE of the canal entrance. Two conspicuous chimneys stand near a power station on the E side of the canal, about 0.7 mile NW of the signal station. Pylons, supporting the overhead power cable, stand close S of the power station and are also conspicuous. A conspicuous crane is reported to stand on the W side of the entrance to the canal.

Ile Boulay (5°16'N., 4°06'W.) is situated at the W side of the inner harbor. A wall, painted white and bearing 313° ahead, is situated on this island. It is used as a mark by vessels transiting the canal.

The inner harbor is part of Lagune Ebrie. It is bounded by Ile Boulay on the SW side and Ile de Petit-Bassam on the E side. The town stands on a promontory which extends S toward Ile de Petit-Bassam. The government palace, a large prominent building, stands on a small hill in the SW part of the town.

A light is shown from a water tower standing on the NW part of Ile de Petit-Bassam, about 3.5 miles NNW of the entrance to Canal de Vridi. A conspicuous silo, 36m high, is situated about 0.4 mile WNW of this light.

Pilotage.—Pilotage is compulsory for vessels of more than 150 nrt and is available 24 hours. Pilots can be contacted on VHF channel 6, 11, 12, or 16 and are reported (2005) to board about 0.8 mile SSW of “AN” lighted buoy (5°13.5'N., 3°59.6'W.).

Regulations.—Vessels must send an ETA and request for pilotage to the Port Control 24 hours, 6 hours, and 3 hours in advance. The message must include their draft.

Vessels moored at the outer anchorage must maintain a continuous listening watch on VHF channel 12 or 16. Vessels moored at the inner anchorage must maintain a watch from 1000 to 1030 local time (after the port meeting).

Vessel Traffic Service.—A Vessel Traffic Service (VTS) system operates in the approaches to Canal de Vridi. The VTS area (control zone) is formed by a circle, with a radius of 1 mile, centered on the approach lighted buoy (5°12.9'N., 4°00.2'W.). The VTS Center (call sign: Vigie) can be contacted on VHF channels 12 and 16.

Vessels are prohibited from entering the VTS area without authorization from the VTS Center or to anchor, except in cases of force majeure (emergency).

After being identified and given instructions by the VTS Center, vessels will proceed to embark the pilot. Vessels departing must follow the route determined by the VTS Center in such a way as not to restrict the approach of inbound vessels.

Contact Information.—The port of Abidjan may be contacted, as follows:

1. Telephone: 225-21-238000
2. Facsimile: 225-21-238080
3. E-mail: info@paa-ci.org

Anchorage.—Vessels awaiting the pilot should anchor at least 1.5 miles W of the meridian passing through the S entrance point of Canal de Vridi. Vessels should anchor in depths of over 20m, sand with good holding ground, at least 1 to 2 miles off the coast, depending on their draft.

Large vessels should anchor about 1 mile off the coast, in depths of 40 to 50m.

The inner anchorage berths, within the harbor, lie S, E, and N of Ile Boulet and may best be seen on the chart. They have depths of 8 to 23m, hard mud, with good holding ground.

Caution.—An area obstructed by wrecks, the limits of which may best be seen on the chart, lies centered about 8 miles WSW of the entrance to Canal de Vridi.

A circular area, within which anchoring is prohibited, lies centered about 1.5 miles S of the entrance to Canal de Vridi. This area has a radius of 1 mile and may best be seen on the chart.

A restricted area extends about 15 miles seaward from the shore in the vicinity of Port Bouet Light. Anchoring, fishing, and dredging are prohibited within this area, which may best be seen on the chart.

Several submarine cables, which may best be seen on the chart, lie across Canal de Vridi.

A wreck, with a depth of 15.1m, lies close to the shore about 0.5 mile SW of the entrance to Canal de Vridi. It is marked by a lighted buoy and may best be seen on the chart.

Large vessels must comply with certain conditions and entry to the port may be delayed by adverse conditions of swell, current, or tide. The local authorities should be contacted in advance for the latest information concerning any restrictions.

Lighting of the navigation aids in the approaches to the port was reported (1998) to be unreliable.

A dangerous wreck lies about 3 miles W of Lighted Buoy R (5°12'N., 4°00'W.).

1.14 Port Bouet Offshore Terminal (5°14'N., 3°58'W.) (World Port Index No. 45990) is situated 2.7 miles E of the entrance to Canal de Vridi and serves the refinery at Abidjan.

Depths—Limitations.—Submarine pipelines extend 0.9 mile SSE and 2.1 miles SSW from the shore in the vicinity of the directional light.

Berth SIR I, consisting of several mooring buoys, is situated in a depth of 20m at the seaward end of the E pipeline. It can handle tankers up to 80,000 dwt, from 170 to 250m in length, and up to 14m draft.

Berth SIR II (5°14'N., 3°58'W.) is an SBM situated in a depth of 49m at the seaward end of the W pipeline. It can handle tankers up to 250,000 dwt and 21m draft, with a minimum length of 300m. Vessels over 150,000 dwt require special mooring arrangements.

The SSW swell in the vicinity of the berths usually attains a height of 1.5m, but can reach a height of 2.7m during July and August.

Aspect.—An outer lighted buoy is moored about 1.6 miles SSW of Port Bouet Light (5°14.7'N., 3°57.5'W.). A directional sector light is shown from a structure standing 0.3 mile NW of Port Bouet Light.

An airport is situated about 1.5 miles E of Port Bouet Light. Red obstruction lights are shown occasionally from a water tower and a radio mast standing in the vicinity of the airport.

Pilotage.—Pilotage is compulsory. Pilots can be contacted by VHF and are reported (2005) to board about 0.7 mile ENE of Lighted Buoy R (5°12'N., 4°00'W.). Tugs are compulsory.

Regulations.—Vessels must send their ETA through their agents 72 hours and 24 hours in advance. Vessels must also contact the Abidjan Port Master the day before arrival at the Vridi roadstead and at least 6 hours before arrival to confirm the ETA.

Caution.—The offshore oil terminal is situated within a restricted area, which may best be seen on the chart. Vessels not proceeding to or from the terminal are prohibited from entering this area without prior permission.

Abidjan to Takoradi

1.15 Belier Oil Field (5°05'N., 3°50'W.), consisting of one production platform, lies centered 11 miles SSE of Port Bouet Light. A submarine pipeline, which may best be seen on the chart, extends NW between this field and Port Bouet.

Grand Bassam (5°12'N., 3°43'W.), situated 15 miles ESE of Port Bouet, stands on the narrow and sandy neck which separates Lagune Ouladine from the sea. A ruined pier fronts the shore S of the town and the shallow Komoe River (Flueve Comoe) flows into the sea 2 miles E of it. Three radio masts and a tower are situated 2.7 miles ENE and 0.8 mile E, respectively, of the ruined pier. The yellowish waters of the river discolor the sea up to about 4 or 5 miles offshore and up to 2 miles W of the mouth. It is reported (1999) that a light is shown from a structure, 32m high, standing in the vicinity of the town.

Vessels anchoring at Grand Bassam usually moor in depths

of 11 to 18m, good holding ground, off the ruined pier. Local knowledge is advised.

The **Riviere Assinie** (Assinic River) (5°07'N., 3°17'W.), which receives water from an extensive area, lies with its mouth located about 27 miles E of Grand Bassam. The coast between is fringed by trees, 30 to 35m high, and numerous huts are situated along the beach. The bar, which fronts the river, is often impassable and can only be crossed by small craft. It is situated close S of the town of Assinie. Prior to 1976, the mouth of this river was situated about 8 miles W of its present position in the vicinity of Assouendi, a large village. Within the entrance of the river, Canal d'Assinie leads W to join the Komoe River (Flueve Comoe).

1.16 The coast extends 62 miles ESE from the entrance to the Riviere Assinie to the mouth of the Anlobra River. It is formed by a sandy beach, with lagoons and swamps, and is backed by hills. The interior of the country consists of thick forest.

The boundary between the Ivory Coast (Cote D'Ivoire) and Ghana lies 12 miles E of the entrance to the Riviere Assinie.

The **Ankobra River** (4°54'N., 2°16'W.) is fronted by a shallow bar and boats should not attempt to cross it without local knowledge. With a heavy swell, the sea breaks in depths of less than 5m in the vicinity of the river entrance. Several rocks, above and below-water, lie close outside the mouth of the river.

Jubilee Oil Terminal (4°36'N., 2°54'E.) lies about 30 miles S of the Ghana/Ivory Coast border and lies within the Jubilee Oilfield.

The terminal consists of a turret moored FPSO. The FPSO can accommodate vessels up to 366m in length and 350,000 dwt. Pilotage is compulsory and provided by the mooring master who boards in the anchorage. Berthing occurs during daylight hours only.

Vessels must send their ETA 7 days, 72 hours, 48 hours, 24 hours and 12 hours in advance.

An IMO-adopted Area to be Avoided, with a radius of 5 miles, is centered on position 4°32'06"N, 2°54'36"E and should be avoided by transiting mariners. Strong easterly ocean currents are reported in this area. Fishing is also prohibited and strictly enforced within the boundaries of the restricted area.

Axim Bay is entered close S of the entrance to the Ankobra River. It lies between Akrumasi Point and Pepre Point, 2.5 miles SSE. The N shore of this bay is sandy and the E shore is rocky. The shores are backed by densely wooded land which rises to hills, 60 to 90m high. Round Hill, 77m high, rises 1.2 miles E of Akrumasi Point.

1.17 Axim (4°52'N., 2°15'W.) (World Port Index No. 46020), an anchorage port for timber, lies at the E side of the bay, 0.7 mile N of Pepre Point.

Bobowasi Island lies 0.4 mile NNW of Pepre Point. It is 14m high and is connected to the coast by a reef. Axim Light is shown from a structure, with a signal station, standing on the island.

Litton Rock, with a least depth of 6.4m, lies about 2.3 miles W of the S extremity of Bobowasi Island. It is surrounded by rocky patches, with depths of 7 to 9m, which extend up to 0.3 mile seaward. Watts Rock, with a least depth of 6.7m, lies 0.7 mile S of Pepre Point and is surrounded by foul ground. Heav-

en Rock, with a least depth of 2.1m, lies about 1 mile W of Bobowasi Island and is also surrounded by foul ground. Depths of less than 9m lie close W, N, and ESE of this rock. Benin Rock, with a least depth of 6.4m, lies 0.4 mile NW of Bobowasi Island.

Anchorage may be obtained in a depth of 9m, good holding ground, about 0.7 mile WNW of Bobowasi Island and midway between Heaven Rock and Benin Rock.

The town of Axim stands on the slopes of the hills behind the coast. A fort is situated on a small rocky point in front of the town.

1.18 Cape Three Points (4°45'N., 2°05'W.) is located 12 miles SE of Axim; the coast between is indented by several bays. The name is given to the middle one of three points which form a 3.5-mile long section of the coast. The entire face of this section, from West Point to East Point, consists of a series of hills with abrupt sides and rocky points.

A light is shown from a prominent tower, 19m high, standing on the S extremity of the cape.

Cape Shoal, a group of dangerous rocks, lies 0.8 mile SSW of Cape Three Points Light and has a least depth of 4.6m. The sea does not always break on this group and even with heavy rollers, the rocks only break at considerable intervals of time. Vessels are advised to stay in depths of at least 35m in this vicinity.

Achowa Point (4°46'N., 1°58'W.) is located 6 miles ENE of Cape Three Points. The coast between is bold and rocky for nearly 1 mile. It then becomes an undulating plain fronted by a sandy beach. The depths offshore between these points are very irregular and vessels should not approach the coast without local knowledge.

Achowa Point is composed of several rocky projections, with reefs extending a short distance from each of them. Several above-water rocks lie close off the W side of the point and may be seen distinctly from seaward. A rock, with a least depth of 5.5m, lies 0.4 mile SSW of the outermost above-water rock. A rock, with a least depth of 18m, lies about 2.5 miles S of the point.

Dix Cove lies 2.5 miles NE of Achowa Point. It is encumbered with reefs but may be used by small craft. A prominent fort, with walls 9m high, stands above the NE entrance point. Mount Swanzy, 119m high, rises about 3 miles NNW of the cove. A low and rocky islet lies about 0.5 mile offshore, 1 mile NE of the entrance to the cove. It is covered with coarse grass and surrounded by reefs.

Butre Point, bold and rocky, is located 2.5 miles NE of Dix Cove. A river enters the sea close N of this point and the ruins of a small fort stand on the W bank near the mouth. Mount Bartensteen, 134m high, rises 2 miles NNW of this point and is covered with tall trees.

Adoblo Rock (4°50'N., 1°53'W.) lies at the end of a sandy projection which extends from the coast 1.5 miles ENE of Butre Point. It is large, black, and shaped like a haystack.

Between this rock and Takoradi, 9 miles ENE, the character of the coast changes and the shore is fronted by reefs, irregular depths, and rocky shoals.

Pumponi, a village, stands on a point located 3.5 miles ENE of Adoblo Rock. The point is composed of two hillocks. A beacon, 18m high, stands on the W most hillock.

Caution.—An obstruction was reported (1945) to lie about 2.8 miles SE of Achowa Point.

An obstruction, with a depth of 5.9m, was reported (1924) to lie (position approximate) about 0.6 mile SE of Dix Cove.

Due to reefs extending up to about 1.3 miles from the shore in places and numerous other dangers, vessels transiting the coast between Adoblo Rock and Takkoradi are advised to keep in depths of at least 20m.

1.19 Takoradi (4°53'N., 1°44'W.) (World Port Index No. 46040), a sheltered harbor, lies in the SW part of Takoradi Bay, which is entered between Takoradi Point and Sekondi Point, 4 miles NE.

Takoradi Home Page

<http://www.ghanaports.gov.gh>

Winds—Weather.—Squalls occur from the middle of February to the beginning of June and from the middle of October to the middle of December. They approach from between NE and SE, but usually from the former direction. The rainy seasons are from April to July and September to November.

Tides—Currents.—The tidal currents set in and out of the harbor entrance and run parallel to Lee Breakwater. Their effect is slightly noticeable in the E part of the harbor, but elsewhere it is nearly imperceptible.

Outside the harbor, a current sets E along the N side of Lee Breakwater and across the entrance. Rollers, which generally break W of Takoradi Point, are comparatively slight within the bay.

Depths—Limitations.—The harbor entrance was reported (2014) to have a depth of approximately 11.5m.

The port has 1,400m of principal quays, which provides seven main berths. These berths are 70 to 225m long and have depths of 8.4 to 10m alongside. There are facilities for general cargo, ore, bulk, ro-ro, and tanker vessels. Vessels of up to 182m in length and 8.9m draft can be accommodated.

In addition, five mooring buoy berths are situated in the S part of the harbor. These berths can be used by vessels of 93 to 200m in length and up to 11m draft.

Clinker Jetty extends 0.2 mile E from the shore, close N of Lee Breakwater. It is reported to be in poor condition and no longer used.

Aspect.—Takoradi Reef extends about 0.7 mile S and 1.3 miles E of Takoradi Point. Several wrecks lie on this reef. The harbor is formed by two breakwaters. Main Breakwater extends E and NNE along the N side of the reef. Lee Breakwater extends E from a point lying 0.4 mile N of the root of Main Breakwater. These breakwaters form an entrance, 180m wide, which faces N.

Takoradi Light is shown from a prominent water tower, 50m high, with battlements and a turret, standing 1 mile W of the head of Lee Breakwater. A conspicuous clock tower, 48m high, is situated 0.1 mile SSW of this light. A signal station stands close ENE of the light.

A conspicuous hotel, over 30m high, stands 0.3 mile WNW of Takoradi Point. Several prominent oil tanks are situated near the root of Lee Breakwater.

The town of Takoradi stands on the slopes of the hills to the

W of the harbor. An airport is situated 1 mile W of the town. It is used only by the Ghana Air Force. An aeronautical radiobeacon is situated about 1.5 miles N of the airport.

The town of New Takoradi stands on Poasi Bluffs, 1.2 miles N of the root of Lee Breakwater. Three radio masts, marked by obstruction lights, stand W of New Takoradi, about 1.4 miles NNW of the root of Main Breakwater.

It is reported (2012) that an extensive harbor expansion is planned.

Pilotage.—Pilotage is compulsory and is available 24 hours. Vessels should send their request for pilotage and ETA 48 hours, 24 hours and 12 hours in advance. The messages should include the following information:

1. Vessel name.
2. Date of arrival.
3. Draft fore and aft.
4. Length.
5. Gross tons.
6. Net tons.
7. Time in port.
8. Last port of call.
9. Next port of call.
10. Nationality.
11. Port of registry.
12. Call sign.
13. Agent.
14. Duty officer.
15. IMO number.
16. MMSI number.

Vessels should confirm their ETA when within 30 miles of the port. Pilots can be contacted by VHF and board about 0.7 mile NE of the head of the Main Breakwater.

Contact Information.—The port of Takoradi can be contacted, as follows:

1. Telephone: 233-312-024073
2. Facsimile: 233-312-022814
3. E-mail: takoradi@ghanaports.net

Anchorage.—Designated anchorage berths, in depths of 9 to 10m, good holding ground, lie 0.6 mile N of Lee Breakwater and may best be seen on the chart. A quarantine anchorage is also located in this vicinity.

Caution.—A dangerous wreck (position approximate) lies about 0.2 mile E of the head of Main Breakwater.

A wreck, with a depth of 8.6m, lies about 0.5 mile NE of the head of Main Breakwater.

A wreck, with a depth of 0.9m, lies about 2 miles NE of the head of Main Breakwater.

An obstruction is reported to lie in the vicinity of the E side of the anchorage area, about 0.5 mile N of the head of Main Breakwater.

An area, within which anchorage is prohibited, extends 0.5 mile N of the port entrance and may best be seen on the chart.

At times, a scend is experienced within the harbor and vessels are advised to moor securely alongside.

Takoradi to Tema

1.20 Sekondi Point (4°56'N., 1°42'W.), located 4 miles NE of Takoradi, is formed by a bold, prominent, and rocky cliff, 29m high. The coast between is composed of several

small bights divided by rocky points. The shore is fronted, in many places, by foul ground.

Fort Orange, a conspicuous square building, is situated on a hill close N of the point. Fort Orange Light is shown from a tower standing on the S corner of the fort.

The town of Sekondi extends W and N from the point and stands between the fort and Sekondi Lagoon.

Sekondi Naval Harbor (4°56'N., 1°42'W.), located close E of Sekondi Point, is formed by two breakwaters. Main Breakwater extends E and NE from the point and forms the S and SE side of the harbor. Lee Breakwater extends ESE from a point lying 0.4 mile N of the root of Main Breakwater and forms the N side. The entrance faces N and has depths of 9 to 10m. The harbor basin has general depths of 10 to 11m, decreasing to 4m at the inner end.

Fort Orange Light and a light shown from a tower standing on the head of Main Breakwater form a range, which leads WSW between the banks lying in the approaches.

Butatel Point, backed by rocky cliffs 12 to 18m high, is located 0.4 mile N of Fort Orange Light. A prominent building, with twin towers, stands close W of this point.

Tsiakur Bansu Point, fronted by a breakwater, is located 0.7 mile NNE of Fort Orange Light. It is surmounted by a conspicuous boundary pillar standing at an elevation of 13m. A conspicuous green house, with a dark roof, is situated 0.3 mile SW of this point.

Sherbro Bank (4°57'N., 1°39'W.), with a least depth of 5.6m, lies about 2.5 miles ENE of the harbor entrance and breaks when the rollers are heavy. Vessels are advised to give this shoal bank a wide berth.

Roani Bank (4°55'N., 1°38'W.), with a least depth of 12m, lies about 3.5 miles ESE of the harbor entrance.

Sekondi Bay (4°57'N., 1°42'W.) lies between Sekondi Naval Harbor and Suchu Point, 1.5 miles NNE. It is shallow and encumbered by numerous rocks. Suchu Reef lies 0.3 mile E of Suchu Point and extends parallel to the coast.

Caution.—It is reported that numerous fishing craft are often encountered in the vicinity of Roani Bank.

1.21 Aboadi Point (4°58'N., 1°38'W.), fronted by a reef with several above-water rocks, is located 3 miles ENE of Suchu Point. The coast between consists of sandy beaches separated by rocky points, which are fronted by rocks. The point is low, with a conspicuous clump of palm trees located near its extremity.

Aboadi Oil Terminal (4°58'N., 1°38'W.) consists of a lighted SPM moored about 2 miles SE of Aboadi Point, in a depth of 18.5m. A submarine pipeline, which may best be seen on the chart, extends NW from the offshore terminal to the coast. The terminal supplies oil to a thermal power station situated E of Takoradi. Tankers up to 55,000 dwt and 300m in length can be accommodated.

Pilots are provided by the station in Takoradi. They may be contacted by VHF and board about 4 miles SW of the SPM.

Caution.—A wreck, with a depth of 0.8m, lies near the E side of Sherbro Bank, about 1.2 miles S of Aboadi Point.

1.22 Bassubu Rocks (4°59'N., 1°38'W.) front the shore about 0.7 mile NE of Aboadi Point and are fringed by a reef which extends up to 0.5 mile E. The coast in this vicinity is

fronted by reefs and foul ground which extend up to 0.8 mile offshore in places.

Shama Bay (5°01'N., 1°36'W.) lies between Aboadi Point and Kafodzidzi (Kotobrai), 6.5 miles NE. The bay affords considerable shelter from the swell, even during the rainy season. A conspicuous fort stands 2.3 miles NNE of Aboadi Point. It is formed by a square building with a wall and is situated on rising ground behind the town of Shama. The ground W of the fort rises considerably above it.

The Pra River discharges into the bay between two lagoons, about 0.5 mile N of Shama. It is fronted by a shallow bar and only used by small craft. Anchorage may be obtained within the bay in a depth of 13m, sand and mud, between 1.5 miles and 2 miles ESE of the fort.

A straight beach, 4.5 miles long, extends from the mouth of the Pra River to Kafodzidzi, a point composed of prominent red cliffs. An irregular reef, lying 0.2 mile offshore, commences 1 mile W of the red cliffs and fronts their whole length.

1.23 Assay Point (5°03'N., 1°30'W.), located 3 miles ENE of Kafodzidzi, is surmounted by Gold Hill, an isolated hummock, which has a remarkable appearance when seen from the W. Foul ground and depths of 5 to 9m extend up to 1.2 miles SE of the point.

Between Assay Point and Komenda, 1 mile ENE, the coast is low and fronted by reefs. A lagoon lies close E of Komenda. Ampenyi (Ampeni), a small village, stands 3.5 miles ENE of Komenda and the town of Brenu-Achinum (Breni-Akyim) is situated on the summit of a small hill, close ENE of it.

Nkwanda (Ankwana) (5°04'N., 1°24'W.), a village, stands on the beach, 2.3 miles E of Brenu-Achinum.

Busum Accra Reefs fringe the coast in the vicinity of Nkwanda. These reefs appear in four distinct patches on which the rollers break heavily. Depths of less than 8m lie close to the outer edge of the reefs which extend up to about 0.5 mile offshore.

Elmina Point (5°05'N., 1°20'W.), formed by the extremity of a low and rocky peninsula, is situated 2.7 miles E of Nkwanda. It is fronted by a reef off which rollers break, depending on the state of the sea and swell. The coast between is formed by a hard and sandy beach. Elmina Bay, about 0.5 mile wide, is entered close N of the point.

Elmina, a small town, extends around the shores of the bay. A small fort is located on Elmina Point and a prominent fort, 30m high, stands on a hill and overlooks the S part of the town.

Anchorage may be obtained off the bay in a depth of 13m, sand and mud, about 1.5 miles SE of the fort on Elmina Point. Anchorage may also be taken in a depth of 9m, black mud, about 0.9 mile E of the fort or in a depth of 5m, fine black sand with fair holding ground, about 0.3 mile offshore.

1.24 Cape Coast (5°06'N., 1°14'W.) is situated 6.7 miles E of Elmina. The coast between is bordered by a sandy beach with regular soundings offshore, with the only exception being at the W end of the beach where there are two small rivers, each closed by a bar, which have a rocky stretch between them.

Cape Coast Castle, white and conspicuous, stands on a great mass of red sandstone lying on a projecting point. The town of Cape Coast stands behind this castle. A prominent mast, with an elevation of 210m, is situated 1 mile N of the castle and is marked by obstruction lights at night. The conspicuous build-

ing of a school is located 2 miles W of the town.

During the dry season, vessels can anchor in a depth of 9m about 0.5 mile SE of the castle. During the rainy season, there is usually a long swell. Vessels should then anchor in a depth of 18m about 1.5 miles SE of the castle.

Between Cape Coast and Queen Ann's Point (Queen Anne Point), 2 miles NE, the coast consists of many small bays and points which are fronted by rocks. Generally, an almost continuous line of breakers appears along these rocks.

Queen Ann's Point is bold and steep. Its summit is surmounted by a village and the ruins of a fort. A small river, the mouth of which is closed by a bar, lies on the W side of the point. The adjacent land is hilly and covered with trees.

Between Queen Ann's Point and Moree Point, 1.3 miles NE, the shore is fronted by several rocks. The ruins of a fort, which are difficult to distinguish against the dark background, are situated on the heights above Moree Point. A black rock, with two heads on which the sea breaks, lies 0.2 mile E of Moree Point.

The coast between Moree Point and Kromantse, 8.3 miles NE, is foul; rocks extend up to 0.3 mile offshore in places.

1.25 Anashun Point (5°09'N., 1°10'W.), located 1.8 miles NE of Moree Point, is bold and consists partly of sand and partly of rock. Several prominent hills, covered with large trees, rise 5 miles NW of this point.

Biriwa Rock, over which the sea breaks, lies 0.7 mile ENE of Anashun Point. The village of Biriwa is situated on the coast, 0.3 mile NNW of this rock.

Anomabu Fort (5°10'N., 1°07'W.) is conspicuous and stands in front of the town of Anomabu, at the entrance to a cove. Anchorage may be obtained in a depth of 16m, blue mud and sand with good holding ground, about 2 miles SE of the fort.

Kromantse (Kromanti) (5°12'N., 1°04'W.), a town, stands at the corner of a ridge of high ground on the E side of a river valley. It may be identified by several very tall trees. A conspicuous fort stands on a bold rocky base, 1 mile SW of the town. It is a square building, constructed of reddish earth, with a tower, 44m high, rising at the SW side.

Saltpond (5°12'N., 1°03'W.), a principal commercial center, is situated 1.2 miles E of Kromantse. The town can be recognized by its numerous white houses, two churches, and a large red earth building standing on a height to the N.

Anchorage may be obtained in a depth of 13m, hard sand, about 1.5 miles S of the town.

AGP1 Terminal (5°05'N., 1°00'W.), an offshore oil terminal, lies 7.5 miles SSE of Saltpond, in a depth of 26m. It consists of a lighted production platform and a storage vessel (Farmer).

1.26 The character of the coast changes in the vicinity of Saltpond. It extends 14 miles E to the village of Aboana in an unbroken straight line of sandy beach. The shore, most of which is cleared of trees and covered with long grass, is very low. Several villages, each standing near clumps of coconut trees, are situated along this stretch and two salt water lagoons lie behind the coast. The approach to this stretch of coast is clear, without any off-lying rocks, and the bottom is composed of fine sand and broken shells, with occasional mud.

Barbara Pow Hill, 97m high and peaked, stands 3 miles in-

land, 7.8 miles ENE of Saltpond.

Tantankweri Point (Tantum Point) (5°13'N., 0°48'W.) is located 2.3 miles E of Aboana. The coast between is composed alternately of rock and sand. The village of Tantum, with the ruins of an old fort covered with jungle close NE, stands on the point.

Babli Point, located 1.2 miles NE of Tantankweri Point, is formed by a large black rock fronted by foul ground.

Kwaben Hill (Obusumadi) (5°17'N., 0°47'W.), rising 3.5 miles N of Babli Point, is 146m high and table-topped. It forms an excellent landmark for this part of the coast.

Between Babli Point and Winneba Point, 12.5 miles NE, the coast is formed by several small and sandy bays which are separated by points fringed with some detached rocks.

Apam Point (5°17'N., 0°44'W.), located 5 miles NE of Babli Point, is fringed by above and below-water rocks. This point appears like a small hummock on the E side of a saddle-shaped hill which rises immediately from the sea. A ruined fort stands on the hummock.

Abrekum (5°18'N., 0°43'W.), a village, stands 1.5 miles NE of Apam Point. Assakri, consisting of two groups of above and below-water rocks, lies about 0.4 mile SSE of this village.

Ejisimanku Hill (5°20'N., 0°41'W.) is a bold and conspicuous headland with a steep ascent from the sea. Its summit, 180m high, is the E of two peaks. When viewed from the SE, it appears as a single conical hill with a flat top.

Muni Lagoon, lying 1 mile E of Ejisimanku Hill, is open to the sea only at the height of the rainy season. A heavily-breaking reef, about 1 mile long, fringes the shore at the W side of the foot of Ejisimanku Hill.

1.27 Winneba (5°20'N., 0°37'W.), a town and resort, stands near the beach of a small inlet. It is situated within a hollow lying between two arms of slightly higher ground which extend to the sea. The higher ground, located on either side of the town, is about 30m high and mostly covered with trees of medium size. A white customs shed, situated on the beach, and a radio mast, standing about 1.7 miles N of it, are conspicuous from seaward. A prominent administrative building, with a flagstaff standing close SW of it, is situated 0.5 mile S of the customs shed. Vessels can anchor in a depth of 7m, sand, about 0.8 mile SE of the customs shed.

Meredith Point (5°23'N., 0°30'W.) is located 7.8 miles ENE of Winneba. The coast between consists of a low and sandy beach. It then turns to the N and becomes rocky. The land rises close inland to several hills which are generally bare of trees, but covered with low and stunted bushes. The most prominent hill is 114m high and stands 2 miles WNW of the point. In addition, several conspicuous hills rise farther inland. Apra, with two hummocks, is 218m high and stands 10 miles N of Meredith Point. Camels Hump, about 360m high, stands 5.5 miles NNW of Apra. It is the central peak of a range which extends about 6 miles in a NE to SW direction.

Dampa Hill (5°29'N., 0°23'W.), 103m high, stands 9.3 miles NE of Meredith Point. It is conspicuous and forms the SW end of a range of hills which extend NE. Mount Bannerman, 148m high, rises 6.5 miles NE of Dampa Hill.

Caution.—It was reported (1994) that a wreck lies 2.3 miles offshore, about 11.5 miles NE of Meredith Point. The two masts of the sunken vessel are visible at HW; the wreck is

marked by a buoy.

Oil exploration is being carried out along this coastal area and vessels are warned that numerous well heads, submerged pipelines, drilling rigs, and platforms may be encountered. Vessels should also exercise care when navigating in this vicinity, as many of the installations are often moved and are not charted.

1.28 Accra Point (5°32'N., 0°13'W.), on which stands a fort, is located 19 miles NE of Meredith Point. It is fronted by shoals, with depths of less than 5m, and foul ground. Kawli Lagoon lies close to the coast, 0.5 mile W of the fort. Accra Light is shown from a prominent tower, 28m high, standing close SW of the fort.

Accra (5°32'N., 0°12'W.), the capital of Ghana, extends NW and NE from Accra Point, but has no docking facilities and little protection from heavy seas. Several prominent tall buildings and churches stand in the town, which is fronted by red cliffs, about 8m high.

An aeronautical light is occasionally shown from the roof of a hanger standing near the airport, 4.6 miles NE of Accra Light.

Christiansborg Castle, a conspicuous white building, stands on a rocky point, 1.9 miles ENE of Accra Light.

An open roadstead lies S of the city, but is encumbered by numerous foul areas, obstructions, and wrecks. Since the opening of the port of Tema, this roadstead is reported to be no longer used by cargo vessels.

Caution.—Due to the existence of submarine cables and obstructions, areas, within which anchoring and fishing are prohibited, front the town and may best be seen on the chart.

A Prohibited Anchorage Area, with a 10-mile radius centered on Christiansborg Castle, fronts the town and may best be seen on the chart. In an emergency, vessels intending to anchor within this area must contact the naval base at Tema or the Tema port authorities.

The Ghanaian Authorities claim a Prohibited Area, with a 5-mile radius centered on Christiansborg Castle, within which ships must not enter. In an emergency, vessels forced to violate this prohibition must contact the naval base at Tema or the Tema port authorities.

1.29 Between Accra and Tema, 14 miles ENE, the coast is generally low and featureless. Inland, the country is grassy, partly open, and diversified with groves of trees, bushes, and scrub. A ridge, 24m high to the top of the trees, runs along the shore and is broken at intervals by lagoons and stretches of low-lying country. These lagoons, which are not open to the sea, flood large areas behind this ridge during the rainy season.

The Shai Hills rise to a height of 289m and stand 28 miles NE of Accra Point. This picturesque range is very broken and rugged in outline. It is conspicuous in clear weather from seaward.

Teshe (Teshi) (5°34'N., 0°06'W.), a small town, stands 7 miles ENE of Accra. It is situated on the top of a ridge and extends down to the sea, where there are rocky cliffs, about 10m high. A number of prominent white buildings stand on the outskirts close W of the town. A church, with a low white roof and belfry, stands at the W end of the town and is conspicuous from S and W. Landing is extremely difficult and dangerous. It is on-

ly practicable in surf boats within a small bay lying near the mouth of a lagoon, close NE of the town.

Between Teshe and Tema, 7 miles NE, the coast consists of a sandy beach. Nungwa Point (Nungua Point), located 2 miles ENE of Teshe, is the SW of two points, 0.7 mile apart, and is fringed with rocky ledges. A shallow bay, in which canoes may be landed, lies between these two points. The village of Nungwa (Nungua), almost hidden by trees, stands on rising ground, 0.3 mile inland.

Greenwich Rock (5°37'N., 0°01'W.), 2.1m high, lies close offshore, 3.5 miles ENE of Nungwa Point. It can be easily recognized against the white background of the beach. Several other rocky ledges, over which the sea breaks heavily, front the shore in this vicinity.

Caution.—Between Accra and Tema, numerous fishing canoes may be encountered offshore within the 200m curve. They fish with drift nets, moored nets, and hand lines by day and at night.

Tema (5°37'N., 0°01'E.)

World Port Index No. 46070

1.30 The port of Tema is the principal port in the Republic of Ghana. Tema provides extensive cargo facilities and is a major fishing center. The town stands on a ridge close N of the main harbor, which is formed by two rubble breakwaters.

Tema Home Page

<http://www.ghanaports.gov.gh>

Winds—Weather.—Winds from the W and SW prevail throughout the year, except between December and February, when the harmattan prevails from the NE. Dangerous squalls from the E occur mostly between May and July. The dry season lasts from December to February while the monsoon season continues from March to November.

Tides—Currents.—The tides rise about 1.5m at springs and 1.2m at neaps.

The Guinea Current, at a distance of about 3 miles SE of Tema, sets NE along the coast at a rate of about 0.5 knot.

Depths—Limitations.—The main harbor entrance is 240m wide. It was reported (2001) that the access channel, 125m wide, had been dredged to a depth of 12.5m.

An oil berth, with mooring buoys and dolphins, is situated near the head of Lee Breakwater. It can accommodate tankers of up to 244m in length and 9.7m draft.

A dredged fairway leads to Volta Wharf, a private aluminum berth, which lies on the inner side of Lee Breakwater, N of the oil berth. It can accommodate vessels of up to 175m in length and 9m draft.

No. 1 Quay, situated on the NW side of the harbor, has seven berths. No. 2 Quay, which extends NE from Main Breakwater, is 878m long and provides five berths. These berths provide facilities for general cargo, ro-ro, container, bulk, and timber vessels. Vessels of up to 275m in length and 11.4m draft can be accommodated alongside. Vessels with drafts of over 9m can only enter at HW.

Two fishing basins, protected by breakwaters, lie at the E

side of Lee Breakwater.

Aspect.—Main Breakwater, 2,000m long, extends ESE and then ENE to form the S side of the harbor. Lee Breakwater, 1,500m long, extends S from a point on the shore about 1 mile NE of the root of Main Breakwater. It forms the E side of the harbor and the W side of the fishing basins. These breakwaters are composed of rubble and are 4m high. It is reported (2012) that the entrance to the harbor may be obscured by vessels in the anchorage.

Chemu Point Light is shown from a prominent tower, 45m high, standing 1.2 miles NNE of the head of Main Breakwater. A conspicuous chimney, 152m high, is situated about 1 mile N of this light. A conspicuous hotel, marked by a light, and the port administration building, 35m high, stand 0.7 mile NNW and 0.5 mile N, respectively, of the root of Main Breakwater.



Chemu Point Light

A racon is situated at the light structure standing on the head of Main Breakwater.

Pilotage.—Pilotage is compulsory and is available 24 hours. Pilots can be contacted on VHF channel 14 or 16 and board about 1 mile E of the head of Main Breakwater.

Regulations.—Vessels should send an ETA 72 hours, 24 hours and 6 hours in advance. The messages should contain the following information:

1. Vessel name.
2. Date of arrival.
3. Draft fore and aft.
4. Length.
5. Gross tons.
6. Net tons.
7. Time in port.
8. Last port of call.
9. Next port of call.
10. Nationality.
11. Port of registry.
12. Call sign.
13. Agent.
14. Duty officer.
15. IMO number.
16. MMSI number.

Vessels from Abidjan should also forward their ETA message 48 hours prior to arrival.

Contact Information.—Tema Port Authority may be con-

tacted, as follows:

1. Telephone: 233-303-204385
2. Facsimile: 233-303-204136
3. E-mail: tema@ghanaports.net

Anchorage.—Anchorage may be obtained off Tema in depths of 28 to 30m, good holding ground. However, vessels should avoid anchoring on the rocky ridge, which has depths of 17 to 18m, lying 1.5 miles off the port.

Caution.—An area, within which anchoring and fishing are prohibited, fronts the port entrance and may best be seen on the chart.

The latest information should be requested from the authorities in advance, as actual depths in the harbor may be less than charted due to siltation.

The harbor entrance is affected by swell and vessels may experience heavy rolling.

A dangerous wreck lies about 1.8 miles ENE of the harbor and is marked by a buoy. It was reported (2012) that the masts are not visible. It is reported (1992) that several uncharted wrecks and a number of stranded wrecks lie to the N of this wreck.

It is reported (2002) that piracy has been a problem for vessels anchored off the port.

It is reported (2004) that extensive construction is being carried out within the port.

Tema to Cape Saint Paul

1.31 Breaker Point (5°39'N., 0°02'E.), located 0.7 mile NE of Tema, is fronted by a coastal bank, with depths of less than 5m, which extends up to 0.2 mile SE and 0.5 mile SW of it.

Grove Point (5°40'N., 0°03'E.) is located 1.5 miles NE of Breaker Point. The coast between consists of a sandy beach interspersed with rocky ledges. Numerous rocks, over which the sea breaks heavily, front this point.

Kpone Bay (5°40'N., 0°03'E.) is entered between Grove Point and Tenpobo Point, 5.5 miles NE. It has depths of 7 to 13m over a bottom formed by sand, shell, and coral. The village of Kpone, obscured by trees, stands on the top of a hill which rises close inland, 1.5 miles NNE of Grove Point. A white house, situated at the W side of the village, is conspicuous from the W.

Prampram (5°43'N., 0°06'E.), a town, stands 3.5 miles ENE of Kpone. The coast between consists of a beach fringed with palm trees. A lagoon lies in the flat country behind the beach. The town is composed of an upper and a lower part. The upper part stands on the summit of a ridge, 50m high, but is partly obscured from seaward by trees. The lower part is not visible, but a white house is situated on the foreshore in front of it. Anchorage can be obtained, in a depth of 11m, about 1 mile S of this white house.

Vernon Bank (5°42'N., 0°11'E.), a narrow spit, has depths of 6 to 9m and extends about 12 miles ENE from the vicinity of Grove Point. The bottom of this bank is very irregular and is composed of rocky ledges and patches of sand, stones, and coral. There is a pronounced swell over the bank and it sometimes breaks in heavy weather.

Jange Lagoon (River Ningo) enters the sea through a narrow

mouth lying between two sandy points, 4.5 miles NE of Prampram. It is reported to be always open and navigable by canoes whenever the heavy surf, which rolls in on the bar, allows.

The large white ruin of a fort is situated in a grove of tall trees on the E entrance point of Jange Lagoon.

Caution.—Numerous stranded wrecks lie along the shore between Tema and Prampram.

1.32 The coast extending for about 4 miles E of the mouth of Jange Lagoon is fringed by a broad ledge of rocks, over which a small river discharges. The edge of this ledge is nearly steep-to and heavy surf rolls over it incessantly.

Between the above ledge of rocks and the Volta River, 26 miles E, the shore consists of an uninterrupted beach. For 5 miles E of the ledge, the coast is formed by a low, clay cliff. Then, for the next 13 miles, it is formed by a sandy ridge, 4 to 5m high, which is covered by a few bushes. This ridge separates Songaw Lagoon, a large salt-water lagoon, from the sea. The lagoon is caused by the overflow from the Volta River. Its surface is broken by large tracts of swamps, some covered by grass and others by jungle, with a few high scattered trees.

Ada (5°47'N., 0°38'E.) is situated 2.5 miles W of the entrance to the Volta River. This town may be easily identified by a prominent mission house standing near its W end. The house is long, white, and flat-roofed.

Anchorage may be obtained in a depth of 13m, sand, about 1 mile SSE of the mission house. Vessels are advised not to anchor any closer to the shore as the depths decrease quickly and the swell is heavy at times.

1.33 The Volta River (5°46'N., 0°41'E.) empties into the sea between two low and sandy points, about 0.5 mile apart. The trees in the vicinity of the entrance attain an unusual height. A dark grove stands on the E bank, 1 mile N of the entrance; from a distance it resembles a bluff headland. Another grove, resembling a conical hill, stands 2 miles E. Three groves of tall trees stand on the W side of the river entrance.

The river is subject to considerable differences in water level according to the season. It begins to rise early in June and commences to fall about the middle of October. The river is usually at its lowest in March and at its highest in September.

The bar, 0.2 mile wide, lies between the extremities of two lines of very heavy breakers which extend up to over 1 mile SE from the river entrance points. It has a least depth of 2.4m and should only be crossed in good weather.

Within the entrance, the river expands into a wide basin containing several islands, most of which are covered with thick bushes and trees. Local knowledge is necessary. Vessels with drafts up to 1.8m can ascend up to 45 miles from the mouth between July and November. During the remainder of the year, vessels with similar drafts would experience difficulty in proceeding only 40 miles above the entrance.

For about 7 miles E of the river entrance, the land is covered with dense forest, principally consisting of fan palms.

Cape Saint Paul (5°50'N., 0°58'E.), marked by a light, is located 18 miles ENE of the mouth of the Volta River. The coast between is fronted by a beach. For further information, see paragraph 2.2.

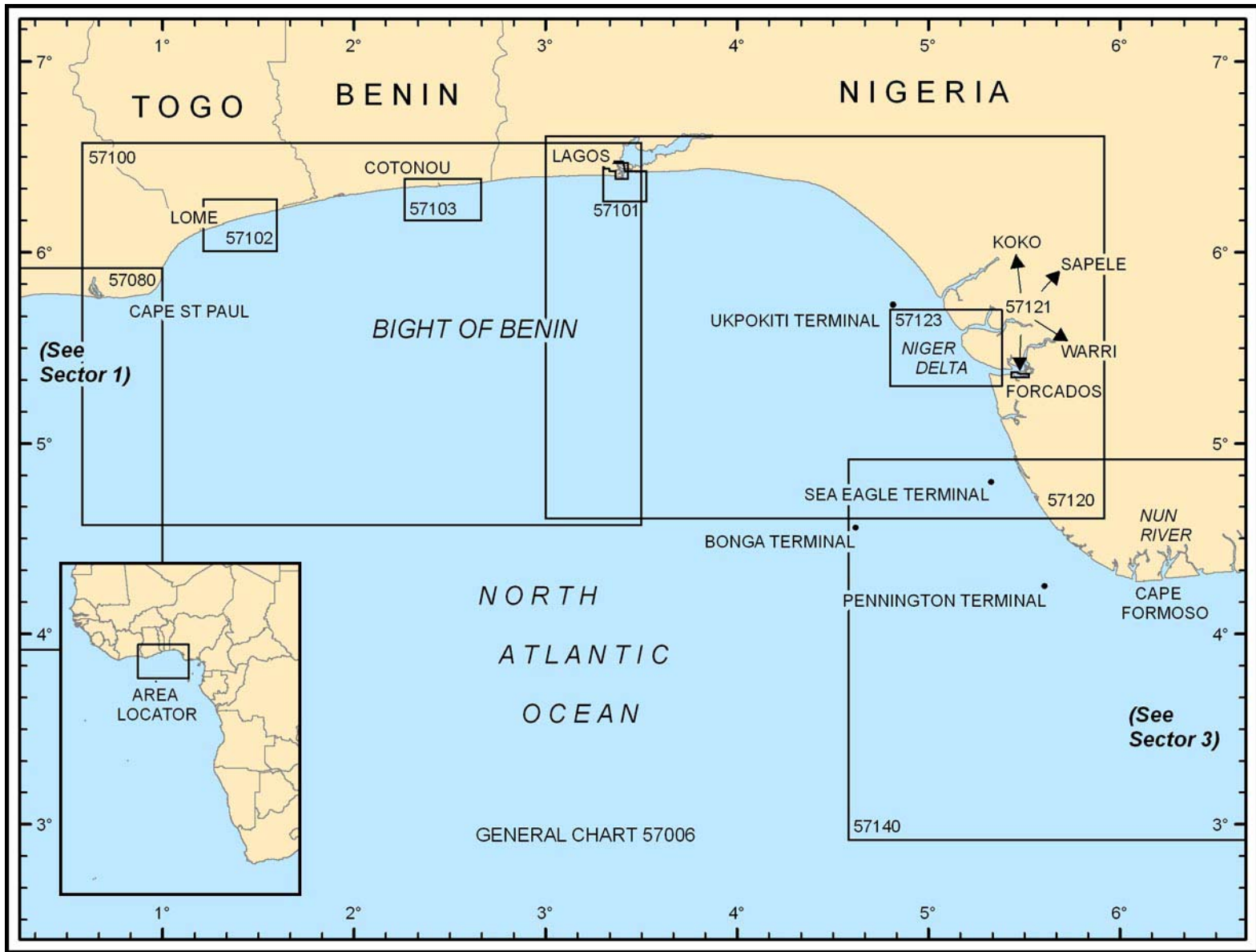
Caution.—Depths in the approaches to the Volta River are liable to change. When passing the river entrance, vessels

should keep in depths of 22m or more in order to avoid getting within the influence of the steep breakers and rollers.

Vessels should also guard against the inward set of the flood tide.

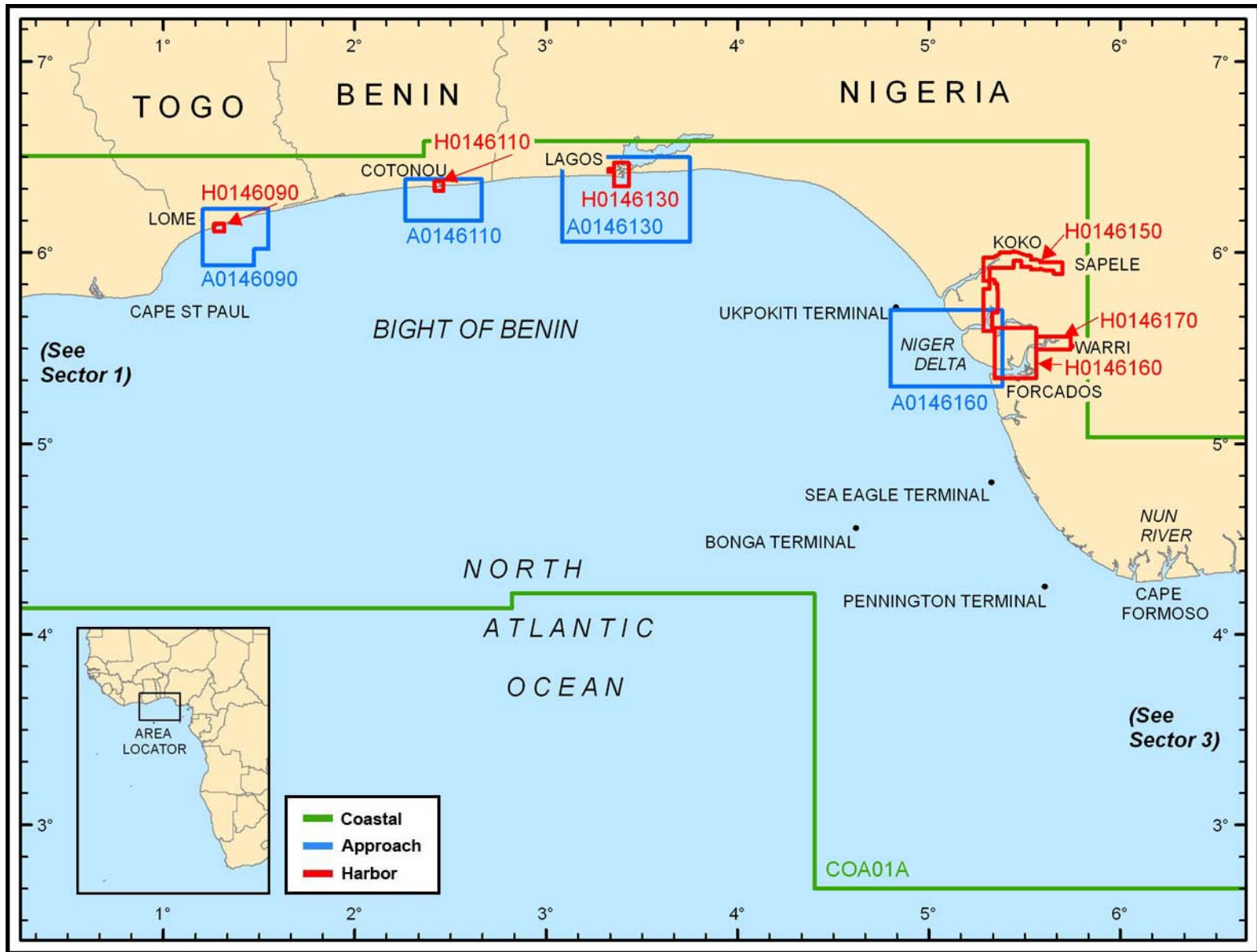
A detached shoal patch, with a depth of 16.1m, is reported (1961) to lie about 13.5 miles SSW of Cape Saint Paul.

A detached shoal patch, with a depth of 27m, is reported (1963) to lie about 11 miles S of Cape Saint Paul.



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

SECTOR 2 — CHART INFORMATION



Additional DNC library coverage may be found in NGA DNC 01 (Limited Distribution) disc within the README\GRAPHICS folder.

SECTOR 2 — DNC LIBRARY INFORMATION

SECTOR 2

TOGO, BENIN, AND NIGERIA—CAPE SAINT PAUL TO CAPE FORMOSO

Plan.—This sector describes the African coast between Cape Saint Paul and Cape Formoso, 325 miles ESE. The descriptive sequence is from W to E.

General Remarks

2.1 The coast of the Bight of Benin, lying between Cape Saint Paul and Cape Formoso, forms a monotonous beach so uniformly low and flat that not a single inland landmark is visible from offshore. The elevation of the ground seldom exceeds 3m and even the most prominent clumps of trees do not rise to heights of more than 20m. This stretch of coast includes parts of Ghana, Togo, Benin (formerly Dahomey), and Nigeria.

The W shore of the bight is covered with jungle and groups of trees interspersed with numerous villages and detached huts. Near Keta, 5 miles N of Cape Saint Paul, the trees are high and form large and distinct groups. The trees then extend 45 miles ENE in a continuous line to Agoue, where they terminate except for a few dotted here and there. Throughout the long extent of coast forming the head of the bight, Lagos Harbor is the only permanent opening or outfall for the water in the lagoons. However, several partial breaks in the sand hills, through which the lagoons pour the overflow, form during the wet season (April to October). The SE shore of the bight has a distinctive character. It is no longer fringed by a bright sandy beach, but has a continuous dense mass of trees growing on a muddy foreshore. There are very few landmarks along this part of the shore, except for several rivers and creeks forming a delta.

Winds—Weather.—The land is frequently obscured by haze, locally known as “The Smokes,” which in the dry season (November to May) prevails throughout the entire Bight of Benin. On the windward or W side of the bight, this haze is not so strong and the bright sandy beach, with its fringe of surf, can usually be distinguished. The haze generally lasts for about 3 hours, beginning after sunrise, and is then replaced by a sea breeze.

The harmattan, a wind of continental origin, is a hot, dry wind from the NE quadrant. It reaches the shores of the Gulf of Guinea and extends seaward. This wind is prevalent from December through early March and is usually laden with fine dust which can reduce visibility in the form of haze. The harmattan generally occurs between Cape Palmas (4°22'N., 7°44'W.) and Douala (4°03'N., 9°41'E.).

Tides—Currents.—The beach has a tidal range of about 1.5m, but the surf is so heavy and incessant along the shore and the swell is so constant that actual measurements in the W part of the bight are very difficult. Along the SE side of the bight and in the vicinity of the river bars, where the water is smooth, tidal measurements have been established by the authorities and are used by local boats.

The influence of the tidal currents generally extends up to between 4 and 9 miles off the mouths of the rivers. The ebb current is increased by the discharge of fresh water and attains a rate of about 3 knots at the river mouths. The rate of the flood

current is generally much less than that of the ebb. At half ebb, a volume of turbid and brownish water is discharged from the rivers and usually carries floating uprooted trees, bushes, and clumps of leaves. This discharge discolors the sea with a brown scum for several miles. During the rainy season, the discoloration may extend up to 10 miles from the coast.

Regulations.—It is reported that all Nigerian ports are closed from 2000 to 0600. In addition, vessels are prohibited from transiting or anchoring in the approaches to the ports during this period unless they have been previously cleared for entry and are registered with the local authorities. Due to the complicated nature of the regulations, vessels are advised to communicate with their local agents well in advance in order to ensure compliance.

Two months prior to arrival in Nigerian waters, agents must register vessels with the Nigerian Ports Authority (NPA) in order to obtain a Ship Entry Notice (SEN). This does not apply to vessels carrying petroleum products in bulk or in ballast. Vessels cannot enter the territorial waters of Nigeria without a SEN.

For information concerning the Nigerian Ship Entry Notice (SEN), Nigerian VHF communications regulations, and reporting requirements for Nigerian oil terminals, see Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

Anchorage.—The bight affords excellent holding ground out to a depth of about 30m. The inshore bottom is composed throughout of stiff black mud and broken shells covered by sand. Outside the 30m curve, the bottom is generally composed of olive-colored mud, broken shells, and decayed vegetable matter. Anchoring anywhere within the bight must be prompted by necessity and not by comfort, as vessels lie more or less across the swell and usually experience unceasing heavy rolling, according to the strength of the current. In the W part of the bight, particularly toward Cape Saint Paul, the swell is not so heavy. Along the SE shore of the bight, vessels should anchor, in depths of 18 to 22m, about 9 miles offshore in order to avoid shoal water and because of the heavy ground swell that is perpetually rolling in.

Caution.—In the inland waters of Nigeria, rafts formed of timber and oil drums may be encountered. These rafts usually show a red light at each end at night.

Although the surf may occasionally appear practicable, landing should not be attempted anywhere between Cape Saint Paul and the end of the sandy beach located 60 miles E of Lagos, except in local canoes and surf boats.

The West African Gas Pipeline runs from 7.5 miles NE of Takoradi, Ghana through the coastal waters of Togo and Benin to 6.75 miles ESE of Badagri, Nigeria. There are several areas with connections along this route. The pipeline, which can best be seen on the chart, has been buried in some areas but not in others. Caution is advised when navigating these areas and anchoring is prohibited within 1 mile of the pipeline.

Oil and gas development areas and fields, with associated

rigs, platforms, riser pipes, wellheads, submarine pipelines, terminal buoys, and storage vessels, may be encountered up to 50 miles off the coasts described in this sector.

Some of the well heads may protrude more than 5m above the sea bed and may be unmarked. Some of the platforms and structures may be disused, abandoned, and unlit. In many cases the submarine pipelines are not buried in the sea bed and depths over them may be reduced by as much as 2m. In addition, many temporary structures and objects associated with oil and gas exploration may not be charted.

Vessels are cautioned that security off the West African coast and within some ports is a serious problem. In recent years (1986-2014), attacks by pirates and thieves have been reported. These have generally taken place at the outer anchorages, but some have occurred while berthed alongside. In the event of a piracy incident, vessels should not rely on the assistance of the local authorities, which are reported in the past to have failed to respond.

Cape Saint Paul to Lome

2.2 Cape Saint Paul (5°50'N., 0°58'E.) is formed by a prominent and rounded section of the coast, but its exact position is difficult to define. The cape is usually considered to be located near the village of Woe (Weh).

A light is shown from a pile structure, 25m high, standing on this cape near the village of Woe. A stranded wreck lies close to the shore 1.5 miles SW of the light.

The coast between Cape Saint Paul and the town of Keta, 5.5 miles N, is formed by a narrow ridge or barrier of sand which separates the sea from Keta Lagoon. This lagoon extends N for about 14 miles and W for about 5 miles. Keta, with a fort, is conspicuous from seaward. A large square bungalow, with a flagstaff at its W side, is situated close to the fort.

Anchorage may be taken in a depth of 9m about 0.6 mile SE of Keta. However, rollers may come in heavily and without warning at this anchorage. Anchorage may also be taken in a depth of 18m about 1.8 miles SE of the fort. Vessels usually lie head to the swell at this anchorage due to the trend of the coast.

Between Keta and Lome, 18 miles NE, the coast is low and flat, with an occasional large clump of palms. It is fronted by a yellow sandy beach on which the surf breaks heavily. Denu stands 15 miles NE of Keta. This village can be identified by a conspicuous house, situated near the beach, and some factories, standing about 0.5 mile NE of it. Afloao, another village, is situated 0.4 mile NE of Denu.

The border between Ghana and Togo lies about 0.3 mile E of Afloao village and is indicated by a beacon.

Caution.—A wave-recorder lighted buoy, with a topmark, is moored about 3 miles E of Keta.

Lome (6°08'N., 1°17'E.)

World Port Index No. 46090

2.3 Lome is situated 23 miles NE of Cape Saint Paul. It is also a port of entry for Niger and Burkina Faso. The harbor, which is formed by breakwaters, lies 5 miles E of the city.

Winds—Weather.—During January and February, calm N winds are to be expected, but at other times W to SW winds

predominate. The rainy season is from April to July and the dry season is from February to March.

Lome Home Page

<http://www.togoport.tg>

Tides—Currents.—The tide rises about 1.6m at springs and 1.3m at neaps.

Depths—Limitations.—The harbor entrance channel is dredged to a depth of 14.5m. However, the dredged fairway, which may best be seen on the chart, acts as a sand trap and less water than charted may be reported to exist at times due to silting.

There are facilities for general cargo, ro-ro, bulk, container, and tanker vessels.

There are two jetties within the harbor. They provide 1,100m of total berthing space, with depths of 11 to 12m alongside. Cargo vessels up to 270m in length and 12m draft can be handled.

A bulk berth is situated near the middle of the inner side of the E breakwater. It has a depth of 12.2m alongside and can accommodate vessels of up to 210m in length and 11.5m draft.

A tanker berth is situated close to the head of the E breakwater. It has a depth of 16m alongside and can accommodate vessels of up to 250m in length and 14m draft.

Aspect.—The main breakwater, 0.6 mile long, extends ESE from the shore and protects the harbor from S. The E breakwater, 0.5 mile long, extends S from a position on the shore located 0.6 mile NE of root of the main breakwater.

Lome Light (6°08'N., 1°15'E.) is shown from a structure surmounting a prominent water tower, which stands near the shore 2.2 miles W of the root of the main breakwater.

Baguida Light is shown from a pylon standing 2.4 miles NE of the head of the main breakwater.

The main breakwater is illuminated along its whole length by lights situated 46m apart. A lighted buoy is moored about 0.4 mile ESE of the head of the main breakwater.

Several conspicuous warehouses stand close NE of the root of the main breakwater. A prominent radio (aeronautical beacon) mast stands near the airport about 2.5 miles NW of the root of the main breakwater.

A prominent four-story hotel stands in the W part of the town about 2 miles WNW of Lome Light and a conspicuous high-rise hotel, with 25 stories, is situated 0.5 mile NW of it.

Pilotage.—Pilotage is compulsory for all vessels over 300 gt and is available 24 hours. Vessels should send an arrival notification and a request for pilotage, via the agent, as soon as possible. The message must include the ETA, vessel length, draft, quantity of cargo to be handled, number of stevedore gangs required, and any dangerous cargo on board.

A tug is compulsory for vessels over 500 gt; two tugs are compulsory for vessels over 10,000 gt.

Pilots may be contacted by VHF channels 12, 14, or 16 and board in position 6°07.3'N, 1°17.5'E.

Anchorage.—Vessels waiting for a pilot should anchor in depths of 15 to 17m, sand, between 0.5 and 1 mile SSW of the main breakwater.

Caution.—An area, within which anchoring is prohibited, lies E of the harbor entrance and may best be seen on the chart.

A dangerous wreck (position approximate) is reported (1997) to lie about 1.8 miles SSW of the head of the main breakwater.

An obstruction, with a depth of 15.6m, is reported (2004) to lie (position approximate) about 1.4 miles SSE of the head of the main breakwater.

Contact Information.—Lome Port Authority can be contacted, as follows:

1. Telephone: 228-22274742
228-22273391
2. Facsimile: 228-22270818
228-22272627
3. E-mail: togoport@togoport.tg

Lome to Cotonou

2.4 Between Lome and Kpeme, 15 miles ENE, the coast consists of small, bushy sand hills with a few isolated palm trees. The shore is fronted by a sandy beach.

Kpeme (6°12'N., 1°31'E.) (World Port Index No. 46095) consists of a phosphate-loading facility and an offshore tanker berth.

Depths—Limitations.—A jetty, which is reported to be radar conspicuous, extends 0.7 mile S from the coast and has a depth of 13m alongside the head. Two loading islets, 76m apart, lie close SSW of the head of the jetty. These islets, along with four dolphins and several mooring buoys, form a loading berth. Vessels of up to 60,000 dwt, 225m in length, and 33m beam can be accommodated. A maximum draft of 9.5m is permitted for berthing while a maximum draft of 11.6m is permitted for departing.

A submarine pipeline extends 0.4 mile E from the head of the jetty to an offshore tanker berth. This berth consists of several mooring buoys and lies in a depth of 9.8m. Tankers of up to 40,000 dwt can be handled. It was reported (1987) that swell in the vicinity of the berth had reduced the maximum permitted draft to 8.2m.

A light is shown from the SW loading islet near the head of the jetty.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channels 11, 12, 13, and 16 and board about 1 mile S of the head of the jetty. They remain on board throughout the loading procedure. Vessels should send an ETA 72 hours and 24 hours in advance.

Anchorage.—Vessels can anchor in depths of 15 to 20m, mud and sand with good holding ground, between 1.5 and 2 miles SE of the head of the jetty.

Caution.—Severe coastal erosion occurs in the vicinity of Kpeme and nine groins have been constructed in order to control it.

2.5 Anecho (Anecho) (6°14'N., 1°35'E.) stands 5 miles ENE of Kpeme and is one of the largest towns along this part of the coast. It can easily be identified from offshore by the tower of a prominent yellow church and two large factories which are situated at its E side. The town stands on a strip of beach which is almost entirely free of trees, except at its W part.

Vessels can anchor in a depth of 15m, fine sand, about 1 mile S of the E end of the town. Local knowledge is advised.

A beacon is situated on the coast, 1 mile ENE of the town. It was reported (1995) that a prominent radio mast stands 1 mile NW of this beacon.

The border between Togo and Benin lies about 2 miles E of Anecho, in the vicinity of a narrow lagoon.

Caution.—Due to severe coastal erosion, a breakwater and five groins have been constructed in the vicinity of Anecho.

2.6 Agwe (Agoue) (6°15'N., 1°40'E.), consisting of numerous houses and several factories, is situated 5 miles E of Anecho. A prominent chapel and a large yellow church stand, respectively, near the W and E ends of this village.

Grand-Popo (6°17'N., 1°50'E.) stands 15 miles E of Anecho. The shore between is bushy with a few scattered palm trees. This town may be recognized by several prominent factories and a number of relatively high houses.

Bouche du Roi, lying 3.5 miles E of Grand-Popo, is the outlet of a lagoon which extends behind the coast. The water discharging from this outlet, which is subject to frequent change, discolors the sea for a considerable distance offshore, particularly during the rainy season (May to July).

Ouidah Plage (6°19'N., 2°06'E.), situated 16 miles E of Grand-Popo, is conspicuous from seaward. This village consists of two groups of buildings with white roofs. An isolated house, with a veranda and a prominent red roof, stands in the space between the two groups. From E, the prominent white clock tower of a church standing in the town of Ouidah, 3 miles inland, can be seen above the trees. Anchorage may be obtained, in a depth of 13m, brown sand, about 1 mile S of the highest storehouse in Ouidah Plage.

Avrekrete-Plage is situated 7.5 miles E of Ouidah Plage. This village can be identified by a rather large, dark house and a white wall standing at its E end. The coastal bank, with depths of less than 12m, extends up to about 1 mile seaward in the vicinity of this village.

Godomey Plage is situated 14 miles E of Ouidah Plage. Two prominent radio masts and the conspicuous control tower of an airfield stand 4 miles ENE and 3 miles ENE, respectively, of this village.

Cotonou (6°21'N., 2°26'E.)

World Port Index No. 46110

2.7 Cotonou, a sheltered harbor, lies 6 miles E of Godomey Plage and is protected by breakwaters. It is situated close W of the mouth of Lac Nokoue (Lagune de Cotonou), which is usually silted up.

Cotonou Home Page

<http://www.portdecotonou.com>

Winds—Weather.—The prevailing winds are from the SW. From mid-November until late February, N winds sometimes carry sand and dust from the deserts and reduce visibility in the vicinity of the harbor to as little as 0.5 mile.

The rainy season lasts from April until July and again from September to November. During December and January, night fog sometimes occurs, but it usually dissipates during the early

morning hours.

Tides—Currents.—The tides rise about 1.6m at springs and 1.3m at neaps.

Tidal currents flow ENE across the harbor at rates of up to 2 knots.

Depths—Limitations.—The entrance channel is dredged to a depth of 12m. However, the dredged fairway, which may best be seen on the chart, acts as a sand trap and less water than charted is reported to exist due to silting, especially near the West Breakwater. The harbor basin is dredged to a depth of 11m.

The main quay, 1,320m long, is situated along the N side of the harbor. It provides eight berths and has depths of 10 to 11m alongside. There are facilities for general cargo, ro-ro, container, and bulk vessels. Vessels of up to 210m in length and 10m draft can be accommodated.

A fuel oil berth, 160m long, is situated at the E end of the main quay and can be used by vessels of up to 150m in length and 8m draft.

Two tanker berths, each 200m long, are situated at the inner side of the E breakwater. Tankers of up to 200m in length and 9.8m draft can be accommodated.

The Benin Container Terminal is situated on the S part of the harbor. It has two berths, combined 540m in length and depths alongside up to 15m.

Aspect.—The E breakwater extends 0.4 mile SSW from a point on the shore located 0.7 mile W of the mouth of Lac Nokoue. The W breakwater, about 0.3 mile long, extends ESE from the E extremity of the shore projection forming the S side of the harbor basin. A groin extends S from this breakwater.

Cotonou Light is shown at an elevation of 30m from a framework tower, 25m high, standing on the W side of the mouth of Lac Nokoue.

An outer fairway lighted buoy is moored about 1 mile ESE of the head of the W breakwater.

A prominent white house surmounted by a flagstaff and a church with a prominent clock tower are situated 1.2 miles NE and 0.3 mile NNW, respectively, of Cotonou Light. A prominent radio mast, with obstruction lights, stands 0.7 mile NNE of the head of the W breakwater.

The port control tower, 26m high and surmounted by a radar scanner, stands near the E end of the main quay, 0.4 mile NNW of the head of the W breakwater, and is conspicuous.

A prominent water tower and a conspicuous bank building, 76m high, stand 0.6 mile NNW and 0.7 mile NW, respectively, of the head of the E breakwater. This bank building is reported to be the tallest landmark in the area.

Pilotage.—Pilotage, available 24 hours, is compulsory for all vessels exceeding 100 nrt. Pilotage must be requested at least 3 hours in advance or by 1830 LT at the latest. Pilots can be contacted by VHF channels 12 or 16 or by radiotelephone (2182khz) and board in position 6°20.1'N, 2°26.8'E (within about 1 mile ESE of the harbor entrance).

Regulations.—Vessels should send an ETA 48 hours in advance via the agent. Vessels should contact port control when within VHF range to obtain berthing instructions.

Details of the roadstead anchoring conditions and pilotage are available on request.

Upon anchoring, vessels should inform the Port Control of the following information:

1. Time of anchoring.
2. Length.
3. Draft.
4. Agent.
5. Type and tonnage of cargo to be unloaded.

Vessels should inform Port Control of the time of berthing.

Contact Information.—Cotonou Port may be contacted, as follows:

1. Telephone: 229-21312890
229-21315280
229-21314033 (Pilots)
2. Facsimile: 229-21312891
3. E-mail: pac@leland.bj
sp@portdecotonou.com

Anchorage.—Vessels can obtain anchorage in a depth of 12 to 14m about 0.6 mile SE of the head of the W breakwater. Anchorage is not recommended in the vicinity of the entrance to Lac Nokoue where the current may attain a rate of 6 knots.

Caution.—It is reported (1998) that pilots prefer inbound vessels to pass E of the outer fairway lighted buoy

An area, within which anchoring is prohibited, lies in the vicinity of the harbor entrance and may best be seen on the chart.

An unsurveyed area, which may best be seen on the chart, fronts the coast 1.5 miles E of the mouth of Lac Nokoue.

A prohibited area, which may best be seen on the chart, lies close W of the harbor. It fronts the coast in the vicinity of the palace and extends up to 3.2 miles offshore.

A pier in ruins, 300m long, is situated 0.3 mile E of the root of the E breakwater. Several stranded wrecks lie in the vicinity of the root of this pier and may best be seen on the chart.

It is reported (2002) that a dangerous wreck lies about 4 miles ESE of Cotonou Light.

It is reported (2007) that lesser depths than charted lie close W of the outer fairway lighted buoy.

Cotonou to Lagos

2.8 Between Cotonou and Lagos, 58 miles E, the coast is bordered by a narrow strip of sand and covered, for the most part, with bushes and a few scattered trees. An extensive series of lagoons lies behind this coast.

The seaward end of the border between Benin and Nigeria lies about 17 miles E of Cotonou.

Seme Oil Field (6°13'N., 2°41'E.), which has not been in service since 1998 due to economic reasons, lies about 4 miles offshore, 16 miles ESE of Cotonou. It is reported (2013) that efforts are underway to recommence energy production in the area starting in 2014.

2.9 Badagri (6°25'N., 2°53'E.) stands 1.5 miles inland on the N side of a creek, 27 miles E of Cotonou. This town is mostly hidden by bushes and palms, but a few white huts may be seen. Vessels can anchor, in a depth of 14m, mud and shells, about 1 mile offshore, S of the town.

Iworo (6°25'N., 3°01'E.), a village, is situated 8 miles E of Badagri. The coast between consists of several salt pans and a few villages. This village may be identified by a grove fronting two umbrella-shaped palm trees and a conspicuous red house.

The W part of the coast extending between Iworo and Lagos is very flat and bare, with few trees or villages. The E part has a

densely-wooded background. A prominent beacon, 14m high, stands on the coast 14 miles E of Iworo. A large wedge-shaped clump of trees is located 2 miles W of the beacon; it stands close inland and is very conspicuous from seaward.

Caution.—Between Badagri and Lagos, the current has been observed to set toward the shore.

Lagos (6°24'N., 3°24'E.)

World Port Index No. 46130

2.10 Lagos, also known as Abuja, is the largest and main port of Nigeria. The harbor consists of a passage, about 6 miles long, which connects Lagos Lagoon with the sea. This passage leads between Lagos Island and Victoria Island, on the E side, and the mainland, on the W side.

The harbor includes two extensive port installations. The Apapa complex is situated on the W side of the main channel and the Tin Can Island complex is situated on the NW side of Badagri Creek, which is entered on the W side of the harbor, about 2.5 miles above the entrance.

Nigeria Ports Home Page

<http://www.nigerianports.org>

Winds—Weather.—The winds are generally SW from mid-morning to evening, being light in January and stronger during July and August. During the night and in the early morning, the winds are usually light and from the N. Periods of early morning fog and haze sometimes occur, especially in January and February.

Tides—Currents.—The tides at the bar rise about 0.9m at springs and 0.7m at neaps.

On the bar, the direction and strength of the tidal currents vary, but generally, the ebb current sets diagonally across the bar. The flood current usually sets NE until within the entrance, when it sets N and up the harbor. The flood current runs during the dry season for about 5 hours while the ebb current runs for about 7 hours. In the rainy season, the flood current is sometimes imperceptible as it is almost equaled by the outflow of the river.

In the lower part of the harbor, the ebb current frequently attains a rate of 4 knots, with the flood current attaining a rate of 3 knots. In the upper part of the harbor, the ebb current attains a rate of 3 knots, with the flood current attaining a rate of 2 knots.

During the rainy season, the ebb current has been observed to attain a rate of 5 knots and the river level has been observed to rise by as much as 0.9m.

At about half ebb, a volume of deep-brown surface scum usually pours out of the harbor from the lagoon and extends up to about 3 miles offshore. During the rainy season (June to September), this scum discolors the water up to about 8 miles seaward of the harbor. However, very little discoloration occurs during the dry season.

It was reported (1988) that an almost constant ebb current sets along the Apapa Quay. This current was observed at times to attain a rate of as much as 6 knots.

Depths—Limitations.—The bar, which lies across the en-

trance of the harbor between the E and W moles, was reported (1995) to have a dredged depth of 9.1m at LW. Depths may be shallower than charted based on recent surveys.

The complex at Apapa has 2,459m of main quayside, which provides 20 berths. These berths are 61 to 250m long and have depths of 9.5 to 15m alongside.

Ijora Wharf, a bulk berth, is 120m long and has a depth of 6m alongside. There are also six tanker berths, with depths of 7.5 to 11m alongside.

There are facilities for general cargo, passenger, ro-ro, container, tanker, and bulk vessels. Vessels of up to 30,000 dwt, 259m in length, and 10.1m draft have been accommodated.

Atlas Cove Oil Jetty is situated at the W side of the channel approximately 1 mile within the harbor entrance. It can handle tankers up to 259m in length and 11m draft.

Tin Can Island (6°26'N., 3°21'E.) (World Port Index No. 46131) has 2,300m of main quayside, which provides fourteen berths. These berths are 120 to 200m long and have depths of 9.6 to 12.7m alongside. There are facilities for general cargo, ro-ro, container, and bulk vessels.

The port formerly provided several mooring buoy berths, in depths of up to 8m, however it is reported that most are missing or have fallen into disuse.

An SPM is moored about 2.5 miles SSW of Lagos Light. A restricted area, with a radius of 1,200m, surrounds the SPM and only vessels using this offshore berth may enter. A submarine pipeline extends NNE from the SPM to the shore. Vessels up to 50,000 dwt, 220m LOA and having a draft 17m or less can be handled.

The Oil Storage Tanker (Tuma) is moored approximately 5 miles SSW of Lagos Light and ship-to-ship transfers of petroleum take place in its vicinity. Other vessels should stay well clear of this area. Vessels intending to carry out a transfer are instructed to anchor S of the port limits and await the lightering vessel. However, in order to reduce the risk of damage, it is reported that inbound vessels prefer to moor the lightering vessel alongside while underway at a slow speed, anchoring only when the mooring operation is completed.

Aspect.—The coastline in the vicinity of the harbor is low. The entrance lies between the E mole, which extends 1.3 miles SSW from the SW extremity of Victoria Island, and the W mole, which extends 0.4 mile SE from the mainland shore.

Lagos Light is shown from a prominent tower standing 0.9 mile NW of the root of the W mole. It was reported (1988) that the light tower is often obscured by trees.

An outer fairway lighted buoy is moored about 1.5 miles SSE of the head of the W mole. The entrance fairway is indicated by a lighted range, which may best be seen on the chart, and is marked by buoys. It is reported (2005) that the outer fairway buoy is unlit.

A conspicuous television mast, 71m high, stands 0.3 mile N of the root of the E mole, with a prominent hotel situated 0.4 mile N of it. A prominent radio mast stands 1.4 miles NNW of the head of the W mole.

A conspicuous telecommunications building (NECOM), 160m high, is situated about 3 miles N of the harbor entrance.

Pilotage.—Pilotage is compulsory for vessels over 500 gross tons and is available 24 hours. Pilots can be contacted on VHF channels 1, 3, 11, 12, 14, and 16 and generally board in position 6°21.9'N, 3°24.8'E near the fairway lighted buoy.



Lagos Harbor—NECOM Building

Regulations.—Vessels should send an ETA and a request for pilotage via their agent 7 days, 4 days, 2 days, and 24 hours prior to arrival. They should provide the following information:

1. Vessel's name.
2. Call sign.
3. Agent's name.
4. Length.
5. Tonnage, loaded.
6. Draft.
7. Type of cargo.
8. Last port of call.
9. Ship Entry Notice (SEN) number and date of issue.

Vessels should establish contact with the port authorities on VHF channel 16 when within VHF range.

Upon anchoring, vessels report the following information to the Harbormaster (call sign: East Mole Signal Station):

1. Ship Entry Notice (SEN) number and date of issue.
2. Agent's name.
3. Cargo details.

Prior to arrival in Nigerian waters, agents must register vessels with the Nigerian Ports Authority (NPA) in order to obtain a Ship Entry Notice (SEN).

Special regulations, in regard to communications, apply to vessels entering any of the creeks, rivers, or channels in Nigerian waters.

For further information concerning SEN and communication regulations, see Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

Traffic restrictions within the port are, as follows:

1. Vessels are prohibited from passing each other in the main channel, between Lighted Buoy No. 7, moored 0.5 mile SE of the head of the W mole, and the head of the training mole, situated 0.8 mile NNW.
2. When two vessels are approaching each other in Apapa Channel, off the Apapa complex, from opposite directions, the vessel stemming the tide shall wait at a safe position until the other vessel has passed, even though the former vessel had been accorded the right of way by the port signal station.
3. Vessels must reduce speed in the vicinity of the floating dock located close N of the Apapa complex.

Contact Information.—The Nigerian Ports Authority at Lagos may be contacted, as follows:

1. Telephone: 234-1-5452820
234-1-5452821

234-1-5452822

234-1-5452823

234-1-5452824

234-1-5452662

2. Facsimile:

234-1-452892

3. E-mail:

lcinfo@nigerianports.org

Anchorage.—Vessels remaining outside the harbor should anchor in a depth of 18m, good holding ground, about 2.5 miles S of Lagos Light, but clear of the wrecks. A heavy swell occurs at this roadstead, particularly in July, August, and September. Vessels may also obtain anchorage in a depth of 13m about 1.5 miles S of the Lagos Light.

It has been reported (1981-2012) that vessels were anchoring or drifting up to 20 miles offshore in order to prevent being boarded by pirates.

Caution.—Numerous wrecks, many of them dangerous, lie in the approaches to the port and while some may be depicted on the chart others remain unmarked. Several wrecks lie within a 1.5 mile radius of the W mole.

Buoys, which mark the harbor channels, may be frequently shifted to conform with changes in the depths and may not in charted position. Hence, mariners are advised to navigate with caution in the approaches and in the port of Lagos.

Depths in the entrance fairway and within the harbor may be found to be as much as 2m less than charted.

Vessels are cautioned that security in the vicinity of this port is a serious problem. In recent years (1986-2014), several attacks by pirates and thieves have been reported. These attacks have generally taken place at the outer anchorages, but some have occurred while berthed alongside. It is reported (2005) that vessels are advised, once their pilot booking has been confirmed, to stay at least 20 miles seaward of the roadstead at night, reporting back only during daylight.

An area, within which anchoring is prohibited, lies in the vicinity of the harbor entrance. It extends up to about 3 miles seaward and may best be seen on the chart. It has been reported (2009) that an area of water with depths less than charted exist within this prohibited anchorage.

It has been reported (2012) that anchored vessels may be encountered in the prohibited anchorage area.

Due to the existence of submarine cables, an area, within which anchoring is prohibited, fronts the coast at the E side of the harbor entrance. It extends up to 15 miles seaward and may best be seen on the chart.

An explosives dumping area, the limits of which may best be seen on the chart, lies centered 32 miles S of the harbor entrance.

Lagos to the Niger Delta

2.11 Kuramo Island (6°27'N., 3°43'E.) forms the coast for 40 miles E of Lagos. The shore is fronted by a steep, sandy beach with heavy surf breaking on it. A prominent beacon, 14m high, stands near the coast 11 miles E of Lagos harbor.

Mosherelkawga (Mosere Ikoga) (6°25'N., 3°41'E.), a village, stands 17 miles E of Lagos. A dangerous wreck, marked by a lighted buoy, lies about 2.7 miles SW of this village.

Orimedu (6°25'N., 3°56'E.), a prominent village, stands on the coast 16 miles E of Mosherelkawga.

The coast extending E of Orimedu continues as a sandy

beach for 36 miles. For the first 21 miles, the undulating and dark bushy foreground stands out sharply against the lighter colored background of the trees. The remaining part of this stretch of coast is very flat, though bushy, with no groves in the background.

Avon Canyon (Avon's Deep) (6°16'N., 3°56'E.), a submarine canyon, lies about 7 miles S of Orimedu and interrupts the regularity of the coastal depths. It has depths that increase suddenly from 40m to over 200m and may best be seen on the chart.

Tolaram Port (6°25'N., 4°01'E.), a new port complex under construction is within the Lagos Free Trade Zone. It is scheduled for completion in 2018 and will feature a 1,500m quay and harbor depths of 14 to 16.5m. The port will be able to accommodate container, dry bulk and liquid bulk vessels.

Lekki (6°24'N., 4°07'E.), a village with a town situated close N of it, stands 11 miles E of Orimedu and 1 mile inland. It is situated W of three remarkable vistas. These vistas or lagoon entrances lie close to, 6 miles E, and 19 miles E of Lekki. They are 0.2 mile wide and appear open only when abreast of them.

Ajumo (6°21'N., 4°26'E.), a village, stands 19 miles E of Lekki and near the E of the three vistas. Overfalls occur about 9 miles S of this village.

Caution.—It is reported that a fiber optic cable has been laid in a series of loops near to the coast between Lagos and Bonney River E Beach (4°23'N., 7°12'E.).

2.12 A village, with two conspicuous palm trees, stands on the coast 5 miles E of Ajumo. An abrupt and remarkable change from sand to mud occurs in the nature of the coast close E of this village. The dry soil, palm trees, and brushwood are succeeded by swamps and mangroves. The coast also changes its direction to SE and depths of less than 11m are found to lie up to 6 miles offshore.

The termination of the sandy beach is a striking feature in the Bight of Benin. Vessels approaching from the W may navigate along the coast about 1 mile offshore, except in the vicinity of Lagos. However, after passing Ajumo, numerous muddy shoals, with depths of 5 to 7m, are then found within 3 miles of the shore.

The coast for about 6 miles SE of the termination of the sand is formed by a mud flat. The absence of any background trees makes those trees scattered along the shore conspicuous and the surf, which breaks about 2 miles offshore, is no longer heard. At the SE end of this mud flat, the coast assumes a somewhat firmer character and is interspersed with clumps of trees and scattered huts for about 15 miles. From this position to the entrance of the Benin River, 26 miles SE, the only distinguishable landmarks are two trees, which stand about 11 miles NW of the river entrance, and a few scattered groups of huts.

Caution.—Structures associated with oil and gas field development may be encountered along this stretch of coast.

The Niger Delta

2.13 The **Niger Delta** (5°30'N., 5°10'E.) is said to begin at Aboh (5°32'N., 6°31'E.), a major trading station, which stands at the head, 130 miles from Forcados. It consists of numerous rivers, the best known being the Benin, Escravos, Forcados, Nun, Brass, New Calabar, and Bonny. All of these rivers unite

with the many streams of the River Niger at or below Ndoni (5°33'N., 6°33'E.).

The Niger River, one of Africa's most famous rivers, originates in the King Mountains, which extend, about 200 miles inland, parallel to the Guinea coast near the border with Sierra Leone. From Bamako (12°40'N., 7°50'W.), the river trends NE for 450 miles to Timbuktu (16°40'N., 2°40'W.) and then E for about 155 miles to Buram Island (16°50'N., 0°16'W.), which is known as The Great Bend of the Niger. The river then flows SE for 400 miles to Gomba (11°34'N., 3°58'E.), where it is joined by the Gulbi n'Sokoto River. It then continues S and SE to the vicinity of Aboh, where the delta commences. Small shallow-draft boats, with flat bottoms, navigate the river, subject to seasonal limitations. The Niger River, like many other rivers, has a high level and a low level. However, the rise in the upper part takes almost 1 year to travel down to the lower part due to the numerous openings into other rivers and creeks.

It is possible to ascend the River Niger from any of the mouths of the numerous rivers by utilizing the many tortuous creeks which connect the rivers and form inland waterways. These creeks are navigable throughout by boats and, in most cases, small vessels with light drafts can transit between 15 and 40 miles inland. However, the creeks and rivers of the delta should only be used by vessels with local knowledge. Numerous oil and gas development installations and structures are situated throughout the delta area.

When approaching any of the delta entrances, vessels generally first ascertain their proximity to land by the depths and the discolored appearance of the sea. The low shoreline is only indicated by isolated trees. These trees may appear as disconnected wooded islets because of the mirage distortion. On closer approach, the edge of the coastal forest appears as a solid line, broken only by the river entrance. Once over the bar and within the estuary, the river banks are fringed with mangroves fronting masses of inland forest.

Tides—Currents.—The current between the mouths of the Forcados River and the Nun River generally sets SE, except during the harmattan season (November to February), when it sets NW. Within depths of 16 to 18m, the current is irregular, with many eddies. Outside of these depths, the current sets at a rate of about 0.5 knot.

For the purpose of buoyage within the creeks and rivers leading to Koko, Sapele, Burutu, and Warri, the direction of the main flood current is considered as flowing from the Escravos bar toward the ports.

Directions.—Vessels should choose the river entrance where the bar offers the most favorable conditions for crossing. Once inside, the deepest route through the creeks can be chosen for proceeding to the other parts of the delta. In this way, the dangerous and shallow bars are avoided. The entrance to the Benin River is difficult to distinguish from seaward. Vessels usually do not enter this river through its mouth, but proceed via the Escravos River and Nana Creek.

Caution.—Vessels are warned that numerous well heads, submarine pipelines, flares, oil fields, oil rigs, and production platforms, some disused and abandoned, exist within the 200m curve off the approaches to the rivers. The well heads may protrude over 5m above the sea bed and may be unmarked.

Vessels are warned that a ground swell of varying amplitude usually prevails on all of the bars fronting the river entrances.

Adequate underkeel clearances must be ensured.

2.14 The Benin River (5°46'N., 5°03'E.), though joined to the Niger Delta by Nana Creek and Chanomi Creek, has an origin entirely distinct from that of the River Niger. Its sources lie at the head of two small rivers which unite at Sapele, 40 miles ENE of North Point. Between the bar and Koko, a port lying 33 miles NE, the river is intersected by several creeks. Nana Creek enters the river through the SE bank and connects it with the Escravos River.

North Point (5°46'N., 5°01'E.), the N entrance point of the Benin River, is well-defined; breakers and heavy rollers extend up to 2.5 miles SW of it. The shore extending from this point on the S side of the river entrance forms only a gentle curve and is difficult to identify from the SW. Overfalls are reported to occur about 10 miles W of the point.

Discolored water may be observed as far as 9 miles seaward of the river mouth. The bar, composed of hard sand, is liable to change. It was reported (1981) to have depths of 2.4 to 2.7m. This entire bar frequently breaks heavily and sometimes with overwhelming force. Passage across the bar is not recommended.

The current off the mouth of the Benin River usually sets SE, but after the harmattan has been blowing, it is often reversed and sometimes sets with considerable strength. The tidal currents over the bar usually set ENE on the flood and SW on the ebb. In December, the flood current runs for 3 hours and attains a rate of 3 knots. The ebb current runs for over 9 hours and attains a rate of 5 knots.

Benin Road, lying 3 miles outside the bar and 5.5 miles from the river mouth, is the only anchorage available in this vicinity. The holding ground is good, but much rolling and pitching must be expected. Vessels may anchor, in a depth of 9m, black mud, about 5.5 miles SW of North Point.

2.15 Ukpokiti Marine Terminal (5°43'N., 4°50'E.) (World Port Index No. 46171) is located about 13 miles WSW of the mouth of the Benin River. It consists of a Floating Production Storage and Off-loading (FPSO) facility (Trinity Spirit), which is lighted and equipped with a racon. Vessels are berthed in tandem, bow to stern, with the FPSO.

Vessels should send the following information via the agent 12 days and then 7 days prior to arrival:

1. Vessel's name.
2. Vessel's ETA.
3. Master's name.
4. Arrival draft and dwt.
5. Deballasting time, if any.
6. Cargo requirements.

Vessels should then update their ETA 72 hours, 48 hours, 24 hours, and 12 hours prior to arrival. Pilotage is compulsory. The mooring master can be contacted by VHF and boards about 3.5 miles SW of the terminal near the N limit of the anchorage area.

Ukpokiti Marine Terminal can be contacted, as follows:

1. Telephone: 870-761294123
2. Facsimile: 870-600133398
3. E-mail: master.independence@conocophillips.com

The terminal is located in a depth of 26m and can accommodate tankers up to 150,000 dwt, 337m in length, and 21m draft. Generally, vessels berth only during daylight hours but they

may depart at any time. An anchorage area, with a radius of 1.5 miles, lies centered about 5 miles SW of the terminal. Vessels at the anchorage must maintain a continuous listening watch on VHF channel 16.

2.16 Abo Marine Terminal (5°42'N., 4°28'E.), located about 36 miles W of the mouth of the Benin River, consists of a Floating Production Storage and Off loading (FPSO) facility. The FPSO (Abo) is moored in a depth of 550m.

Vessels should send an ETA message via the agent on departure from the previous port. This initial message should include the following:

1. Vessel's name, call sign, and INMARSAT numbers.
2. ETA in local time.
3. Cargo requirements.
4. Deballasting time.
5. Maximum loading rate.
6. Arrival draft fore and aft.
7. Last port of call.
8. Port of destination.
9. Confirmation of clean bill of health.
10. Details of any sickness onboard, if any.
11. Distance (meters) from the bow to the loading manifold and SWL of crane or derrick at manifold.
12. Summer deadweight tons.
13. Port and country of registration.
14. Name of Master.
15. Length.
16. Does the vessel comply with the latest Oil Company International Marine Forum (OCIMF) standards?
17. A statement declaring that the vessel can perform closed loading.
18. Confirmation that the vessel is equipped with a bow stopper which is able to receive 76mm chain.
19. Name and particulars of local agent.

Vessels should then update their ETA 72 hours, 48 hours, 24 hours, and 4 hours prior to arrival. Pilotage is compulsory within 2 miles of the terminal. The mooring master can be contacted on VHF channels 16 and 72 and boards in position 5°44.8'N, 4°31.1'E (about 3 miles NE of the terminal). Vessels are prohibited from approaching within 2 miles of the terminal without prior permission.

The ABO Marine Terminal can be contacted, as follows:

1. Telephone: 65-6796 0441
870-763607517 (INMARSAT M)
2. Facsimile: 65-6796 0459
870-763607519 (INMARSAT M)
3. E-mail: abo@sg.prosafe.com

Vessels must arrive with clean ballast only, not less than 25 per cent of summer dwt, trim not exceeding 3m, and propeller fully immersed.

The terminal can accommodate tankers up to 350,000 dwt with unrestricted drafts. Generally, vessels berth and depart only during daylight hours, weather permitting.

All export tankers are required to fly the Nigerian national flag during daylight while berthed at the terminal.

2.17 Escravos Oil and Gas Terminal (5°30'N., 5°00'E.) (World Port Index No. 46135) is situated 11 miles WSW of the mouth of the Escravos River. It consists of an Operations Plat-

form, two SBMs, and an FSO.

The Operations Platform (5°30.5'N., 5°00.3'E.), 26m high, provides a heliport, which is surrounded at night by red lights. No. 2 SBM is moored in a depth of 19.8m, about 1 mile W of the Operations Platform. It can handle tankers up to 200,000 dwt, with drafts up to 15.8m, and tankers from 200,000 to 308,000 dwt, with drafts up to 15m.

No. 3 SBM is moored in a depth of 30.5m, about 5 miles WSW of the Operations Platform. It can handle tankers up to 350,000 dwt, 365m in length, 61m beam, and 22.5m draft. Submarine pipelines extend in an ENE direction from these berths to the shore and may best be seen on the chart.

The LPG facility is situated about 9 miles W of the Operations Platform and consists of a Floating Storage and Off loading (FSO) barge. It is moored in a depth 43m and equipped with a racon. A submarine gas pipeline extends E from the FSO to the shore and may best be seen on the chart.

A fairway lighted buoy is moored about 2 miles SW of the Operations Platform. A designated anchorage area lies about 2.5 miles SW of the Operations Platform.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF and board in the vicinity of the anchorage area. They remain on board throughout the loading procedure. Vessels must have their engines ready for immediate use while moored at this terminal.

A restricted area, which may best be seen on the chart, surrounds the terminal facilities. All vessels are prohibited from entering this area without prior permission.

All inbound vessels must send an ETA to the terminal and to Chevron Nigeria Limited, Lagos 72 hours, 48 hours, and 24 hours prior to arrival. The following information is required:

1. Vessel's name.
2. ETA.
3. Master's name.
4. Summer dwt.
5. Net tons.
6. Last port of call.
7. Next port of call.
8. Owner's name and address.
9. Quantity of cargo required.
10. Destination of cargo.
11. Nationality of officers and crew.
12. Quantity of cargo on board.
13. Maximum draft on arrival and departure.

Berthing details may be obtained from the terminal on VHF channel 10 or 16 when within range.

Mooring at or departing from the oil berths is allowed in normal weather conditions at any time. Mooring at the LPG berth is allowed only during daylight hours. Vessels may depart this berth at any time.

All export tankers shall fly the Nigerian national flag during daylight while berthed at the terminal.

Contact Information.—Escravos Terminal can be contacted by as follows:

1. Telephone: 234-1-2600600 ex 3370
870-1772324 (INMARSAT)
2. Facsimile: 234-1-2600600 ex 8129
870-1772323 (INMARSAT)
3. E-mail: L9esc15@chevrontexaco.com

Caution.—The current in the vicinity of the terminal usually

sets NNW, but it sometimes reverses to set SSE. The rate of the current varies between 0.5 knot and 1.5 knots. This current has been observed to reverse direction very quickly and cause vessels to swing heavily.

Unfavorable weather is usually expected from May through November.

Several platforms in ruins stand about 3.5 miles S of the Operations Platform. They barely show 5m above sea level and form poor radar targets.

It was reported (1970) that the terminal is somewhat difficult to identify due to the existence of numerous gas flares in the area. However, the coast and breakwater lying to the S of the river entrance are radar conspicuous (see paragraph 2.19).

2.18 Erha Oil Terminal (5°21'N., 4°20'E.), a deep-water facility, lies in the vicinity of the Erha Oil Field and is situated within an exclusion zone bordered by a line joining the following positions:

- a. 5°21.7'N, 4°17.7'E.
- b. 5°23.9'N, 4°20.4'E.
- c. 5°23.9'N, 4°22.5'E.
- d. 5°21.7'N, 4°23.6'E.
- e. 5°18.0'N, 4°21.5'E.
- f. 5°19.0'N, 4°17.7'E.

The terminal consists of a Floating Production Storage and Off loading (FPSO) vessel and an SBM. The SBM is moored 1 mile SE of the FPSO and is connected to it by two steel pipelines. The FPSO lies in a depth of 1,100m and is equipped with a racon.

Tankers may secure to the SBM or berth in tandem, bow to bow, with the FPSO.

Vessels must send an initial ETA message to the terminal 7 days in advance. The ETA should then be confirmed 72 hours, 48 hours, 24 hours, and 6 hours prior to arrival.

A designated waiting area, with a radius of 2.5 miles, lies centered about 9 miles SE of the terminal.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF and generally board in the vicinity of the waiting area. Tankers may secure to the SBM at any time, weather permitting. Tankers may berth at the FPSO during daylight only but may depart at any time.

Erha Oil terminal can be contacted as follows:

1. Telephone: 234-1-2621640 ext 1292
2. Facsimile: 234-1-2621640 ext 6939
3. E-mail: etmooringmasters@exxonmobil.com

2.19 The Escravos River (5°34'N., 5°10'E.) is the principal entrance of the delta for the ports of Koko, Sapele, Burutu, and Warri. Nana Creek, entered 7 miles within the mouth, leads into the Benin River and then to the ports of Koko and Sapele. Chanomi Creek, entered 12 miles within the mouth, leads S to the Forcados River and then to the ports of Burutu and Warri.

A coastal bank, with depths of less than 5m, fronts the river mouth and extends up to about 6 miles seaward. The river entrance is subject to siltation. The channel leading across the bar was reported (1986) to have a dredged depth of 6.4m. It was reported (1993) that the channel leading across the bar had a dredged depth of 6.7m and vessels with drafts up to 6.4m could enter the river.

Tapa Oil Field (5°42'N., 5°00'E.) lies centered 12.5 miles NW of the river mouth.

Delta Oil Field (5°41'N., 5°03'E.) lies centered 10 miles NW of the river mouth.

Delta South Oil Field (5°36'N., 5°06'E.) lies centered 5 miles W of the river mouth.

Ejulebe Oil Field (5°35'N., 5°00'E.) lies centered 11.5 miles W of the river mouth.

Okan Oil Field (5°33'N., 5°05'E.) lies centered 7 miles WSW of the river mouth.

Mefa Oil Field (5°31'N., 5°04'E.) lies centered 9 miles SW of the river mouth.

Awodi Oil Field (5°28'N., 5°01'E.) lies centered 12 miles SW of the river mouth.

Sonam Gas Field (5°29'N., 4°50'E.) lies centered 22 miles WSW of the river mouth.

Numerous rigs, platforms, structures, well heads, submarine pipelines, storage vessels, flares, above-water pipes, and obstructions are situated within the above oil and gas fields, which front the river entrance.

Aspect.—A main breakwater, about 4 miles long, extends WSW from a point on the coast located 1 mile S of the S entrance point of the river. A detached breakwater is located with its S end lying about 0.4 mile NNE of the head of the main breakwater. It extends NNE and is about 0.5 mile long. The entrance channel, which is buoyed, leads between these breakwaters.

A beacon, 9m high, is situated on the N entrance point of the river and a radio mast, 98m high, stands 1.2 miles NE of it. Escravos Tank Farm is situated close N of the radio mast.

Ogidigbe, a prominent village, is situated 1.6 miles NE of North Point. Ajogbe, another village, is situated 3 miles NE of North Point.

Nana Creek is entered 7 miles E of the mouth of the river. It leads in a N direction for 23 miles, but has many sharp bends.

Pilotage.—Pilotage is compulsory within the river. Pilots can be contacted on VHF channel 16 and board about 2 miles SW of the Escravos breakwater. Pilotage is available during daylight hours only and should be arranged through the vessel's agent in the port of destination.

The Escravos River Pilot Station requests the following information via VHF channel 16 before the pilot boards:

1. Vessel's name.
2. Call sign.
3. Nationality.
4. SEN number.
5. Crew.
6. Length and draft.
7. Cargo details.
8. Master's name.

Escravos River Pilots provide pilotage services from the bar to Bennett Island Anchorage and Koko Anchorage. Nigerian Ports Authority (NPA) Harbor Pilots provide pilotage services from these anchorages to the berths at Warri, Koko, and Sapele. Pilots for Burutu are also available. Escravos River Pilots also provide pilotage services to the offshore oil and gas industry.

For security reasons, the movements of vessels are being monitored and coordinated by the Nigerian Naval Station (Del-

ta) at Warri through the Nigerian Navy Gun Boat stationed at Escravos Tank Farm, near Lighted Buoy No. 19, where clearance is usually granted via VHF.

Directions.—Due to numerous marked and unmarked obstructions associated with the oil and gas fields, vessels should avoid taking an inshore route and should approach the pilot boarding area from seaward.

Vessels approaching from N or W should pass W and SW of the Escravos Oil and Gas Terminal (see paragraph 2.17). They should then pass S of No. 3 SBM (see paragraph 2.17) and proceed E to a position located about 2.5 miles S of the Escravos Operations Platform (see paragraph 2.17), passing N of the ruined platforms. Vessels should then continue in an ENE direction to the pilot boarding area.

Vessels approaching from S should remain well offshore to avoid Meji Oil Field (see paragraph 2.22). They should then proceed to a position located about 6 miles S of the Escravos Operations Platform (see paragraph 2.17), taking care to avoid the ruined platforms standing about 3 miles S of it. Vessels should then continue in a NE direction to the pilot boarding area.

Caution.—Due to piracy activity, vessels are advised to remain 30 to 40 miles seaward of the breakwater during darkness.

The entrance of the river is subject to frequent silting.

During the flood tide, a strong NW current sets across the bar and within the entrance.

It was reported (1995) that the buoys marking the approach and river channels were unreliable. Several were observed to be unlit and many, including the outer fairway lighted buoy, were missing.

Submarine pipelines extend across the river about 0.7 mile above and below the tank farm. A submarine pipeline also extends across Nana Creek, 4 miles NNE of its junction with the Escravos River. The depth may be reduced by as much as 2m in the vicinity of these pipelines.

Numerous fishing stakes are situated in the shallow depths fronting the river entrance and along the river banks.

Vessels should approach the mouth of the Escravos River with caution due to several unsurveyed areas lying off the coast in this vicinity.

2.20 Koko (6°00'N., 5°28'E.) (World Port Index No. 46140) is situated on the N bank of the river. It is a large settlement and extends for about 1 mile along the shore. The main quay is 137m long and has a depth of 7.3m alongside. Berthing is only carried out during daylight hours. Vessels of up to 140m in length and 6.4m draft have been accommodated alongside.

From Koko, the Benin River trends in a general ESE direction, with two sharp bends, for 16 miles to Sapele. Above Koko, the banks of the river revert to mangroves for about 3.8 miles when they again change to open country with trees and palms.

Munro Island (5°55'N., 5°40'E.) divides the river and has several log storage lagoons. The main channel passes SW of this island.

Miller's Point (5°54'N., 5°42'E.) is the NW entrance point of the Ethiope River. A prominent radio mast stands close WSW of this point. Another prominent radio mast stands on the W bank of the Ethiope River, about 0.3 mile SSE of this

point.

Caution.—Vessels should keep a good lookout for floating logs in the river, many of which are nearly submerged.

Vessels passing Koko should reduce speed to avoid damage to the river banks and to small craft moored at the quay.

2.21 Sapele (5°54'N., 5°41'E.) (World Port Index No. 46150), a major logging port, stands on the S bank of the Benin River, abreast the SE extremity of Munro Island. A conspicuous church stands in the N part of the town.

Sapele Home Page

<http://www.nigerianports.org>

Depths—Limitations.—A private timber quay is situated on the W bank of the Ethiope River, 0.7 mile SE of Miller's Point. It provides 267m of berthing space, with a depth of 4.9m alongside, and 144m of berthing space, with a depth of 4.6m alongside.

The principal port installations are situated at Ogorode, 5 miles NW of Miller's Point. There is a total of 1,183m of quayage, which provides six main berths, with a depth of 10.5m alongside. There are facilities for general cargo, container, and ro-ro vessels. Vessels of up to 170m in length and 6.4m draft have been accommodated alongside.

In addition, several mooring buoy berths are situated in the river. These berths lie in depths of 4.9 to 7.6m and can accommodate vessels of up to 137m in length.

Anchorage.—Vessels can anchor in a depth of 7m about 0.3 mile above the E end of Munro Island.

Caution.—A submarine cable, marked by beacons, extends across the river, about 0.2 mile E of the SE end of Munro Island.

It was reported (1984) that the S bank had extended into the river in places between Munro Island and Sapele.

2.22 The Forcados River (5°23'N., 5°16'E.) is entered between Hughes Point and South Point, 7 miles SE. A navigable channel, only about 1 mile wide, leads into the river between the shoalbanks extending from these points.

South Point (5°22'N., 5°19'E.) is steep and wooded. A stranded wreck lies on the beach on the N side of this point. It is reported to be conspicuous in the afternoon but difficult to identify in the morning.

Hughes Point (5°27'N., 5°14'E.) is ill-defined, sandy, and backed by tall mangroves. Middle Beacon, 18m high, is situated 1.7 miles NW of this point. Yoki Beacon, 12m high, is situated 0.5 mile SE of this point. Norman Beacon, 8m high, is situated 2 miles SE of the point and East Beacon, 17m high, is situated 1.5 miles SE of it. Moore Point, located 9 miles ESE of Hughes Point, is a steep and prominent bluff.

A bar fronts the river entrance, 7 miles seaward of the mouth, and lies between two lines of breakers, which are usually visible, except during the harmattan season. This bar was reported (1986) to have a least depth of 2.7m on it. Immediately within the bar, the water is smooth and the depths increase to over 9m. The channel leading over the bar and into the river is marked by buoys. It can be used by small craft with local knowledge.

Meji Oil Field (5°25'N., 5°10'E.) lies centered 10 miles

WNW of the entrance to the Forcados River. A submarine oil pipeline extends in a NW direction from this field.

Afremo Oil Field (5°26'N., 5°10'E.) lies centered 10 miles WNW of the entrance to the Forcados River, close E of Meji Oil Field.

Forcados Oil Field (5°23'N., 5°18'E.) extends across the river mouth within the bar.

Mesan Oil Field (5°21'N., 5°13'E.) lies centered 5.5 miles W of South Point.

Numerous rigs, platforms, structures, wellheads, submarine pipelines, flares, and obstructions are situated within the above oil fields, which front the river entrance and extend up to about 10 miles seaward.

Caution.—A submarine gas pipeline extends seaward in a SW direction from a point on the shore located about 2 miles SE of Hughes Point.

A submarine oil pipeline extends across the river about 2 miles E of South Point.

It was reported (1990) that the buoys marking the entrance channel are not reliable and some may be missing.

2.23 Forcados Oil Terminal (5°10'N., 5°10'E.), situated 15 miles SW of South Point, consists of a platform, which is equipped with a racon, and two SBMs. A submarine pipeline, which may best be seen on the chart, extends in a NE direction from the terminal to the shore.

No. 1 SBM and No. 2 SBM are located in a depth of 22.8m about 1 mile WSW and 1 mile W, respectively, of the platform. Vessels of 45,000 to 350,000 dwt, with drafts up to 21m, can be accommodated. There are no restrictions for length or beam. It is reported (2014) that the facility is only open to vessels up to 150,000 dwt until further notice.

Vessels must have their engines ready for immediate use while at the terminal. Unfavorable weather is expected at the terminal from June to September, when a heavy swell may be experienced. Fog may occur in the mornings in December and January.

A designated anchorage area, for vessels waiting to berth, lies about 3 miles NW of the platform.

A restricted area, with a radius of 3 miles, surrounds the terminal and may best be seen on the chart. All vessels are prohibited from entering this area without prior permission.

Pilotage is compulsory and is available 24 hours. Pilots, acting as mooring masters, can be contacted on VHF channel 8 and board in position 5°12.0'N, 5°08.0'E (3 miles NW of the Forcados crude oil loading buoy). They remain on board throughout the loading procedure.

Vessels should send their ETA to Shell Lagos 7 days, 72 hours, 48 hours, and 24 hours in advance. Vessels should then contact the terminal on VHF channel 8 when within range, on arrival off the terminal, and when anchored.

Vessels at anchor must maintain a continuous listening watch on VHF channel 8.

Caution.—It is reported (2004) that the former anchorage area, lying about 4 miles W of the platform, is no longer used due to the presence of a gas submarine pipeline. Vessels are advised to contact the terminal for the latest information prior to anchoring.

2.24 Chanomi Creek (5°35'N., 5°23'E.), which connects

the Escravos River to the Forcados River, leads in a S direction for 14 miles and is narrow and winding. The N entrance of this creek lies 12 miles E of the entrance to the Escravos River. The S entrance of the creek lies between Goshawk Point and Warri Point, 2.5 miles WNW. The coastal bank lying off Warri Point is marked by a lighted buoy. The fairway, which is marked by buoys and beacons, has general depths of 5 to 25m; the bar at the N end of the creek was reported (1986) to have a depth of 6.2m on it.

2.25 Port Forcados (5°22'N., 5°26'E.) (World Port Index No. 46160) lies 7 miles within the S entrance of the Forcados River and S of the S entrance of Chanomi Creek. It also includes the entrance to Muri Creek, lying E of the town of Forcados. The town is situated within Kwarra Point and is protected by a seawall. Vessels can anchor in depths of 7 to 9m, good holding ground, N and E of Kwarra Point. During the tornado season (March to April and September to October), vessels should not anchor close to the shore.

The government wharf, situated 0.4 mile SE of Kwarra Point, is 58m long and has a depth of 6m lying close off it. Vessels with drafts up to 5.2m can berth alongside with lighters moored between them and the side of the wharf.

Burutu (5°21'N., 5°30'E.) lies on the S bank of the Forcados River, 4 miles E of Forcados. It is approached through Burutu Channel, marked by buoys, which has a least depth of 4m (1991). There is a main wharf, 229m long, and a new wharf, 91m long. Both have depths of 6.4m alongside at HWS. The port is no longer used by ocean-going commercial vessels. However, a local fleet of shallow-draft vessels operates from this harbor and carries cargo and passengers throughout the entire area. Vessels can anchor, in a depth of 7m, good holding ground, in the middle of the river, off the town.

2.26 Warri (5°31'N., 5°44'E.) (World Port Index No. 46170) lies on the N bank of the Warri River, 21 miles above its junction, at Warri Point, with the Forcados River. This junction is located close above the entrance to Chanomi Creek.

Winds—Weather.—The prevailing winds are usually from the SSW, but are variable during the harmattan season. Tornadoes are sometimes experienced at the beginning and end of the rainy periods (March to April and September to October).

Depths—Limitations.—The river channel is narrow and marked by buoys.

Four oil jetties, fronting the refinery, provide 121m of berthing space and have a depth of 7m alongside.

A bulk quay, which fronts the Delta Steelworks, is situated at Aladja on the S side of the river, about 4 miles above Warri. It is 750m long and has a depth of 7m alongside.

The old section of the port has 1,500m of main quayage. It provides four berths for ocean-going vessels, with depths of 6.5m alongside.

The new section of the port has 1,600m of main quayage. It provides six berths for ocean-going vessels, with depths of 11m alongside. In addition, there are several mooring buoy berths situated in the river.

The port has facilities for general cargo, container, tanker, bulk, and ro-ro vessels. Vessels of up to 250m in length and 6.4m draft have been accommodated.

Anchorage.—This area has a depth of 6.6m and good hold-

ing ground, mud.

Caution.—Vessels are restricted by the depth on the bar at the entrance to the Escravos River. The Nigerian Ports Authority (NPA) at Lagos should be contacted in advance for the latest information.

2.27 The coast extending S from the entrance to the Forcados River to the entrance of the Nun River, 80 miles SSE, has the same monotonous features as that to the N. Dense forest and thick jungle rise from a narrow sandy beach which extends along the whole stretch of this coast. The surf breaks heavily in the rainy season on this beach and a heavy swell in this area generally causes a set toward the shore.

The shoreline is intersected by the mouths of several rivers. The entrances to these rivers are fronted by sandy bars which usually break completely across. All of the rivers are connected by creeks and communication by launches is maintained between places along the Forcados River and places along the Nun River throughout the entire year.

The **Ramos River** (Amos River) (5°08'N., 5°22'E.) flows into the sea 15 miles S of the entrance to the Forcados River. Its mouth, which is fronted by a bar, is about 0.5 mile wide and lies between two well-defined entrance points. Breakers extend up to about 3 miles seaward of the entrance and discolored water has been observed up to 7 miles seaward. Anchorage may be taken in a depth of 9m, black mud, outside the bar and about 5 miles W of the mouth.

The **Dodo River** (4°53'N., 5°29'E.) enters the sea 15 miles S of the mouth of the Ramos River. It was reported (1988) that the land located on the S side of this river entrance had extended up to about 2 miles NNW. The river entrance faces NNW and is about 0.7 mile wide. It is obstructed by Ivy Island on the N side. A drying sand bank extends about 3 miles NNW from close N of Ivy Island. It extends about 0.5 mile seaward from the coast and fronts the entrance to a lagoon. The river entrance is fronted by breakers and discolored water has been observed up to 7 miles seaward of it. Anchorage may be taken, in a depth of 7m, black mud, about 2.5 miles W of the entrance.

2.28 EA Oil Field (4°49'N., 5°21'E.) lies centered about 8 miles SW of the entrance to the Dodo River and consists of numerous wells, rigs, riser pipes, and platforms, which may or may not be lighted.

A Development Area, the limits of which may best be seen on the chart, surrounds this oil field. Surface vessels, subsea craft, and divers may be engaged in construction work or the servicing of installations within this area. All other vessels are strongly advised to remain outside this area and enter only with permission.

Sea Eagle Terminal (4°48'N., 5°19'E.) (World Port Index No. 46180), consisting of a Floating Production Storage Off loading (FPSO) facility and an SPM, is situated within the EA Oil Field Development Area. The FPSO (Sea Eagle) is secured to a fixed bow-integrated Soft Yoke Mooring Platform (SYMP) and is moored in a depth of 26.5m.

The terminal can handle vessels up to 300,000 dwt and 58m beam. Due to the existence of submerged structures and pipelines, vessels are limited to a maximum draft of 17.8m. Berthing is allowed during daylight hours only. Vessels berth in



FPSO Sea Eagle

tandem with the FPSO.

Vessels waiting to berth should anchor, in depths of 40 to 70m, NW of the terminal and well clear of the area. Pilotage is compulsory. Vessels must proceed to Forcados Oil Terminal (see paragraph 2.23) in order to embark the pilot.

The Sea Eagle Terminal FPSO can be contacted, as follows:

1. Telephone: 870-365790032 (INMARSAT B)
2. Facsimile: 870-365790033 (INMARSAT B)
3. E-mail: uig-seaeaglems@shell.com

Vessels should send their ETA to the Shell Marine Office, Forcados and the terminal 7 days, 72 hours, 48 hours, and 24 hours in advance. Vessels should then contact the pilot station at Forcados Oil Terminal on VHF channel 8 when within range and Sea Eagle Terminal on VHF channel 10 when within range of the field and again when arriving at the EA Field Exclusion and Safety Zones to request permission to enter.

2.29 Bonga Terminal (4°33'N., 4°37'E.), consisting of a Floating Production Storage Off loading (FPSO) facility and an SPM, is located about 65 miles SW of the entrance to the Forcados River. It is situated in a depth of about 1,000m and can handle vessels up to 350,000 dwt, 360m in length, and 21.2m draft.

Vessels should send their ETA to the Shell Marine Office, Forcados and the terminal 7 days, 72 hours, 48 hours, and 24 hours in advance. Changes of 12 hours or more to the ETA must be reported immediately. Changes of 30 minutes or more to the ETA must be reported during the last 24 hours prior to arrival.

Pilotage is compulsory. Vessels must proceed to Forcados Oil Terminal (see paragraph 2.23) in order to embark the pilot. Vessels should contact the pilot station at the Forcados Oil Terminal on VHF channel 8 when within range. Vessels should then contact Bonga Terminal on VHF channel 72 when within range and again to request permission to enter the restricted area, which surrounds the terminal.

The Bonga Terminal FPSO can be contacted, as follows:

1. Telephone: 870-365790037 (INMARSAT B)
2. E-mail: bongamss@shell.com

2.30 The Pennington River (4°44'N., 5°32'E.) flows into the sea 11 miles SE of the entrance to the Dodo River. The river entrance is 0.3 mile wide but appears as a small opening

from WNW.

Pennington Oil Field (4°37'N., 5°25'E.) lies 7 miles SW of the entrance to the Pennington River. A gathering platform stands near the center of this field and a flare structure is situated close NE of it. A storage hulk is moored about 1 mile SW of this platform and several mooring buoys are situated 1 mile SW of it. Several other platforms are situated within the field.

Caution.—A submarine pipeline connects the gathering platform, the storage hulk, and the mooring buoy berth. In addition, a submarine pipeline, which may best be seen on the chart, extends 10 miles SSE from this oil field to Middleton Oil Field.

2.31 The Middleton River (4°32'N., 5°41'E.) flows into the sea 14 miles SE of the Pennington River. It appears from offshore to be a wide estuary with an island lying in the entrance. In reality, the island is actually a group of tall trees standing on Hopkin Point, which divides the mouth into two branches.

Factory Point, the N entrance point of the river, is well-defined and several very high trees stand on the S entrance point, 2.5 miles SE. Miller Island, lying close S of Hopkin Point, is covered with grass and low scrub. It is reported not to be visible until close inshore.

The bar, which lies about 1.3 miles W of Factory Point, has a least depth of 2.1m; however, the river entrance is obstructed by drying sand banks which lie between the bar and Miller Island.

Middleton Oil Field (4°30'N., 5°33'E.) lies centered 8 miles WSW of the entrance to Middleton River. It consists of a production platform and several oil rigs. Submarine pipelines, which may best be seen on the chart, connect this field to Pennington Oil Field, 10 miles NNW, and Pennington Offshore Terminal, 15 miles S.

2.32 The Fishtown River (4°24'N., 5°50'E.) flows into the sea 12 miles SE of the Middleton River. Its entrance is 0.2 mile wide and lies between two well-defined points. Between these two river entrances, the forest is somewhat removed from the coast and a belt of partially-cultivated land, with clumps of palms, intervenes.

The Kulama River flows into the sea 4 miles NW of the Fishtown River but its entrance, 0.5 mile wide, is difficult to identify from seaward.

The Sengana River, a branch of the River Niger, flows into the sea 9 miles SE of the Fishtown River. Its entrance, which is about 1 mile wide, is obstructed by a sand bank. Discolored water has been observed up to 4 miles seaward of the entrance.

North Apoi Oil Field (4°21'N., 5°47'E.) lies centered 3.5 miles SW of the mouth of the Fishtown River. It consists of a central gathering platform surrounded by several lighted well heads. A submarine pipeline, which may best be seen on the chart, extends 13 miles SW and connects this field with the Pennington Offshore Terminal.

Sengana Oil Field (4°17'N., 5°49'E.) lies centered 7 miles S of the mouth of the Fishtown River.

Okubie Oil Field (4°14'N., 5°54'E.) lies centered 10 miles SSE of the mouth of the Fishtown River.

2.33 Pennington Offshore Terminal (4°15'N., 5°37'E.) (World Port Index No. 46200) is situated 16 miles SW of the entrance to the Fishtown River and consists of two SPMs. Submarine pipelines extend NE from the terminal toward the shore and N to Middleton Oil Field.

A floating storage vessel (VLCC Oloibiri) is moored to SBM A. The export loading berth, SBM B, is moored in a depth of 26.8m, about 0.7 mile NW of SBM A. The terminal can accommodate vessels having a maximum draft of 24.3m and up to 160,000 dwt.

The wind and swell at the terminal are mostly from a SW direction. The weather is generally good from November to May, but it may be unfavorable during the wet season (May to November). The currents in the vicinity of the terminal are reported to be irregular and strong at times.

A designated anchorage area lies 2.3 miles SW of the terminal. Vessels must have their engines ready for immediate use while at the terminal.

Pilotage is compulsory. Pilots, who act as mooring masters, may be contacted by VHF and board in position 4°14.5'N, 5°34.5'E. They remain on board during the entire loading operation. Mooring operations are conducted at all hours.

Vessels should send an ETA 10 days, 96 hours, and 24 hours prior to arrival via the oil company (Chevron Nigeria Ltd.) office in Lagos. Vessels should then contact the terminal 2 hours prior to arrival on VHF channel 16.

A restricted area, with a radius of 3 miles, is centered on the terminal. All vessels are prohibited from entering this area without prior permission.

2.34 The Nun River (Branch River) (4°16'N., 6°04'E.) flows into the sea 16 miles SE of the Fishtown River. It is entered between Cape Nun and Palm Point, 1.4 miles SE. This river was formerly used as the principal entrance into the Niger River. However, because of shoaling on the bar and continual changes in the channel above Akassa, 2 miles within the entrance, navigation is only possible by vessels with light drafts, even when the river level is high.

The river mouth is imposing when first entered, but, after reaching Akassa, the channel is almost entirely obstructed by numerous flats and drying sand banks. It is not until 25 miles N of Akassa that the river regains a width and depths commensurate with its importance.

The shores on either side of the river entrance are heavily wooded and form areas of vast swamp as they are at a level close to that of the river.

Cape Nun (4°17'N., 6°04'E.), the N entrance point of the river, is somewhat low, with trees standing close behind it. Between this cape and Barracoon Point, 2 miles N, the W bank of the river is sandy, with trees extending almost to the edge of the water. A beacon, 9m high, is situated on Barracoon Point.

Palm Point (4°16'N., 6°05'E.), the S entrance point, is low, sandy, and covered with grass. Several trees stand about 0.3 mile N of the point. A square clump of trees, situated 0.5 mile inland and 2.5 miles E of the point, is somewhat conspicuous above the unbroken line of tree tops.

A light is shown from a metal pile structure standing on the point; a beacon is situated 2 miles E of it.

The bar fronting this river is considered to be one of the worst within the Niger Delta. The coast changes direction sharply in this vicinity and renders it fully exposed to the W and S. There is always a heavy swell on the bar and calm days are very few. The bar lies between the S extremities of two shallow spits, which extend up to about 4 miles S from each entrance point. The sea breaks heavily along the W spit and there are heavy rollers and surf along the E spit. The bar is composed of hard sand, with mud immediately outside of it, and has a least depth of 1.8m (1963).

During the rainy season, the bar frequently breaks all over, but it only breaks after half ebb in the dry season. Local knowledge is essential for crossing the bar. Discolored water has been observed up to 4 miles seaward of the bar.

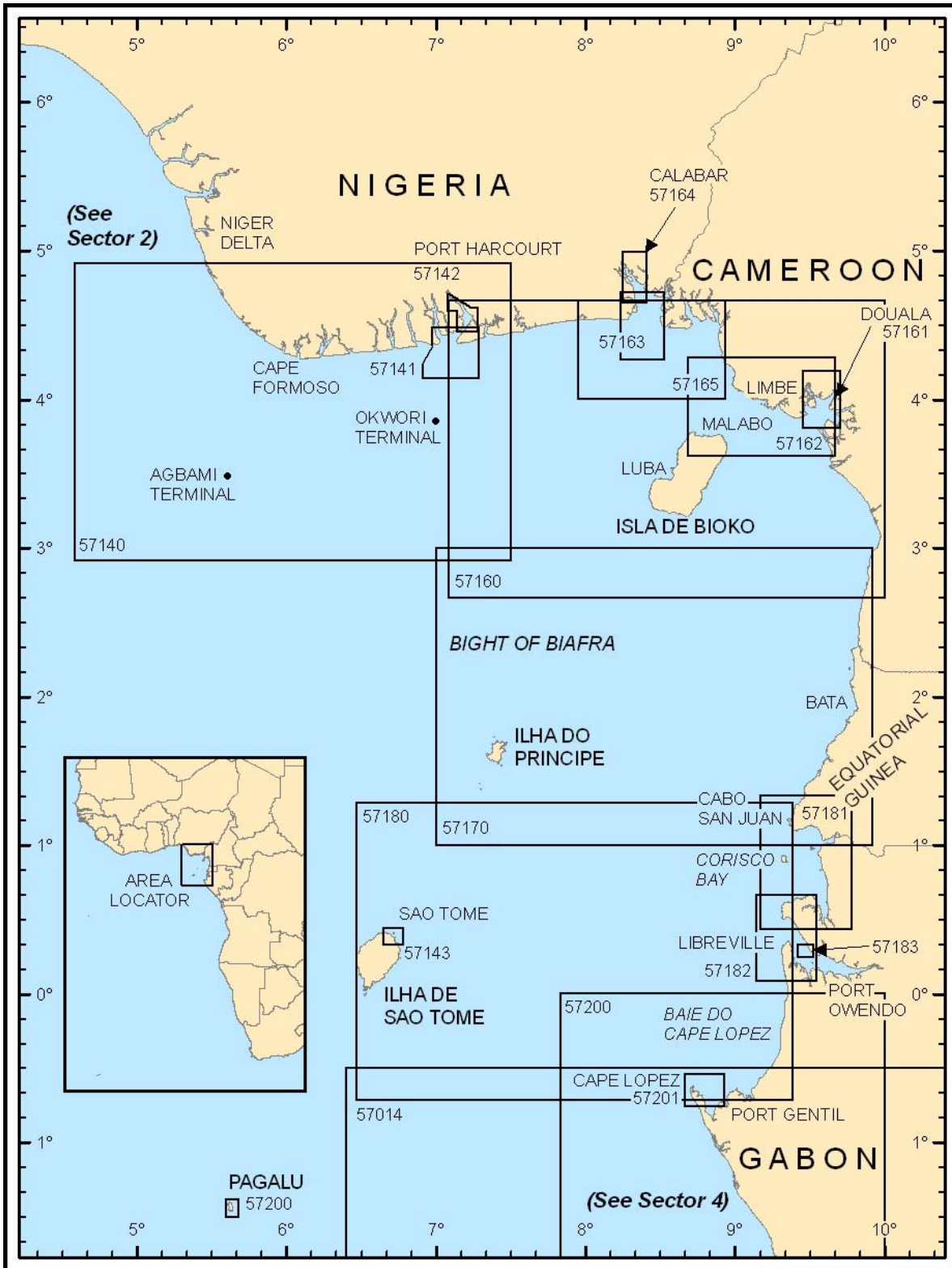
Akassa (4°19'N., 6°04'E.), a small town, is situated on the W bank of the Nun River, 2 miles N of Cape Nun and close NW of Barracoon Point. A small wharf, with a depth of 1.2m, fronts the town. Vessels may anchor in a depth of 14m, mud, in the middle of the channel, off Barracoon Point. Local pilots for the inland creeks are available here.

Anchorage may be obtained offshore, free from rolling, in a depth of 11m about 5 miles S of Palm Point. In this vicinity, the current from the river usually keeps the bow of the vessel heading N.

Caution.—During the harmattan season (November to February) or during heavy rains, the river entrance may be often obscured for several days.

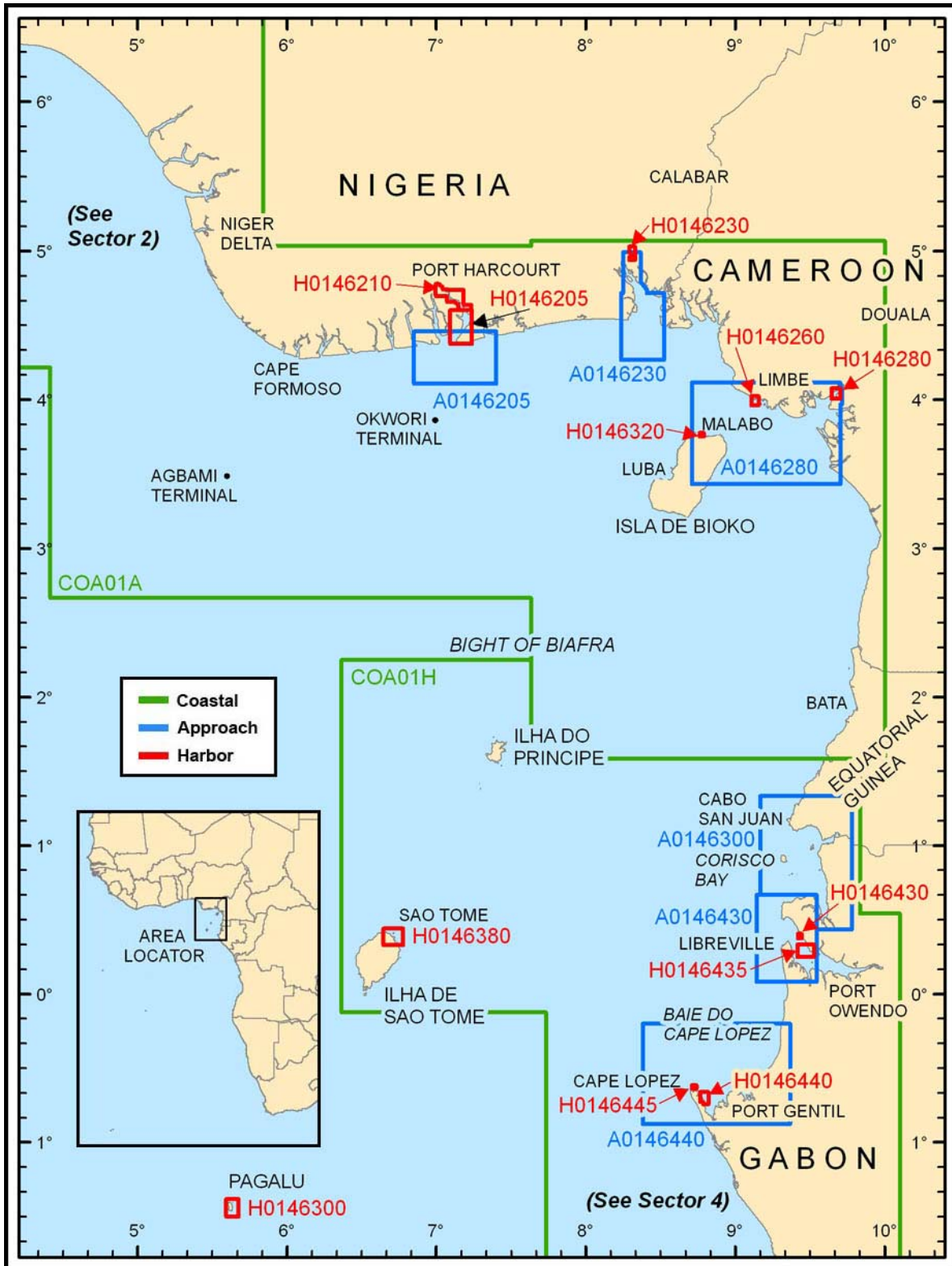
2.35 Anyala Oil Field (3°55'N., 5°54'E.) lies centered 24 miles SSW of the mouth of the Nun River.

Cape Formoso (4°16'N., 6°05'E.) is the low and wooded tract which forms the S extension of the Niger Delta. This cape, located on the E side of the Nun River, also forms the E extremity of the Bight of Benin and is fully described in paragraph 3.2.



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

SECTOR 3 — CHART INFORMATION



Additional DNC library coverage may be found in NGA DNC 01 (Limited Distribution) disc within the README\GRAPHICS folder.
SECTOR 3 — DNC LIBRARY INFORMATION

SECTOR 3

NIGERIA TO GABON—CAPE FORMOSO TO CAP LOPEZ

Plan.—This sector describes the African coast between Cape Formoso and Cap Lopez, and includes the islands lying in the Bight of Biafra. It includes the coasts of Nigeria, Cameroon, Equatorial Guinea, and Gabon. The descriptive sequence is first from W to E and then from N to S.

General Remarks

3.1 The Bight of Biafra, known to Nigeria as the Bight of Bonny, is an extensive indentation in the African coast. Within the limits of this bight, numerous rivers discharge into the sea. The most important of these rivers are the New Calabar River, the Bonny River, and the Calabar River. The N shore of this bight is almost flat and dark in color. It is intersected by the mouths of the numerous rivers, forming the Niger Delta, each of which is obstructed by bars or shoals at the entrance. The coast consists of a belt which is 10 to 60 miles wide and covered with mangrove forests and swamps. Vast tropical forests stand inland of this coastal belt beyond which the ground becomes more open. There is little vegetation and very little rainfall in the extreme N part.

Fako (4°13'N., 9°10'E.), also known as Cameroon Mountain, is the highest peak of the mountains which rise abruptly from the land on the NE shore of the bight. This peak attains an elevation of about 4,095m and is covered with trees and verdure of luxuriant growth, except in the vicinity of the rounded summit. It is very conspicuous from seaward but the summit is often obscured by clouds. Fako is also a volcano. It last had an eruption in 2012. Another conspicuous peak, which stands about 9 miles SSW of Fako, ascends from the SW slopes of the mountain range. Although numerous other peaks rise from the sides of this range, they appear slight and scarcely break the uniformity of the slopes.

The more distant mountains, which stand about 30 miles N of Fako, attain elevations of 1,220 to 1,830m and tower aloft in huge peaks and rugged masses. A plain, from whose surface several conical hills rise abruptly, extends between the bases of these mountains. Several other nearby peaks, which are extinct volcanoes, are also visible from seaward.

The islands lying in the Bight of Biafra are evidently of volcanic origin and, together with the mountain ranges on the mainland, are probably the gigantic results of one and the same submarine upheaval.

Winds—Weather.—The Southwest Monsoon is the most significant of the local winds in this area. This large scale sea breeze, which extends up to about 150 miles inland, occurs in the N section over the Gulf of Guinea and adjacent coasts. It is strongest during the summer (June-August), but is prevalent all year. The monsoon is a deflection of the SE trade winds toward the heated continental interior. It acts very much like a land-sea breeze system and is felt up to about 10°S. At Douala for example, while SW winds are prevalent during the afternoon, their frequency drops to 5 per cent during the early morning hours.

The harmattan, a wind of continental origin, is a hot, dry

wind from the NE quadrant. It reaches the shores of the Gulf of Guinea and extends seaward. This wind is prevalent from December through early March and is usually laden with fine dust which can reduce visibility in the form of haze. The harmattan generally occurs between Cape Palmas (4°22'N., 7°44'W.) and Douala (4°03'N., 9°41'E.).

Tides—Currents.—The Guinea Current sets E along the N shore of the Gulf of Guinea. During June through October, a large part of this current is formed by an extension of the Atlantic Equatorial Countercurrent. During other months, it is considered to be an extension of the Canaries Current which sets S along the NW coast of Africa. The Guinea Current attains rates of 1 to 2 knots, but generally becomes weaker as it flows E and is very weak in the Bight of Biafra.

Regulations.—For information concerning Nigerian Ship Entry Notice (SEN), VHF communications regulations, and reporting requirements for Nigerian oil terminals, see Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

Caution.—Numerous oil and gas fields, with associated rigs, platforms, obstructions, well heads, riser pipes, submarine pipelines, terminal buoys, and storage vessels, may be encountered up to 70 miles offshore between the approaches to the Forcados River (5°20'N., 4°50'E.) and the approaches to Debundscha Point (4°06'N., 8°58'E.). It is reported (2012) that oil and gas development and exploration areas may be found up to 70 miles seaward of the coast described in this sector.

Some of the well heads may protrude more than 5m above the sea bed and may be unmarked. Some of the platforms and structures may be disused, abandoned, and unlit. In many cases, the submarine pipelines are not buried in the sea bed and depths over them may be reduced by as much as 2m. In addition, many temporary structures and objects associated with oil and gas exploration may not be charted.

Several restricted areas lie offshore in the vicinity of the oil and gas installations. Vessels not proceeding to or departing from these installations should keep clear of the areas.

The constant heavy surf along the coast generally prevents landing by boats and renders the river bars dangerous.

Internal waves, known as Solitons, have been experienced within the waters described in this sector. These waves can result in extremely rapid current changes of 3 to 4 knots within a distance of 300 to 400m. This phenomenon can be very hazardous for vessels engaged in offshore operations.

Vessels are cautioned that security off the West African coast and within some ports is a serious problem. In recent years (1986-2014) several attacks by pirates and thieves have been reported. These have generally taken place at the outer anchorages, but some have occurred while berthed alongside or moored at offshore terminals.

Cape Formoso to the Cameroon River

3.2 **Cape Formoso** (4°16'N., 6°05'E.) is the general name

given to the low, wooded tract which forms the S extension of the Niger Delta. This tract lies on the E side of the entrance to the Nun River and Palm Point, which is marked by a light, forms its S extremity.

Between Palm Point and West Point, 8 miles E, the coast is fronted by a flat and sandy shore. The surf breaks heavily on this shore and trees stand along it, close to the water.

The **Brass River** (4°17'N., 6°13'E.), formed by the confluence of several branches of the Niger River, is entered between West Point and East Point, about 1 mile ENE.

West Point is low, sandy, and covered with small bushes. It is reported to be difficult to identify from seaward. The forest trees extend close up to the HW mark in this vicinity.

East Point is thickly wooded, but the trees on it have the appearance of a steep bluff and do not extend to the water. The W bank of the river is backed by trees as far as the entrance to Akassa Creek, 2 miles N of West Point. Above the entrance to Akassa Creek, the mangroves and swamps begin. The E bank of the river has some small villages, hidden by trees, situated within 0.5 mile of East Point.

Anchorage may be obtained in a depth of 11m about 6 miles SW of West Point or 7 miles SE of East Point.

Brass (4°19'N., 6°14'E.), a small town, stands on the E bank of the river, about 1 mile NE of East Point. It is fronted by several small piers which are used by boats and small craft.

A bar, consisting of shoals, connects the seaward ends of two spits which extend S for 1.5 miles from the entrance points. The outer part of this bar lies 2 to 3 miles S of the river mouth. Breakers mark the spits and the bar. A passage, about 0.5 mile wide, leads over the center of the bar, where the breakers are less frequent than elsewhere. The fairway is shallow and marked by buoys. It is only used by small craft with local knowledge. The approach is dangerous because of the heavy rollers which break at frequent intervals even at HW. The inner part of the channel may also be obstructed by fishing nets.

Caution.—Two unlit riser pipes, reported to be radar conspicuous, lie about 7 miles S of West Point.

In the rainy season, the Brass River entrance is often completely obscured.

3.3 Brass Oil Terminal (4°04'N., 6°17'E.) (World Port Index No. 46190), located about 14 miles SSE of the mouth of the Brass River, consists of a lighted central platform, which is equipped with a racon, and two SBMs. Submarine pipelines, which may best be seen on the chart, extend NNW to the shore and SE to the Agbara Oil Field from the terminal.

No. 1 SBM and No. 2 SBM are situated 1 mile E and 1 mile W, respectively, of the central platform, in a depth of 27.4m. Vessels of up to 320,000 dwt and 27m draft can be handled, with a minimum length of 220m and a maximum length of 366m.

Pilotage is compulsory. Pilots can be contacted by VHF and board in position 4°06.2'N, 6°19.4'E (3 miles NE of the Buoy Operating Platform). Berthing takes place only during daylight hours. Vessels may depart at any time.

Vessels should send an ETA to the terminal via Lagos Radio 7 days, 72 hours, 48 hours, and 24 hours before arrival. This message should contain vessel particulars and cargo request. Vessels should then contact the terminal by VHF before arrival and when anchoring.

A restricted area, with a radius of 2.5 miles, is centered on the terminal. Vessels must receive permission to enter this area.

The Brass Oil Terminal can be contacted, as follows:

1. VHF: VHF channels 14 and 16
2. Facsimile: 234-84-236400 (ext. 3478)

A designated anchorage area, with depths of 27 to 29m and fairly good holding ground, lies about 2.8 miles NE of the terminal platform.

Agbara Oil Field (3°56'N., 6°24'E.) lies about 10 miles SE of Brass Oil Terminal and has a central platform, with a very conspicuous flare.

3.4 Between the Brass River and the Bonny River, about 50 miles E, the coast is intersected by several rivers. The mouths of these rivers are fronted by bars on which the sea generally breaks heavily. The rivers are not entered through their main mouths, but through creeks which connect them inland with other rivers having navigable entrances. Several beacons are situated along the shore between the river entrances.

The **River Saint Nicholas** (4°18'N., 6°25'E.) lies 12 miles E of the Brass River and is separated from it by slightly elevated wooded land. The W entrance point of the river is surmounted by trees, which are taller than elsewhere in the vicinity, and can be easily identified. Heavy surf fronts the river mouth and bars entry.

The **River Santa Barbara** (4°19'N., 6°36'E.) lies 11 miles E of the River Saint Nicholas and is separated from it by low forest land, fringed by a sandy beach. The entrance points are low and difficult to recognize from seaward. Heavy surf fronts the river mouth and bars entry to the river.

The **River San Bartholomeo** (4°20'N., 6°43'E.) lies 7 miles E of the River Santa Barbara and is separated from it by a sandy plain, 0.3 mile wide, which is interspersed with several shallow lagoons. The entrance points of the river are bold, being covered with tall trees. A shallow bar extends up to 3.5 miles S of the mouth.

The **River Sambreiro** (4°22'N., 6°53'E.) lies 11 miles E of the River San Bartholomeo; its entrance does not open when approached from the W until bearing less than 334°. The W entrance point then appears low, sloping, and gradually rising to tall forest trees behind it. When the river mouth is fully open, bearing about 314°, both entrance points appear as bold, high bluffs. Heavy surf fronts the river mouth and extends up to 3.5 miles offshore.

Fouche Point (4°23'N., 7°01'E.) is located about 8 miles E of the W entrance point of the River Sambreiro. From the vicinity of the entrance to the River Sambreiro, this point appears to be the extremity of the land because the E side of the estuary formed by the New Calabar River and the Bonny River is not visible until a vessel proceeds farther to the E. The entrance of Ke (Fouche) Creek, about 0.3 mile wide, lies close W of Fouche Point. A prominent radio mast, 18m high, stands on the SW side of Fouche Point.

Caution.—A dangerous wreck lies about 6 miles S of Fouche Point and is marked on its S side by a buoy.

A stranded wreck, radar conspicuous, lies about 3.2 miles SW of Fouche Point. Another stranded wreck is reported to lie about 6 miles SW of the point.

3.5 The **New Calabar River** (4°23'N., 7°02'E.) and the

Bonny River (4°18'N., 7°04'E.) flow into a common estuary which lies between Fouche Point and Field Point, 7 miles E. The section of the Bonny River as far as Okrika, 25 miles above Field Point, is more correctly described as an arm of the sea, as it is insignificant and drains only a comparatively small area. The estuary is fronted by a bar which is more easily crossed than those of other rivers in the Niger Delta.

Fouche Point, the W entrance point of the estuary, is low and wooded with tall trees, among which the sea breaks at HW. The W bank of the New Calabar River extends NNW from this point. It is lined by mangroves and thick bush and is intersected by many creeks.

Field Point, the E entrance point of the estuary, is low, sandy, and covered with grass. A prominent beacon, 15m high, is situated in the vicinity of this point.

Bonny River Light (4°25'N., 7°08'E.), equipped with a racon, is shown from a framework tower standing 1 mile N of Field Point.

Rough Corner Spit, an area of drying patches, fronts Field Point; its seaward edge is marked by breakers.

Peter Point is located 2 miles N of Field Point. The E bank of the river between these points is lined by mangroves.

Yellow Island lies NE of Fouche Point and forms the E side of the New Calabar River. It is subject to continual change with islets and sandbanks constantly forming and reforming in this vicinity.

In the approaches to the estuary, the hard sandy bottom of the river is reported to extend seaward into depths of 11 to 12m. Off the other river entrances in this vicinity, the bottom at these depths is invariably formed by soft mud.

An outer fairway lighted buoy (4°12'N., 7°00'E.), equipped with a racon, is moored about 14 miles SW of Bonny River Light.

Inda Oil Field (4°21'N., 7°06'E.), with several platforms, lies centered about 4 miles SW of Field Point.



Bonny River Light

Tides—Currents.—Off Bonny, the current setting N begins 5 hours 30 minutes before HW and runs for 6 hours. It attains a maximum rate of 2.5 knots at springs. The current setting S begins 1 hour after HW and runs for 5 hours. It attains a maxi-

imum rate of 3.5 knots at springs. Between Field Point and Peter Point, 1.7 miles N, both currents set toward the entrance.

Depths—Limitations.—The bar fronting the estuary consists of a shoal area which connects the shallow banks extending from the entrance points to an extensive flat extending S from Yellow Island. Breaker Spit, lying 2.3 miles W of Field Point, forms the E side of the extensive flat. It dries in places and breaks heavily at half tide, even in fine weather. Western Breakers, a shoal, forms the SW part of the flat and its E edge is steep-to. This shoal breaks continuously in moderate weather, but not in calm weather.

Baleur Bank, with a least depth of 1m, lies centered 6 miles S of Field Point. It generally breaks at half tide and at all stages of the tide during rough weather.

Fouche Patches, a cluster of submerged heads, lies within the bar and has a least depth of 1.5m. This cluster lies on a shoal which extends about 3.5 miles SE from Fouche Point.

An entrance channel, 200m wide, extends NE across the bar and leads to the Bonny River. This channel, which may best be seen on the chart, is marked by lighted buoys and dredged to a depth of 14.3m (2008).

Pilotage.—Pilotage is compulsory from the outer fairway lighted buoy (4°12'N., 7°00'E.) along the Bonny River to Port Harcourt. For further information, see paragraph 3.11.

Vessel Traffic Service.—A VTS is in effect on the Bonny River. For further information, see paragraph 3.11.

Caution.—Due to the continual coastal erosion near the entrance of the estuary, the charted aspect of the land should not be relied upon.

When the harmattan is blowing, the land in the vicinity of Fouche Point will generally not be visible to vessels entering the river.

The lighted buoys marking the entrance channel should not be depended upon and are reported to be often unlit at night. It was reported (1995) that several of the buoys were missing.

Vessels should contact the port authorities in advance to verify the latest depths in the river and approach channel.

Several submarine pipelines, which may best be seen on the chart, extend across the river. The depths in the channel may be reduced by as much as 1.8m in the vicinity of these pipelines.

Fishing stakes line the sides of the river in numerous places.

Several spoil ground areas lie in the approaches and within the river and may best be seen on the chart.

Several oil fields and offshore terminals, with associated structures, lie in the approaches to the estuary and may best be seen on the chart.

It was reported (1986-2012) that several vessels, while anchored off the entrance channel, had been attacked by pirates. The authorities now advise vessels to drift within radar range of the outer lighted buoy instead of anchoring. During this same period, serious theft was being carried out from vessels berthed at the river ports and precautions should be taken.

3.6 Agbami Oil Terminal (3°28'N., 5°34'E.), located about 62 miles SW of the Brass River, consists of the deep-water offshore terminal FPSO Agbami and a SPM located approximately 1 mile to the N.

Vessels of up to 315,000 dwt and 329m in length have been accommodated at the SPM. Vessels of up to 150,000 dwt and 286m in length have been handled at the FPSO Agbami.

Pilotage is compulsory when within the exclusion zone and during mooring and unmooring operations. Pilots can be contacted on VHF channels 10 or 16 and board 3 miles NW of the terminal.

Tandem mooring at the FPSO Agbami takes place during daylight hours only, but vessels may depart at any time. Four tugs are available to assist when tandem mooring. Berthing and unberthing is available 24 hours when mooring to the SPM, which is preferred, and two tugs are available to assist with this operation.

Anchorage is not advised in the area due to numerous submarine pipelines and the excessive depth, more than 1,400m.

Vessels should send an ETA to the terminal 7 days or upon departure at previous port of call if less than 7 days, and also 72, 48, and 24 hours before arrival. Vessels should also advise of any change in ETA more than 12 hours, or of more than 30 minutes if within 12 hours of arrival.

Two restricted areas exist, one with a radius of 1850m, centered on the SPM, and another with a radius of 1500m, centered on the terminal. Vessels must receive permission to enter this area.

3.7 Okwori Oil Terminal (3°51'N., 6°59'E.) (World Port Index No. 46240), located about 33 miles SSW of Field Point, consists of a Floating Production Storage and Offloading (FPSO) facility. The FPSO (Sendje Berge), alongside which the loading vessel is berthed, is moored in a depth of 138m. Vessels up to 250,000 dwt can be handled.



FPSO Sendje Berge (Okwori Terminal)

Pilotage is compulsory. Pilots, who act as mooring masters, may be contacted on VHF channel 15 or 16 and board about 3 miles E of the terminal. Berthing is carried out during daylight hours only. Vessels may depart at any time.

Vessels should send an ETA to the terminal, Addax Petroleum Limited (marine superintendent), the agent, and as instructed by the charterer 7 days, 96 hours, 72 hours, 48 hours, and 24 hours in advance. The initial message should contain the following information:

1. Vessel's name, flag, and port of registry.
2. ETA (in local time).
3. Master's name.
4. Estimated draft (fore and aft) and displacement on arrival. Estimated draft on departure.
5. Last port of call. If vessel is proceeding to any other port(s) prior to terminal and, if so, any anticipated delays.

6. Cargo requirements (quantity of crude to be loaded).
7. Maximum loading rate vessel is able to accept.
8. If partly laden, quantity and description of cargo on board.
9. Name of agent.
10. Confirmation of clean bill of health.

Vessels must report immediately any change in their ETA of 2 hours or more. When in range, vessels must contact the terminal on VHF channel 16 for berthing instructions.

Okwori Terminal can be contacted, as follows:

1. Telephone: 47-22-120201
870-1320513 (INMARSAT A)
430-946810 (INMARSAT B)
2. Facsimile: 47-22-120202
870-1320514 (INMARSAT A)
430-946820 (INMARSAT B)
3. E-mail: master.sendje.berge@bwoffshore.com

The designated anchorage (waiting) area, with a radius of 1.5 miles, is centered about 5 miles E of the terminal.

A restricted area, which may best be seen on the chart, is located in the vicinity of the terminal and extends up to about 6 miles W of it. Several well heads and pipelines exist in this area. Vessels must receive permission to enter this area.

All export tankers are required to fly the Nigerian national flag during daylight while berthed at the terminal.

3.8 Okono Oil Terminal (3°59'N., 7°18'E.) (World Port Index No. 46238), consisting of a CALM buoy and a Floating Production Storage and Offloading (FPSO) facility, is located about 25 miles SE of Field Point. The FPSO (Mystras) is moored in a depth of 35m. The terminal can handle vessels up to 70,000 dwt (2003).

Pilotage is compulsory. Pilots are available from sunrise to 1500. Pilots can be contacted on VHF channel 8, 16, or 69 and board in the designated anchorage area, which lies centered 2 miles N of the FPSO.

Vessels should send their ETA 72 hours, 48 hours, 24 hours, and 4 hours in advance to the terminal. The initial message should contain the following information:

1. Vessel's name and call sign.
2. ETA.
3. Cargo requirements.
4. Deballast time.
5. Maximum loading rate in barrels per hour.
6. Estimated draft on arrival.
7. If any sickness onboard or clean bill of health.
8. Last port of call.
9. Port of destination.
10. Summer dwt.
11. Port of Registry/Country.
12. Master's name.
13. Confirm vessel is free of defects and in all respects in full safe operational status.
14. Distance in meters from bow to the loading manifold and from the port rail to the manifold.
15. Confirm that the vessel is fitted with 1 or 2 bow chain stoppers.
16. Advise if the bow chain stoppers are suitable for the terminal's 76mm mooring chain.
17. Acceptance and compliance with the Okono Terminal

User Regulations and Procedures.

When in range, vessels should contact the terminal on VHF channel 8.



FPSO Mystras (Okono Terminal)

A restricted area, with a radius of 2 miles, is centered on the terminal. Vessels must receive permission to enter this area.

Okono Terminal can be contacted, as follows:

1. Telephone: 870-763642070 (INMARSAT M)
234-8039072312 (V Sat)
2. Facsimile: 870-763642068 (INMARSAT M)
3. E-mail: oim.mystras@naoc.agip.it

Caution.—It is reported (2002) that gas is escaping to the surface in an area lying about 7 miles NE of Okono Terminal. All vessels are advised to keep clear of this area of escaping gas, which is marked by buoys.

It is reported (1986 and 1988) that discolored water and breaking seas were observed in an area lying about 10 miles SE of the terminal. Caution is advised.

3.9 Yoho Oil Terminal (4°01'N., 7°28'E.) (World Port Index No. 46178), located about 30 miles SE of Field Point, consists of a Floating Storage and Offloading (FSO) facility. The FSO (Yoho), which is equipped with a racon, is situated in a depth of 64m. The terminal can handle vessels up to 350,000 dwt.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 16 or 17 and board at the anchorage or where directed. The pilot boarding area is located within the Yoho Oil Field centered in position 3°58.7'N, 7°33.5'E. Berthing is only carried out during daylight hours, but vessels may depart at anytime. Vessels are moored in tandem, bow to stern, with the FPSO.

A designated anchorage area, with a radius of about 1,700m, lies centered about 5.5 miles ESE of the terminal. Obstructions and abandoned well heads may lie outside this area.

Vessels should send their ETA to the terminal 72 hours, 24 hours, and 4 hours in advance, specifying whether the time given is in GMT or local time. When the vessel is within 4 hours of arrival, the terminal should be contacted on VHF channel 16 or 17. Further communication, including instructions, will be conducted on a working channel. In the event of a communication difficulty, vessels should contact the Qua Iboe Terminal (see paragraph 3.21).

Yoho Terminal can be contacted, as follows:

1. Telephone: 870-330936310 (INMARSAT B)
2. Facsimile: 870-330936315 (INMARSAT B)
3. E-mail: qit.mooring.masters@exxonmobil.com

A restricted area, with a radius of 1.5 miles, is centered on the terminal. Vessels are prohibited from entering this area without prior permission from the terminal.

Caution.—It is reported (2002) that gas is escaping to the surface in an area lying about 6 miles NW of Yoho Terminal. All vessels are advised to keep clear of this area of escaping gas, which is marked by buoys.

It is reported (1986 and 1988) that discolored water and breaking seas were observed in an area lying about 5 miles SSW of the terminal. Caution is advised.

3.10 Bonny Offshore Terminal (4°11'N., 7°14'E.) (World Port Index No. 46206), located 13.5 miles SSE of Field Point, consists of three SBMs. A submarine pipeline extends NNW from the terminal to the shore. No. 1 SBM is moored close SSW of the platform and No. 2 SBM is moored close SSE of the platform. No. 3 SBM is located at position 4°06.5'N, 7°07.6'E.

The terminal is situated in a depth of 27.4m and can handle vessels between 45,000 dwt and 320,000 dwt, with drafts up to 22.8m. There are no maximum limitations on length or beam.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 8. The pilot boards for No. 1 and No. 2 SBM at 4°08.1'N, 7°14.2'E. For No. 3 SBM the boarding position is 4°04.7'N, 7°04.9'E. They remain on board throughout the loading operation.

Vessels should send an ETA via Lagos Radio 7 days, 3 days, 2 days, and 24 hours prior to arrival. Vessels should report immediately if their ETA changes by more than 2 hours. When in range or 3 hours prior to arrival, vessels should contact the terminal on VHF channel 10 for berthing information. Vessels at anchor should maintain a continuous listening watch on VHF channels 8 and 16.

Bonny Offshore Terminal can be contacted, as follows:

1. Telephone: 234-1-2601600
2. Facsimile: 234-1-2636681

The designated anchorage area, which is reported to have poor holding ground, lies about 3.5 miles S of the platform. Vessels must not proceed any closer to the terminal without a pilot.

Caution.—During the rainy season (June to September), heavy swells may be encountered at the anchorage.

It is reported (2002) that gas is escaping to the surface in an area lying about 11 miles SE of Bonny Offshore Terminal. All vessels are advised to keep clear of this area of escaping gas, which is marked by buoys.

3.11 Bonny (4°27'N., 7°10'E.) (World Port Index No. 46205) lies at the E side of the river. The town stands on very low land among mangrove swamps.

Tides—Currents.—The tides rise about 2.9m at springs and 1.9m at neaps.

Depths—Limitations.—The maximum draft to which a vessel can load is governed by the datum depth in the channel, the height of tide, and the underkeel clearance allowed.

It is reported (2008) that the approach channel has been

dredged to a depth of 14.3m over a width of 200m. The tide is variable, but the relevant factor is the height at the time of transit. The underkeel clearance allowed is dependent on the time of the year and is related to the height of the swell expected to be encountered in the channel. The underkeel clearance ranged from 0.76 to 1.22m (1989). The maximum size of vessel permitted at the terminal (1989) was 135,000 dwt, subject to review during the rainy season (May through October). The maximum length allowed was 320m and the maximum draft allowed was 11.2m. Vessels must have a minimum length of 161m, but there is no restriction for beam.

Mobil Jetty is a T-headed facility located on Peter Point, 2 miles N of Field Point. There is an alongside depth of 12.5m. Vessels of 20,000 to 120,000 dwt can be accommodated. The facility is surrounded by an Entry Restricted zone.

The Nigeria LNG Terminal (NLNG Terminal), a T-headed facility, stands about 0.8 mile NE of the Mobil Jetty. The terminal normally accommodates product tankers of 30,000 to 60,000 dwt, but partially-loaded vessels up to 100,000 dwt can be handled. It also handles LNG vessels up to 140,000 cubic meters. The facility is surrounded by an Entry Restricted zone.

The LPG Jetty, a T-headed pier, is situated between the above two jetties. It can accommodate LPG vessels with capacities between 30,000 and 85,000 cubic meters.

A storage tanker (Tuma) is moored in the river 0.7 mile WNW of Peter Point. Vessels berth alongside this tanker and depart at the early part of the ebb tide.

Pilotage.—Pilotage is compulsory from the outer fairway lighted buoy along the Bonny River up to Port Harcourt, including Onne and Okrika.

The pilots are Nigerian Port Authority licensed and are required for both inbound and outbound navigation of the Bonny Inshore Oil Terminal Marine Operations. Pilotage is only available during daylight hours.

Pilots can be contacted by VHF channels 14 or 16 and board, as follows:

1. Bonny Inshore Terminal:
 - a. Condensate and LNG vessels—1.5 miles SW of the outer fairway lighted buoy, generally between 2.5 hours before LW and 2.5 hours before HW.
 - b. Other vessels—0.5 mile SW of No. 1 lighted buoy.
2. Port Harcourt, Onne, and Okrika—in the anchorage off the NPA Jetty in position 4°27.5'N, 7°10.0'E.

Regulations.—A VTS is in service for all vessels transiting the Bonny River. Reports to Bonny Signal Station should be made on VHF channel 14, as follows:

1. Vessels inbound prior to entering the channel at the lighted entrance fairway buoy or on departing the narrow channel at Lighted Buoy No. 22.
2. Vessels outbound shall report their ETD at least 2 hours before departure. They shall also report before entering the narrow channel at Lighted Buoy No. 22 or upon departing the channel at the entrance Fairway Lighted Buoy.

Vessels should send their ETA by e-mail 7 days, 4 days, 72, 48, 24, and 6 hours in advance, giving the following information:

1. On departure from discharge port—ETA and arrival draft.
2. Seven (7) days prior to arrival—ETA, arrival draft, estimated arrival tank temperatures (vapor and liquid), and re-

quired cool down period upon berthing.

3. Four (4) days prior to arrival—Vessel's name, ETA at Bonny Point pilot boarding station, cool down time required, crew list, and ISPS security information with list of personnel embarking or disembarking.

4. Seventy-two (72) hours prior to arrival—Confirm ETA, average bottom liquid and tank vapor pressures, and average vapor pressure (mb absolute).

5. Forty-eight (48) hours prior to arrival—ETA and arrival draft, estimated tank temperatures and cool down period required on berthing, confirm all navigation, mooring, safety, and engine systems are fully operational, confirm vessel is free of tank leakage.

6. Confirmation that the following systems have been inspected/tested and are operating correctly should be included in the 48-hour report—Cargo system and boil off control equipment; gas-detection analyzers, ESDS alarms, and interlocks; tank high level alarms, tank high pressure and low pressure alarms; remotely operated valves, cargo tanks and lines free of oxygen; stress calculations for cargo, ballast, and bunker transfers made and within recommended safety limits; and estimated departure draft from Bonny.

7. Twenty-four (24) hours prior to arrival—Confirm ETA.

8. Six (6) hours prior to arrival—Vessel's name, voyage number, cargo number, ETA at Bonny Point pilot boarding point, average bottom tank temperature, average tank vapor pressure and temperature (mb absolute) over the last 24 hours, and confirm the vessel is ready to berth on arrival.

Vessels should then contact Bonny Signal Station on VHF channel 14 to obtain permission to proceed into the entrance channel. Vessels should also maintain a continuous listening watch on VHF channels 14 and 16.

All movements of vessels between the outer fairway lighted buoy and the gas berths are restricted when gas or condensate supertankers are maneuvering in the area.

Contact Information.—Bonny Inshore Terminal can be contacted as follows:

- | | |
|---------------|--|
| 1. Telephone: | 234-803905 (ext. 3130)
234-803905 (ext. 3133) |
| 2. Facsimile: | 234-84-232900 (ext. 3152)
44-207-3163888 (ext. 3103) |
| 3. E-mail: | bonny.terminal@ning.com
marine.ops@ning.com |

Anchorage.—Vessels proceeding to Bonny may anchor in depths of 17 to 19m within a designated area centered about 4 miles W of the outer fairway lighted buoy. When anchored, vessels should report their date and time of arrival to the port authority by VHF.

3.12 Onne (4°41'N., 7°09'E.) (World Port Index No. 46208) is situated in Ogu Creek and consists of a quay, 1,590m long, which provides six berths. The quay has a depth of 13.5m alongside and can accommodate vessels up to 55,000 dwt. There are facilities for general cargo, container, ro-ro, and bulk vessels.

Onne Home Page

<http://www.nigerianports.org>

The entrance channel within the creek has a least depth of 5.4m.

Federal Lighter Terminal, located at the N end of the port, consists of a quay 1,567m long.

West Africa Container Terminal, currently being expanded, is located at the S end of the port. When complete, the terminal will have a new 570m long quay, with a depth alongside of 12m.

Federal Ocean Terminal is currently under construction (2012) and will have three berths, each 250m long.

Pilotage is provided by Bonny NPA Pilots.

The Onne Port Authority can be contacted, as follows:

1. Telephone: 234-84-820464
2. Facsimile: 234-84-820423
3. E-mail: onneinfo@nigerianports.org

3.13 Okrika (4°43'N., 7°05'E.) (World Port Index No. 46207), an oil terminal, lies on the NE side of the river channel, about 0.5 mile SSE of the island on which the town of Okrika stands. The oil refinery is fronted by two L-shaped jetties, with faces 100 and 80m long, with dolphins at the outer end. Coastal and ocean tankers up to 39,870 dwt and 192m in length can be handled. Berthing is carried out during daylight hours only. The approach river channel has a least charted depth of 4.6m close WSW of the Oil Jetty. Vessels with drafts up to 7.9m can berth and vessels with drafts up to 9m can depart on the flood tide. The port monitors VHF channels 14 and 16.

3.14 Port Harcourt (4°46'N., 7°00'E.) (World Port Index No. 46210), a railroad terminal, lies on the E side of a bend in the Bonny River, about 30 miles above the mouth.

Port Harcourt Home Page

<http://www.nigerianports.org>

Depths—Limitations.—There are eight principal dry cargo berths, which are 128 to 196m long; one palm oil berth; and one tanker berth. In addition, there are several mooring buoy berths, with depths of 8m. Generally, vessels up to 190m in length and 8.5m draft can be accommodated. At the palm oil berth, which consists of a T-jetty with dolphins, vessels are limited to a maximum length of 146m. Berthing is carried out during daylight hours only. The approach river channel has a dredged depth of 11.5m.

Pilotage.—For details see paragraph 3.11.

Signals.—When two black balls are displayed from the signal station of the port, a vessel is known to be proceeding up-river from Bonny and outbound vessels should take necessary precautions, especially when navigating the bends.

Contact Information.—Port Harcourt can be contacted, as follows:

1. Telephone: 234-84-300370
2. Facsimile: 234-84-335402

Caution.—At the river berths, the flood tidal current attains a rate of 2.5 knots and the ebb current attains a rate of 3 knots.

3.15 Between the Bonny River and the Opobo River, 27 miles E, the coast is low and swampy. It is covered with man-

groves and other trees which grow in brackish water. Further inland, the country is fertile and more elevated. Several beacons, which may best be seen on the chart, stand along this stretch of the shore.

The Andoni River (4°25'N., 7°20'E.), which is shallow and not used, enters the sea 11 miles E of Field Point.

Kalaekule Oil Field (4°16'N., 7°19'E.), with several platforms, lies centered about 10 miles S of the mouth of the Andoni River.

Caution.—Vessels navigating along this stretch of the coast should not proceed into depths of less than 15m without local knowledge due to numerous obstructions and dangers.

Numerous oil wells lying off the this stretch of the Niger Delta have collapsed and created foul areas, which may best be seen on the chart.

3.16 Ima Oil Terminal (4°13'N., 7°23'E.), located about 14 miles SSE of the mouth of the Adoni River, consists of a Floating Production Storage and Offloading (FPSO) facility and an SBM. A submarine pipeline extends about 9 miles NW from the terminal to a production platform (Cliff Langley). The FPSO (Ailsa Craig) is moored in a depth of 25m. The terminal can handle vessels between 25,000 dwt and 150,000 dwt, with drafts up to 18m.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF channels 16 or 72 and board in the anchorage area 3 miles S of the terminal. Berthing is carried out only during daylight hours. Vessels may depart at any time.

Vessels should send their ETA to the terminal operator 72 hours, 48 hours, and 24 hours in advance. Vessels should then contact the terminal on VHF channel 72 prior to arrival.

A restricted area, with a radius of 2 miles, is centered on the terminal. Vessels must receive permission to enter this area.

All export tankers shall fly the Nigerian National flag during daylight while berthed at the terminal.

A designated anchorage area, with a radius of 1.5 miles, lies centered about 3 miles S of the terminal.

Caution.—It is reported (1986 and 1988) that discolored water and breaking seas were observed in an area lying about 17 miles S of the Ima Terminal. Caution is advised.

3.17 The Opobo River (4°27'N., 7°35'E.) is entered between West Point and East Point, 1.8 miles NE. It is fronted by a bar which is subject to change. West Point is difficult to distinguish from seaward when bearing less than 015°. East Point is fairly sharp, with forest trees standing near the water.

Opobo (4°35'N., 7°32'E.) (World Port Index No. 46220) is situated on the E bank of the river, 10 miles above the mouth. This town is a principal palm oil center and a number of factories, fronted by quays, stand along the river.

The bar is formed by a horseshoe-shaped shoal connecting the outer ends of the spits, which extend up to about 2 miles S from each entrance point. The sea always breaks heavily on these spits. A channel leading across the E part of this bar has a least charted depth of 1.8m. The bottom of the bar is formed by sand, with mud on either side of it. Small vessels, with local knowledge, use the channel, but no pilots are available.

Anchorage is available outside the bar, in a depth of 10m, about 4 miles S of West Point. However, because the prevailing

current sets E, vessels nearly always lie broadside to the prevailing S swell.

Oso Oil Field (4°18'N., 7°38'E.), with several platforms, lies centered about 10 miles S of the mouth of the Opobo River.

Usari Oil Field (4°14'N., 7°47'E.), with several platforms, lies centered about 18 miles SE of the mouth of the Opobo River.

Asabo Oil Field (4°06'N., 7°48'E.), with several platforms, lies centered about 25 miles SE of the mouth of the Opobo River.

Adua Oil Field (4°06'N., 7°42'E.), with several platforms, lies centered about 22 miles SSE of the mouth of the Opobo River.

Ekpe Oil Field (4°06'N., 7°35'E.), with several platforms, lies centered about 21 miles S of the mouth of the Opobo River.

Caution.—Numerous submarine pipelines, which may best be seen on the chart, extend between the above oil fields and the shore.

3.18 Odudu Oil Terminal (4°00'N., 7°46'E.) (World Port Index No. 46235), located 29 miles SSE of the entrance to the Opobo River, consists of a Floating Production Storage and Off-loading (FPSO) facility and a CALM buoy. The FPSO (Unity), a storage tanker, is turret-moored. A submarine pipeline extends 18 miles NE from the terminal to the Ofon Oil Field. The terminal is situated in a depth of 64m and can handle vessels of between 80,000 and 280,000 dwt.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF and board in the anchorage area. Berthing or departure may take place at any time. Vessels are generally moored to the stern of the storage tanker. Tugs are available for berthing; one tug will remain secured to the stern of the tanker for the entire loading operation.

Vessels should send an ETA message to the terminal 72 hours, 48 hours, 24 hours, and 4 hours in advance. Vessels should then contact the terminal on VHF channel 72 or 77 when within range. The initial message should contain the following information:

1. Vessel's name and call sign.
 2. ETA.
 3. Cargo requirements.
 4. Deballast time.
 5. Maximum loading rate in barrels per hour.
 6. Estimated draft on arrival.
 7. If any sickness onboard or clean bill of health.
 8. Last port of call.
 9. Confirm vessel is free of defects and in all respects in full safe operational status.
 10. Distance in meters from bow to the loading manifold and from the port rail to the manifold.
 11. Confirm that the vessel is fitted with one or two bow chain stoppers.
 12. Advise if the bow chain stoppers are suitable for the terminal's 84mm mooring chain.
 13. Acceptance and compliance with these Okono Terminal User Regulations and Procedures.
- The Odudu Operations Manager can be contacted, as fol-

lows:

1. Telephone: 870-322688671 (INMARSAT B)
2. Facsimile: 870-322688672 (INMARSAT B)
3. E-mail: ep-ng-OML100.OML100-fso-mos@total.com

Vessels must have the ability to maintain a minimum of 30 per cent of their summer dwt throughout the loading operation. Vessels must arrive with a trim of not more than 2m by the stern.

A restricted area, which may best be seen on the chart, lies in the vicinity of the terminal and extends up to about 8 miles S of it. Vessels must receive permission to enter this area.

All vessels must fly the Nigerian national ensign during day-time when in the vicinity of the terminal.

A designated anchorage area, with a radius of 1.5 miles, lies centered about 5.5 miles NNE of the storage tanker.

3.19 Okoro Oil Terminal (4°24.1'N., 7°49.7'E.), located 15 miles ESE of the entrance to the Opobo River, consists of a Floating Production Storage and Offloading (FPSO) facility. The FPSO (Armada Perkasa), a storage tanker, is moored bow-on to an SBM. The terminal is situated in a depth of 14m and can handle vessels up to 70,900 dwt and maximum draft of 8.75m.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channels 13, 16, and 74 and board approximately 5 miles S of the FPSO's location. Berthing is during daylight only, but unberthing may take place at any time. Vessels are generally moored to the stern of the storage tanker. Tugs are available for berthing; one tug will remain secured to the stern of the tanker for the entire loading operation.

Vessels should send an ETA message to the terminal 72 hours, 48 hours, 24 hours, and 12 hours in advance or if there is a more than 2 hour change in arrival time. Vessels should then contact the terminal on VHF channel 13 when within range. The initial message should contain the following information:

1. Vessel's name and call sign.
2. Vessel's facsimile number and satellite code.
3. Master's name
4. ETA in local time.
5. Estimated arrival draft fore and aft and displacement.
6. Last port of call.
7. Confirm vessel has a clean bill of health.
8. Number of bow stoppers and type.
9. Cargo requirement-quantity of crude to be loaded.
10. Maximum loading rate.
11. Confirm SWL 10-ton crane at manifold.
12. Name of agent.
13. Owners and operators name and address

The Okoro Terminal can be contacted, as follows:

1. Telephone: 234-703-4117113
2. Facsimile: 44-1224-279085
3. E-mail: okoro.terminal.manager@amnipetroleum.com

Vessels must have the ability to maintain a minimum of 30 per cent of their summer dwt throughout the loading operation. Vessels must arrive with a trim of not more than 2m by the stern.

A restricted area extends 2,000m from the FPSO. Vessels must have the pilot onboard before entrance into the restricted

area is granted.

Anchorage should be taken a safe distance from the oil and gas installations. Anchoring within the exclusion zone is prohibited.

3.20 Between the Opobo River and the Qua Ibo River, 24 miles E, the coast consists of a narrow ridge of sand, only about 1m above sea level and, in some places, only about 3m wide. Several mangrove swamps joined by lagoons and creeks lie behind this ridge.

Between the Qua Ibo River and the Calabar River, 18 miles E, the coast is formed by a strip of sand, which is mostly under water during the rainy season, backed by a dense forest.

The **Qua Ibo River** (4°33'N., 7°59'E.) is entered between Bluff Point and Egerton Point, 0.3 mile E. A bar fronts the river mouth. A channel leads across the bar and can be used by small craft, with drafts up to 2.7m, at HW. The entrance of this river can be recognized by a church, with a prominent spire, standing on the E bank, 1.5 miles within the mouth. A pier is situated in the estuary of the river and is used by craft associated with the offshore oil and gas facilities.

A group of storage tanks and a prominent radio mast are situated about 1 mile E of the river entrance.

Enang Oil Field (4°12'N., 7°55'E.), with several platforms, lies centered about 10 miles SSW of the mouth of the Kwa Ibo River.

Idoho Oil Field (4°22'N., 8°00'E.), with several platforms, lies centered about 11 miles S of the mouth of the Kwa Ibo River.

Inim Oil Field (4°12'N., 8°00'E.), with several platforms, lies centered about 20 miles S of the mouth of the Kwa Ibo River.

Edop Oil Field (4°09'N., 7°58'E.), with several platforms, lies centered about 24 miles S of the mouth of the Kwa Ibo River.

Ofon Oil Field (4°06'N., 8°02'E.), with several platforms, lies centered about 27 miles S of the mouth of the Kwa Ibo River.

Etim Oil Field (4°09'N., 8°03'E.), with several platforms, lies centered about 24 miles S of the mouth of the Kwa Ibo River.

Eku Oil Field (4°16'N., 8°06'E.), with several platforms, lies centered about 18 miles SSE of the mouth of the Kwa Ibo River.

Unam Oil Field (4°17'N., 8°11'E.), with several platforms, lies centered about 20 miles SE of the mouth of the Kwa Ibo River.

Ubit Oil Field (4°14'N., 8°10'E.), with several platforms, lies centered about 21 miles SSE of the mouth of the Kwa Ibo River.

Lyak Oil Field (4°10'N., 8°10'E.), with several platforms, lies centered about 25 miles SE of the mouth of the Kwa Ibo River.

Utue Oil Field (4°11'N., 8°15'E.), with several platforms, lies centered about 27 miles SE of the mouth of the Kwa Ibo River.

Mfem Oil Field (4°16'N., 8°15'E.), with several platforms, lies centered about 23 miles SE of the mouth of the Kwa Ibo River.

Okwok Oil Field (4°07'N., 8°18'E.), with a single well, lies

centered about 32 miles SE of the mouth of the Kwa Ibo River.

Caution.—Between the Opobo River and the Calabar River, 40 miles E, numerous oil and gas structures, platforms, pipe risers, and well heads lie up to 30 miles offshore. Numerous submarine pipelines, which may best be seen on the chart, also extend between the above-named oil fields and the shore.

A dangerous wreck is reported to lie about 11.2 miles S of the entrance to the Kwa Ibo River.

3.21 Qua Iboe (Kwa Ibo) Offshore Terminal (4°14'N., 8°02'E.) (World Port Index No. 46195) is located 19 miles S of the entrance to the Qua Ibo River. It consists of an operations platform, equipped with a racon, and three SPMs which are moored 1.2 miles SE, 1 mile SSE, and 3.4 miles ESE of it. The terminal is situated in depths of 25.9 to 27.4m and can handle vessels of up to 312,000 dwt, with drafts up to 21.9m.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channels 16 and 67 and board at the anchorage or about 2.5 miles SE of the operations platform.

Vessels should send an ETA 7 days, 72 hours, 48 hours, 24 hours, and 6 hours prior to arrival at the anchorage area.

The pilot requires the following information:

1. ETA at the pilot station.
2. Time of notice of readiness.
3. Boarding arrangement for officials.
4. Propeller immersion.
5. Portside derrick or crane to be ready for cargo gear basket.
6. Any defects.

When communication has been established with Qua Iboe Control on VHF channels 16 and 67, vessels must provide the following information:

1. Vessel's name and call sign.
2. ETA at the terminal.
3. Last port of call.
4. Cargo requirements.

The Qua Iboe Terminal can be contacted, as follows:

1. Telephone: 234-82-443211
2. Facsimile: 234-82-443195
3. E-mail: qit.mooring.masters@exxonmobil.com

All tankers enroute to the SPMs must switch on their radar to identify the racon (K) signal on the operations platform as an aid to navigation.

A designated anchorage area, which may be best seen on the chart, lies centered 11 miles SE of the operations platform.

Caution.—Vessels should not anchor outside the designated anchorage area.

On rare occasions, winds of up to 60 knots have been recorded at the terminal and are sometimes accompanied by heavy rain, thunder, and lightning. They are unpredictable in both force and direction.

Vessels bound for the terminal should proceed with extreme caution and approach from the SE as numerous structures, obstructions, platforms, riser pipes, and submarine pipelines are situated in the vicinity.

3.22 Zafiro Offshore Oil Terminal (3°51'N., 8°07'E.) is located about 22 miles SSE of Qua Iboe Offshore Terminal and 37 miles W of Punta Europa (3°48'N., 8°43'E.), the NW ex-

tremity of Isla de Bioko. It is under the jurisdiction of Equatorial Guinea.

The terminal consists of a Floating Production Storage and Offloading (FPSO) facility (Zafiro Producer), a production platform (Jade), and is now a part of the Serpentina Offshore Terminal. It is situated in depths of 70 to 300m and can handle vessels up to 310,000 dwt.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channels 16 and 74 and board about 4 miles N of the terminal. Pilots may also board by helicopter. Berthing is carried out by daylight only but vessels may depart at any time.

Vessels must send an ETA to the terminal 72 hours, 48 hours, 36 hours, and 24 hours in advance. Changes of 3 hours or more to the ETA must be reported immediately. Changes of 1 hour or more to the ETA following the 24-hour message must be reported immediately. Vessels should contact Zafiro Producer Radio on VHF channel 74 or 16 when within range of the terminal FPSO (Zafiro Producer).

A restricted area, with a radius of 4.3 miles, surrounds the terminal. Vessels must receive permission to enter this area.

Vessels must fly the Equatorial Guinea national ensign during daylight when moored at the terminal.

A designated anchorage area, with a depth of 64m, lies about 6 miles N of the terminal.

Caution.—Thunder and lightning are common during the rainy season and may delay cargo operations.

Vessels approaching the terminal from the W must remain clear of the Nigerian offshore terminals and the restricted area located in the vicinity of Odudu Oil Terminal (see paragraph 3.18) prior to adjusting course for the terminal.

3.23 Serpentina Offshore Terminal (3°48'N., 8°05'E.) (World Port Index No. 46310) is located about 3.5 miles SW of Zafiro Offshore Terminal and is under the jurisdiction of Equatorial Guinea.

The terminal consists of a Floating Production Storage and Offloading (FPSO) facility (Serpentina), which is moored to an SPM. It is situated in a depth of 475m and can handle vessels up to 350,000 dwt.

The terminal is situated within the restricted area surrounding Zafiro Offshore Oil Terminal.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channels 16 and 74 and board about 2 miles W of the terminal or about 4 miles N of Zafiro Offshore Oil Terminal. Pilots may also board by helicopter. Berthing is carried out by daylight only but vessels may depart at any time. Vessels berth in tandem with the stern of the FPSO.

Vessels must send an ETA to the terminal 72, 48, 36 and 24 hours in advance. Changes of 3 hours or more to the ETA must be reported immediately. Changes of 1 hour or more to the ETA following the 24-hour message must be reported immediately. Vessels should contact Zafiro Producer Radio on VHF channel 74 or 16 when within range of the terminal FPSO (Serpentina).

Vessels must fly the Equatorial Guinea national ensign during daylight when moored at the terminal.

Serpentina Terminal can be contacted, as follows:

1. Telephone: 1-713-431-9036
1-713-431-9123

2. Facsimile: 1-713-431-9124
1-713-431-9081
1-713-431-9082
3. E-mail: megi-marine@exxonmobil.com

Vessels may anchor in the designated area, with a depth of 64m, lying about 6 miles N of Zafiro Offshore Oil Terminal or in a similar depth about 2 miles W of the FPSO (Serpentina). Vessels must not pass through the restricted area when proceeding to the anchorage.

Caution.—Thunder and lightning are common during the rainy season and may delay cargo operations.

Vessels approaching the terminal from the W must remain clear of the Nigerian offshore terminals and the restricted area located in the vicinity of Odudu Oil Terminal (see paragraph 3.18) prior to adjusting course for the terminal.

3.24 The Calabar River (4°33'N., 8°23'E.) has an estuary which is entered between West Point (4°32'N., 8°17'E.), located 17.5 miles E of the Qua Ibo River, and East Point, 13 miles ESE. This estuary is formed by the waters of several rivers including the Cross River, the Akpa-Yafe River, and the Little Kwa River. The Calabar River has no definite bar, but the entrance is obstructed by several shoal flats.

The border between Nigeria and Cameroon (Cameroun) is situated on the E side of the estuary. It lies in the vicinity of the Akpa Yafe River, which is entered about 9 miles N of East Point.

Tides—Currents.—The tides at the entrance to the main channel rise about 2.1m at springs and 1.6m at neaps. At Calabar, the tides rise about 1.5m at springs and 1.3m at neaps.

During the dry season (December to April), the flood current as far as Calabar begins 4 hours 30 minutes before HW. This current runs for 5 hours and attains its greatest rate 2 hours 45 minutes before HW. The ebb current begins 1 hour 30 minutes after HW. This current runs for 5 hours 45 minutes and attains its greatest rate 4 hours 15 minutes after HW. At springs, the flood current attains a rate of 1.5 to 2 knots. At springs and during the dry season, the ebb current usually attains a maximum rate of 2 to 2.5 knots. At the outer fairway buoy, this current has been observed to be less than 2 knots, but at Parrot Island (4°49'N., 8°17'E.) it has been observed to attain a rate of 3.5 knots.

Depths—Limitations.—Tom Shot Bank, with depths of less than 5m, is a large shoal area which extends up to about 11 miles S from the W side of the river entrance. Depths on this bank are very irregular and it should not be approached within depths of less than 7m.

It was reported (1986) that a low and sandy islet, about 0.7 mile long, had formed on the W side of Tom Shot Bank, 4 miles SE of West Point.

Outer Reef lies in the middle of the E edge of Tom Shot Bank. It is marked by breakers, even in the calmest weather, and forms a useful mark for locating the river entrance. In misty weather, these breakers are frequently the first distinguishing feature recognized in the area. The E side of Outer Reef is steep-to and may be approached with safety.

A minor channel, used by small craft with local knowledge, leads NE through the NW part of Tom Shot Bank, adjacent to West Point.

Bakasi Bank, with depths of less than 5m, is a vast shoal area

which extends up to about 12 miles SW and 8 miles S from the E side of the river entrance. It is composed of soft mud and usually covered, in many places, by numerous fishing stakes. When the land is not visible, vessels approaching the estuary may determine which side of the entrance they are on as there are no fishing stakes on Tom Shot Bank. A secondary channel leads between the W side of Bakasi Bank and the E side of Tom Shot Bank. It is marked by buoys and has a least depth on the centerline of 3.9m (1990).

The main entrance channel leads NE through Tom Shot Bank and is entered about 13 miles S of West Point. It was reported (1995) to be 150m wide and to have a dredged depth of 8m. The best time to enter the river channel is 3 hours before HW at Calabar. No night transit is allowed.

Aspect.—The W side of the river entrance is low, sandy, and backed by high trees and large bushes. From the SW, West Point appears low and sandy, but Tom Shot Point, a steep bluff located 4 miles NE, is generally visible behind it. The E side of the river entrance is formed by the S shore of the Bakasi Peninsula. Between East Point and Sandy Point, 3 miles N, the E bank is sandy and backed by high mangroves.

An outer fairway buoy (4°18.5'N., 8°14.9'E.) is moored about 13.5 miles S of West Point. The main channel is marked by buoys.

Caution.—The buoys marking the channels may be moved as conditions change. In addition, the outer buoys are very exposed and are liable at times to be out of position or missing.

During the rainy season (May to October), the river entrance is often obscured by thick weather from seaward. During the Harmattan season (December through March), the river entrance is at times enveloped within a dense haze. This haze may last a week or more and reduce visibility to less than 2 miles.

Vessels should use extreme caution when approaching the estuary as, in addition to the offshore banks and shoals, there are numerous oil development structures, obstructions, platforms, riser pipes, well heads, and submarine pipelines situated in this area. Some of the latter structures and platforms are densely illuminated.

The coast in the vicinity of the estuary is very low and has few distinguishing features.

A restricted area, which may best be seen on the chart, extends S from the S part of Bakasi Bank and is associated with the oil and gas loading facilities.

Less water than charted was reported (1986) to lie about 4 miles NE of the outer fairway buoy.

A dangerous wreck, with masts visible, is reported (1989) to lie about 2 miles W of the S end of Outer Reef and is marked by a lighted buoy. It is reported (2005) that the wreck of a jack-up barge, with three legs visible, also lies in this vicinity.

An isolated depth of 1.5m was reported (1986) to lie about 6.7 miles SSE of West Point, on the N side of the main channel.

A spoil ground area, which may best be seen on the chart, lies 4.3 miles NE of the outer fairway buoy.

Several unsurveyed areas lie in the approaches to the river and may best be seen on the chart.

3.25 Calabar (4°58'N., 8°19'E.) (World Port Index No. 46230) is situated in Nigeria on the E bank of the Calabar Riv-

er, about 42 miles above the entrance. The new port lies 5 miles above the town and the old port.

Depths—Limitations.—The old port has a principal cargo berth, 75m long, which can accommodate vessels of up to 160m in length and 4m draft. There are two oil berths, with a depth of 8m alongside, which can accommodate vessels of up to 150m in length. In addition, there are 11 mooring buoy berths in the river.

The new port consists of a quay, 860m long, which provides six berths. It has a depth of 9m alongside and can accommodate vessels of up to 170m in length and 7m draft. There are facilities for general cargo, bulk, container, and ro-ro vessels.

Pilotage.—Pilotage is compulsory. Vessels should send an ETA via Port Harcourt or Lagos Radio 7 days, 4 days, 3 days, and 1 day prior to arrival. Vessels should anchor between Lighted Buoys No. 23 and No. 25 and contact the port on VHF channel 12 or 16 in order to request pilotage. The pilot boarding area lies approximately 25.5 miles SW of West Point in position 4°51'N., 8°17'E. Movements are carried out in daylight only.

Contact Information.—Calabar Port Authority can be contacted, as follows:

1. Telephone: 234-87-232480
2. Facsimile: 234-87-210151
3. E-mail: calinfo@nigerianports.org

Anchorage.—Vessels may anchor outside the estuary in a depth of 22m, mud, about 11 miles SSW of West Point, clear of any submarine pipelines or well heads.

Caution.—Several spoil ground areas lie within the river and may best be seen on the chart.

Large floating tree trunks, partly submerged, may be encountered within the river.

Several submarine cables extend across the river and may best be seen on the chart.

3.26 Antan Oil Terminal (4°13'N., 8°20'E.) (World Port Index No. 46225) is situated about 19 miles SSE of West Point (4°32'N., 8°17'E.). It consists of a Tanker Manifold Platform, a CALM buoy, and a Floating Production Storage Offloading (FPSO) facility moored close SE. The FPSO (Knock Adoon) is located in a depth of 38m and can handle vessels between 60,000 dwt and 150,000 dwt. The CALM buoy can accommodate vessels up to 350,000 dwt.

Pilotage is compulsory. Pilots, acting as mooring masters, can be contacted by VHF and board in the anchorage area 3 miles S of the terminal.

Vessels should send an ETA to the terminal 7 days, 96 hours, 72 hours, 48 hours, and 24 hours, in advance. Any change to the ETA of 2 hours or more should be reported immediately. The initial message should include the following information:

1. Vessel's name and call sign.
2. ETA in local time.
3. Name of the Master in full.
4. Estimated arrival draft, forward and aft displacement, estimated departure draft.
5. Last port of call.
6. Cargo requirements—quantity of crude to be loaded.
7. Name of agent.
8. Confirm vessel has a clean bill of health.
9. Maximum loading rate capabilities (barrels per hour).

10. Owners and operators name and address
11. Flag and port of registry.
12. Number of bow stoppers and type.
13. Confirm 15-ton SWL crane/derrick

Contact Information.—Knock Adoon Control can be contacted, as follows:

1. Telephone: 47-51-206140
2. Facsimile: 47-51-206141
3. E-mail: oim.adoon@vsl.forms.no

Vessels should contact the FPSO on VHF channel 15 or 16 when in range to obtain berthing details.

A restricted area, with a radius of 1.5 miles, is centered on the terminal. Vessels must receive permission to enter this area.

All vessels must fly the Nigerian national ensign when in the vicinity of the terminal.

A designated anchorage area, with a depth of 45m, lies centered about 4 miles S of the terminal and may best be seen on the chart. Vessels are moored only during daylight hours but may depart at any time.

3.27 Kita Oil Field (4°05'N., 8°26'E.), consisting of several platforms, lies about 12 miles SE of West Point (4°32'N., 8°17'E.), the W entrance point of the Calabar estuary.

Ekoundou Oil Field (4°18'N., 8°25'E.), consisting of several platforms, lies about 17 miles SSE of West Point.

Barombi Oil Field (4°15'N., 8°26'E.), consisting of several platforms, lies about 19 miles SSE of West Point.

Kombo Oil Field (4°17'N., 8°30'E.), consisting of several platforms, lies about 20 miles SE of West Point.

Bavo Oil Field (4°20'N., 8°37'E.), consisting of several platforms, lies about 23 miles SE of West Point.

Asoma Oil Field (4°17'N., 8°38'E.), consisting of several platforms, lies about 26 miles SE of West Point.

Kole Oil Terminal (4°13'N., 8°33'E.) (World Port Index No. 46285), situated about 14 miles S of the Bakasi Peninsula, is an export terminal under the port authority of Douala, Cameroon. It consists of a FSO (Kingsway) and two SBMs.

The main SBM (KLB2 Bluewater), to which export tankers are moored, is situated about 2.5 miles SSW of the storage tanker, in a depth of 26.5m. Vessels between 50,000 dwt and 310,000 dwt, with drafts up to 22m, can be handled. The minimum underkeel clearance permitted is 4.5m.

Vessels should send an ETA 72 hours, 48 hours, and 24 hours before arrival. Pilotage is compulsory. Pilots, who act as mooring masters, are provided by the station at Douala. They can be contacted on VHF channels 11, 12, or 16 and board about 2 miles SW of the SBM Lighted Buoy KLB 2. of the main SBM. Berthing is only carried out during daylight but vessels may depart at any time.

A designated anchorage area, with a depth of 38m, lies centered about 1 mile S

Caution.—The above-listed oil fields and offshore terminal are situated within an extensive restricted area. This area extends up to about 17 miles seaward of the Bakasi Peninsula and may best be seen on the chart. Numerous platforms, submarine pipelines, well heads, and riser pipes associated with oil and gas development exist within this area. Vessels are prohibited from entering the area without prior permission.

Visibility at the Kole Terminal is often reduced to 2 miles or less during the harmattan season (December to February) and

during the wet season (June to September).

Very strong E to SSE winds, up to 45 knots, can occur with the passage of local thunderstorms at the terminal but they are short lasting. The predominant swell is SSW with an average height of 2.5m.

3.28 Moko Abana Oil Field (4°11'N., 8°27'E.), consisting of several platforms, lies centered 23 miles SE of West Point (4°32'N., 8°17'E.).

Massongo Marine Terminal (Victoria Oil Terminal) (4°07'N., 8°28'E.), located 7 miles SW of Kole Oil Terminal, is an export terminal under the port authority of Douala, Cameroon. It consists of a production platform, a storage tanker (Massongo) and an SBM.

The SBM, to which the export tankers moor, is situated in a depth of 57m. Vessels of between 50,000 dwt and 280,000 dwt can be handled, with drafts up to 21.3m.

Pilotage is compulsory. Pilots, acting as mooring masters, are provided by the station at Douala. They can be contacted by VHF channels 13, 16, or 69 and board about 2 miles ENE of the SPM.

Vessels should send an ETA, via Douala, 72 hours, 48 hours, and 24 hours before arrival. Vessels should then contact the terminal on VHF when within 60 miles.

Vessels berthed at the terminal must have their engines available at all times. Berthing is generally only carried out during daylight but the operation may take place at night with the agreement of the terminal operator. Vessels may depart at any time.

The terminal is situated within a restricted area, which may best be seen on the chart. Vessels are prohibited from entering the area without prior permission.

A designated anchorage area, with a depth of 60m, lies 2 miles ENE of the SBM.

Caution.—Alba Gas Field is centered about 9 miles SSE of Massongo Marine Terminal.

The average maximum height of the swell at the terminal is 1.2m from October to February and 1.9m from March to September.

3.29 Rio-del-Rey (4°30'N., 8°45'E.) is an extensive, open, and shallow bay formed by the confluence of several rivers. It lies between West Point (4°29'N., 8°42'E.), located at the SE end of the Bakasi Peninsula, and Betika Point, 18 miles SE. This latter point forms the termination of a ridge of hills. Several villages stand along the shores of the bay and may be seen from offshore. A sandbank fronts the bay and only small craft with local knowledge transit this area.

The Meme River flows into the E side of the bay, about 12 miles N of Betika Point. The coast turns abruptly S from the mouth of this river and consists principally of low cliffs with many large caves.

Madale de Coto Point is located 2 miles SSE of Betika Point. Madale Rocks, the largest being 1.2m high, extend up to 1.5 miles SW from this point.

A wreck, with a depth of 15m, lies about 9 miles SW of Madale de Coto Point.

Caution.—Oil exploration and production are being carried out off the entrance to Rio-del-Rey and numerous associated platforms, structures, well heads, riser pipes, and submarine

pipelines are situated in this vicinity.

3.30 Bibundi Bay (Baie de Bibundi) (4°11'N., 8°58'E.) is entered between Madale de Coto Point and Debundscha Point, 10 miles S. The Bibundi River empties into this bay, about 4 miles SE of Madale de Coto Point. The entrance of the river is narrow and difficult to identify. It lies between a sandy spit, on the N side, and a steep and rocky bank, on the S side. The village of Bibundi stands close within the entrance of the river and is a trading center for numerous large coca plantations. It is mostly concealed by trees.

Anchorage may be obtained in a depth of 18m, sand and mud, in the S part of the bay, NNE of Debundscha Point. Vessels with local knowledge can also obtain good anchorage off Bibundi in a depth of 11m, mud, about 0.8 miles offshore. Vessels entering the bay from the S should not approach closer than 1.5 miles from the coast and should keep in depths of 10m or more.

Debundscha Point (Debunja Point) (4°06'N., 8°58'E.) consists of a bold headland terminating in red limestone cliffs up to 15m high. A light is shown from a tower, 8m high, standing on this point.

Fako (4°13'N., 9°10'E.), a conspicuous peak, is also known as Cameroon Mountain. It attains an elevation of about 4,095m about 14 miles NE of Debundscha Light (see paragraph 3.1).

3.31 Izongo Point (4°04'N., 9°01'E.), located 3 miles SE of Debundscha Point, appears as a prominent bluff from the NW or SE. It is fronted by a drying reef and several sunken rocks. The village of Izongo, with several sheds, stands at the head of a small bay lying close N of the point. It is fronted by a small pier with a depth of 1.8m alongside at LW.

Between Izongo Point and Batoki Rock, 6.5 miles SE, the shore is intersected by several small streams and the sea usually breaks heavily on it.

Batoki Rock (Batoke) (4°01'N., 9°06'E.), 15m high, lies close offshore and is connected to the coast by a rocky reef. Habicht Reef, with a least depth of 1m, lies 0.7 mile SE of this rock and about 0.4 mile offshore. Foul ground extends between the reef and the coast.

Limboh Point (4°01'N., 9°08'E.) is located 1.3 miles ESE of Batoki Rock. It is fringed by shoals with depths of less than 10m. A refinery (Sonara) is situated 0.3 mile N of the point and a tall chimney, marked by a light, stands close to it.

3.32 Limboh Oil Terminal (4°00'N., 9°08'E.) (World Port Index No. 46262), located at Pointe Limboh, consists of an offshore SBM and a jetty. The SBM is moored in a depth of 21m about 1 mile S of the point. It can handle vessels up to 150,000 dwt, 243m in length, and 18m draft.

The jetty extends 915m seaward from the point and has a depth of 10m alongside. It can handle vessels up to 130m in length and up to 8m drafts. A light is shown from the head of this jetty.

Pilotage is compulsory. Pilots can be contacted by VHF and board about 1 mile S of the SBM. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance.

Berthing at the SBM is carried out only during daylight but vessels can depart anytime. There are no restrictions at the jetty berth.

A restricted area, which may best be seen on the chart, surround the terminal and extends up to 2 miles S from Limboh Point. Only vessels proceeding to the terminal may navigate within this area.

Caution.—A submerged rock is reported to lie close to the jetty and is marked by a buoy.

Limboh Shipyard (4°00'N., 9°08'E.) is located 0.3 mile NE of Limboh Point. A 700m breakwater has been constructed, while the shore side infrastructure is in varying states of completion. It is reported that the site will be completed in 2014.

3.33 Nyeme Point (Ngeme Point) (4°01'N., 9°09'E.) is located 1.5 miles E of Limboh Point. A small bay lies between these points, but it is foul in many places and should only be approached by vessels with local knowledge.

Ambas Bay (4°00'N., 9°10'E.) is entered between Nyeme Point and Cape Nachtigal, 5 miles SE. The NW shore of the bay, up to 1.3 miles E of Nyeme Point, is fairly steep-to. The NE shore of the bay is bold and overlooked by four hills, 153 to 207m high.

Ambas Island, located 2 miles SSE of Nyeme Point, is the outer and W island lying in the bay. It is 51m high, narrow, and covered with trees and brushwood, except at the N end.

Mondoleh Island is located 1.4 miles E of Ambas Island. It is 98m high and the largest island in the bay. The island is composed of volcanic rock and is heavily wooded along its sides.

The Pirate Islands, a group of islands and rocks, lie on a shoal spit which extends 0.8 mile S from the N shore of the bay. Bobia Island, located 1.5 miles N of Ambas Island, is 33m high and the largest of the group.

Cape Nachtigal (3°57'N., 9°13'E.), the SE entrance point of Ambas Bay, forms the S extremity of the Monkey Peninsula. A light is shown from a tower, 14m high, standing on this cape. A dangerous wreck is reported to lie about 0.5 mile S of the light.

3.34 Limbe (Victoria) (4°01'N., 9°12'E.), a roadstead port, is situated at the head of Morton Bay, which lies on the NE side of Ambas Bay. It is operated by the Douala Port Authority and is the export harbor for Buea, which stands 10 miles inland. The town of Limbe fronts the bay; the village of Bota is situated close WNW of it. Bota is fronted by a mole which is used by small craft and lighters.

A range, consisting of lighted beacons, indicates the main approach route, which passes between Ambas Island and Mondoleh Island. The track leads in a NE direction to the roadstead where cargo is worked. Vessels can moor in depths of 12 to 16m, good holding ground, within four designated anchorage berths. Pilotage is not compulsory but local knowledge is advised.

The flood current sets S and the ebb current sets N between Ambas Island and the Pirate Islands. These currents are of about equal duration and at times are strong in the vicinity of Ambas Island and Mondoleh Island.

Caution.—Between May and September, the swell rises quickly in the bay and causes a heavy surf and violent undertow. This swell makes landing very dangerous and at times impossible. It consists of two principal parts. One of these parts sets fairly constantly E between Ambas Island and the Pirate Islands and varies according to existing conditions. The other part, which arises when the winds are fresh or after a local

thunderstorm, enters from the S or SW between Amba Island and Mondoleh Island. This latter part of the swell runs straight into Morton Bay, turning and combining with the usual swell from the W, and finally breaks on the rocks.

It is reported (2001) that the lighted beacons forming the approach range may be obscured at times by vessels anchored in the roadstead.

It is reported (2008) that navigational aids were not visible at night.

3.35 Man of War Bay (3°57'N., 9°13'E.), with depths of less than 5m, lies between Cape Nachtigal and Reef Point, 1.3 miles E. Cape Bimbia, located 0.7 mile SE of Reef Point, is the S extremity of the base of the Cameroon Mountains (Fako). The land behind this cape rises gradually and regularly from the coast. A shallow wreck fronts the E side of the cape.

Fish Point is located 0.7 mile NE of Cape Bimbia. A shallow bay lies between this point and Dikulu Point, 1.5 miles NE. Nicol Island, 73m high and thickly wooded, lies in the entrance to this bay. Dikulu Bay lies between Dikulu Point and Pegel Point, 0.8 mile NE. This bay is very shallow, but anchorage may be obtained close outside it, in a depth of 7m.

Several prominent factories, consisting of large white buildings, stand at the Bamba Plantation, which is located on the coast to the N of Nicol Island. Entrance Point, marked by a light, is situated 0.4 mile NE of Pegel Point.

The **Bimbia River** (3°58'N., 9°17'E.) is entered between Entrance Point and the coast, 0.5 mile E. The approach to the mouth is obstructed by a bar which lies SE of Cape Bimbia. This bar was reported (1994) to have a least depths of 2.7 to 4.5m, but the depths in this vicinity are subject to frequent change. A fairway, marked by buoys, leads over the bar to the river. Above Entrance Point, the river deepens and has depths of 5 to 9m.

A ground swell is usually encountered on the bar and allowance must be made to ensure a minimum underkeel clearance of 0.3m. Vessels normally cross the bar at half speed. The bottom consists of fine sand and mud. It is soft and vessels which touch bottom are not damaged.

3.36 Tiko (4°04'N., 9°22'E.), a large town, stands on the mainland close W of Tiko Island, about 8.5 miles NE of Entrance Point.

A narrow causeway connects the town with the W end of Tiko Island. Tiko Wharf is situated at the E end of the island. It lies parallel to the river and has a berth, 137m long, with depths of 5.8 to 7.6m alongside. Vessels of up to 150m in length and 6.1m draft have been accommodated.

Pilotage is compulsory. Pilots can be contacted by VHF and are provided from Douala. They generally board within Amba Bay, close NE of Mondoleh Island.

It is reported (1990) that the port was seldom used and the berth could only be used by small vessels with drafts up to 2.5m.

Caution.—Numerous fishing stakes generally obstruct the entrance bar.

The buoys marking the fairway are moved to conform to frequent changes in the banks.

The sharp turns in the river must be navigated with caution.

3.37 From the E entrance point of the Bimbia River, the coast trends 8.5 miles SE and then 4.5 miles ENE to Cap Cameroun. The shore is low and covered with mangroves, but has been reported to be visible, in clear weather, from up to 12 miles seaward.

Bancs Bimbia (3°50'N., 9°20'E.) fronts this entire portion of the coast and the sea breaks heavily on it. This bank extends up to about 5 miles offshore and has depths of less than 5m. Depths of less than 10m lie up to about 8.5 miles offshore. A drying shoal was reported (1961) to lie on the SE side of this bank.

Cap Cameroun (3°54'N., 9°28'E.), surmounted by a tower, is a low but well-defined point which is covered by tall and bare trees. It is reported (1993) that a racon is situated at the tower.

3.38 The Cameroon River (Estuaire Cameroun) (3°50'N., 9°26'E.) has its estuary lying between Cap Cameroun and Pointe Souellaba (Pointe Suellaba), 7 miles SE. This estuary is formed by the outlet of several rivers and creeks, the principal one being the River Wouri. The port of Douala lies on the SE side of the River Wouri, about 15 miles NE of the entrance.

Pointe Souellaba, surmounted by a pylon, is a long, low, and narrow point which is gradually being eroded by the action of the sea. The trees standing within 0.2 mile of the point appear thinned out and ragged, while only the trunks remain at the seaward extremity. A racon was reported (1993) to be situated at the pylon.

Tetes de Chiens, with depths of less than 5m, fronts Point Souellaba. It extends up to about 6 miles W, 4 miles NW, and 3.5 miles N from the point. The sea always breaks on this shoal, except at high water slack, and can be seen from a considerable distance.

Winds—Weather.—During the dry season (December to February), the sea breeze may blow from the SW at up to force 5. During the ebb current at spring tides, this breeze may produce a very nasty, short sea in the estuary which is dangerous for small boats.

Tides—Currents.—At Cap Cameroun, the tides rise about 2.3m at springs and 1.9m at neaps.

The spring tides are fairly regular, but the neap tides cannot be relied on. The water has been frequently observed to be rising at Douala, although an ebb current has been running at the time. Generally, the evening tides tend to be higher, especially after a strong afternoon sea breeze. In the rainy season, the level of the river is usually 0.4m higher than in the dry season.

The flood tidal current attains its maximum strength about 2 hours 30 minutes before HW at Bonny. The ebb current attains its maximum strength about 3 hours 30 minutes after HW at Bonny. The maximum strength of both these currents is usually about 2.5 knots at springs. During the rainy season, the ebb tidal current may run for as long as 8 hours and attain a rate of 2.7 knots. The flood current may then run for only 4 hours 30 minutes and attain a maximum rate of less than 2 knots.

In the estuary S of Cap Cameroun, the ebb tidal current has been observed to attain a rate of about 5 knots at springs.

Vessels are cautioned against getting too close to the E side of the channel, as the ebb tidal current sets strongly toward Tetes de Chiens.

Depths—Limitations.—The estuary is approached through

a channel which leads over the outer bar and between Bancs Bimbia, on the NW side, and Tetes de Chiens, on the SE side. The outer bar lies between the seaward extremities of these banks.

The channel leading to Douala has a least dredged depth of 6.9m (2001). Generally, vessels of up to 200m in length can transit the river.

Aspect.—The approach channel is marked by lighted buoys and unlighted buoys. An outer lighted buoy, marking the seaward entrance, is moored about 10.5 miles SSW of Cap Cameroun. Lighted tide gauges are situated 1.2 miles ENE of Cap Cameroun and 5.5 miles W of Point Souellaba. Base/B9 Lighted Buoy is moored about 3.2 miles E of Cap Cameroun.

Within the entrance, the estuary comprises Baie Mocouchou and Baie Modeaca, on its NW side, and Crique Malimba and Baie de Manoca, on its SE side. The main river channel extends NE to Douala.

Anchorage.—If obliged to anchor outside the bar, vessels can ride easily, out of the strength of the tidal current, in a depth of 11m, about 12.5 miles SW of Cap Cameroun.

Vessels may anchor off this coast during all seasons of the year, but should never do so in a depth of less than 12m, except in cases of emergency. When in depths of less than 12m, the swell begins to assume the character of rollers and causes vessels to ride very uneasily.

Caution.—Several dangerous wrecks lie in the approaches to the river entrance and may best be seen on the chart.

A local magnetic anomaly exists in an area lying about 7 miles ENE of Cap Cameroun.

Vessels should reduce speed when crossing the outer bar in order to avoid a build up of water under the keel.

The ebb tidal current flows very strongly over Tetes de Chiens, especially at springs (see Tides—Currents).

The buoys marking the channel are moved as necessary to conform to frequent changes in the banks. The navigational aids were reported (1995) to be unreliable. Several of the channel buoys were observed to be missing or unlit.

Less water was reported (2004) near Buoy B6 and Buoy B9.

3.39 Douala (4°03'N., 9°41'E.) (World Port Index No. 46280) stands on the SE bank of the River Wouri which empties into the estuary of the Cameroon River, 9.8 miles ENE of Cap Cameroun. Bonaberi, situated on the NW bank, is connected to Douala by a prominent bridge.

Douala Container Terminal Home Page

<http://www.apmterminals.com>

Winds—Weather.—Douala has a hot climate throughout the year. Along the coast in this vicinity, the rainy season lasts from April to November and the dry season lasts from November until March. The prevailing winds are from the W during the day and from the E at night. Local thunderstorms from the E occur most frequently between February and April; they generally develop during the night.

Tides—Currents.—The tides at Douala rise 2m at springs and 1.1m at neaps.

Off the port, the flood current attains a maximum rate of 2.5 knots and the ebb current a maximum rate of 3 knots. These

tidal currents generally set in the direction of the channel axis.

Depths—Limitations.—There is 2,750m of principal quayage at Douala, which provides 17 berths. These berths, which have depths of 7.6 to 12.9m alongside, provide facilities for handling general cargo, bulk, timber, and petroleum products. In addition, there is 560m of total quayage, with a depth of 6.5m alongside, which is used by fishing vessels and 925m of total quayage, with depths of 5.5 to 6m alongside, which is used by vessels associated with offshore oil exploration.

At Bonaberi, the main facilities include a bulk quay, which is 200m long with a depth of 8.5m alongside, and a banana quay, which is 150m long with a depth of 7m alongside.

Generally, vessels of up to 30,000 dwt and 200m in length can be handled. Vessels up to 9.2m draft can transit the river channel and be accommodated in the port at springs. Vessels up to 6.4m draft can be accommodated at neaps.

It is reported (2004) that the port has three floating repair docks. The largest dock has a length of 130m and a beam of 33m. It can handle vessels up to 30,000 dwt.

A naval base is situated at the SW side of the timber basin.

Pilotage.—Pilotage is compulsory for all vessels of 100 gt and over, except naval ships. Vessels should send an ETA message, with a request for pilotage, at least 24 hours before arrival. This message must include the length and fresh water draft (in meters) of the vessel. Pilots can be contacted by VHF and board at the anchorage in the vicinity of Base/B9 Lighted Buoy. Vessels are required to maintain a listening watch on VHF channel 16 while transiting the channel.

Contact Information.—Douala Port Authority can be contacted, as follows:

1. Telephone: 237-33420133
2. Facsimile: 237-33426797
3. E-mail: portdouala@iccn2000.com

Anchorage.—Anchorage may be obtained, in depths of 7 to 11m, within a designated area lying SSE of Base/B9 Lighted Buoy and about 4 miles E of Cap Cameroun. Vessels are required to maintain a listening watch on VHF channel 16 while at this anchorage. It is reported (2004) that less water than charted exists within this anchorage area.

Caution.—Heavy pieces of floating driftwood may be encountered throughout the length of the River Wouri.

The navigational aids were reported (1995) to be unreliable. Several of the channel buoys were observed to be missing, unlit, or out of position.

The port authorities should be contacted prior to arrival, as the minimum depth in the channel is subject to siltation.

Unlit fishing boats may be encountered in the river at night.

Due to numerous armed robberies in the vicinity of the port, it was reported (1990-2013) that personnel should use caution and not go ashore at night.

The Cameroon River to Bahia de Corisco

3.40 Between Pointe Souellaba and Cabo San Juan, 120 miles S, the hinterland is generally lower in the N part of the area than in the central and S parts. The coast is uniformly low and thickly wooded with large prominent forest trees lining the shore. The beaches are generally sandy, with detached rocky patches in places.

At times, a heavy surf breaks along all of this coast and

makes landing dangerous. The coastal waters, up to a depth of over 20m, have been reasonably well surveyed between the estuary of the Cameroon River and Baie Campo, 90 miles S. However, to the S of the latter bay, they have only been sketchily surveyed.

The **Riviere Sanaga** (3°34'N., 9°36'E.) lies 17 miles SSE of Pointe Souellaba and has two mouths. Bouche Bengé, the N mouth, and Bouche Boungo, the S mouth, are separated by Ile Malimba. The island and the banks at the mouths change frequently. The mouths are obstructed by a sandy bar with depths of less than 1m. Depths of 2 to 2.7m lie within 1 mile of the river entrances and depths of less than 5m lie up to 2 miles offshore. Edea, an administrative center, is situated on the S bank of the river, about 45 miles above the entrance. It can only be reached by small craft. Lac Ossa, a large expanse of water, lies W of Edea and can be used to land seaplanes. Anchorage is available for small craft with local knowledge, in depths of 5 to 14m, good holding ground, within Bouche Boungo.

3.41 Baie Panavia (3°10'N., 9°52'E.) lies between Bouche Boungo and Pointe Garajam, 37 miles SSE. This bay has depths of 9 to 12m lying between 3 and 6 miles offshore. Secure anchorage can be found by vessels, with local knowledge, in depths of 9 to 11m, mud, anywhere off the shore of the bay because along this coast the local thunderstorms blow offshore.

The **Riviere Nyong** (Riviere Njong) (3°16'N., 9°54'E.) lies 23 miles SE of Bouche Boungo; its mouth is hardly visible from seaward. A sandy bar obstructs the entrance to this river. It has depths of 0.6 to 1.8m, but is subject to frequent changes.

The **Riviere Lokoundje** (3°13'N., 9°56'E.), lying 3.5 miles S of the Riviere Nyong, also has a mouth which is difficult to identify from seaward. Its entrance is obstructed by a bar, with a depth of 1.5m, and is only used by small craft. Three mooring buoys are reported to be situated about 1.5 miles W of the river entrance and are used by barges.

Longji (Londji) (3°05'N., 9°59'E.) lies 12 miles SSE of the Riviere Nyong and is the site of several prominent factories. An anchorage roadstead, with a depth of 7m, mud, lies off this settlement and is marked by a buoy.

Several factories are situated 4 miles S of Longji. One of them, consisting of a white house standing on a hill, is very prominent from seaward. Several dangerous rocks front the coast in this vicinity and Roche Plantation, which dries, lies about 0.5 mile offshore.

Pointe Garajam (3°00'N., 9°56'E.), low and wooded, is rounded in shape and sometimes difficult to distinguish. It is fringed by several rocks which lie on the beach and show up distinctly against the white sand. Two groups of rocks lie about 1 mile W of the point. One group consists of above-water rocks and the sea breaks on the other.

Caution.—Several dangerous wrecks, which may best be seen on the chart, lie up to 4 miles offshore in the vicinity of the entrances of the Riviere Njong and the Riviere Lokoundje.

3.42 From Pointe Garajam, the coast trends in a SSW direction for about 40 miles to the mouth of the Riviere Campo. The shore extending up to 23 miles S of Pointe Garajam is fringed by a fine beach without mangroves, but rocks lie up to 0.5 mile seaward in many places.

Further S, the foreshore consists of a long narrow strip of

densely-wooded lowland which is fronted by a beach of yellow sand. This beach is interrupted in places by what appear to be the mouths of small rivers. Several plantations, with patches of lighter green, and a number of villages, with groups of brown huts, show the coast to be inhabited. It is reported that several landing places front the various villages.

Off this coast, the depths decrease gradually toward the shore. The bottom is generally clean and mostly consists of sand and mud. It forms a good holding ground, although in places there are patches of coral. Vessels are advised to ascertain the nature of the bottom before anchoring.

Mont Nisus (2°56'N., 10°07'E.), an isolated hill, rises 12 miles SE of Longji. It is conical in shape and may be identified easily from seaward.

Monte Elephant (2°47'N., 10°00'E.) is 519m high. This hill resembles an elephant when seen from the W and has a conical appearance when seen from the S.

Les Mamelles, rising about 7 miles inland, stand near the center of a range of hills which extends S from Monte Elephant.

Pointe Brima (2°57'N., 9°55'E.) is located about 3.5 miles SSW of Pointe Garajam. A rock, which dries 1.5m, lies close N of the point and is marked by a beacon. A dangerous wreck lies about 1.2 miles WNW of the point.

Caution.—Numerous oil exploration drilling rigs and structures, the positions of which change frequently, are generally encountered offshore in many places along this part of the coast.

Vessels transiting this stretch of coast are advised to keep at least 5 miles offshore and in depths of at least 20m. They should also avoid all offshore terminal areas.

3.43 Kribi (2°56'N., 9°54'E.) is a small roadstead port where cargo is worked by vessels at anchor. The harbor basin is fronted by a bar and can only be used by small craft. Local knowledge is advised as a group of detached rocks lie in the middle of the approach channel, close inside the bar. The fairway is indicated by a lighted range. The front light is shown from a tower, 15m high, and the rear light is shown from the prominent spire of a church. An outer lighted buoy is moored about 1 mile WNW of the harbor. Two mooring buoys are reported (1994) to be situated about 0.5 mile W of the harbor.

Good anchorage is available in a depth of 7m, sand and mud, about 0.8 mile WNW of the harbor.

The surface current in the vicinity of the entrance is much influenced by the Riviere Kienke, which flows into the head of the harbor basin. It is constantly setting out at rates of 2 to 5 knots, depending on the state of the tide and the level of the river.

A bridge spans the river at the head of the harbor basin and the church, with a prominent spire, stands near its S end. A conspicuous pylon is situated 0.3 mile N of the church.

It is reported (2001) that a prominent radio mast, 200m high, stands about 1.2 miles ESE of the harbor.

3.44 Kome Kribi 1 Marine Terminal (2°55'N., 9°48'E.) (World Port Index No. 46292), located about 7 miles W of Kribi, consists of an offshore storage tanker, which is moored by the stern to an SPM. It is the export terminal for petroleum extracted in Chad. A submarine pipeline extends from the termi-

nal to the shore.

Depths—Limitations.—Vessels moor bow to bow in tandem with the storage tanker, which is moored in a depth of 35m. Vessels up to 320,000 dwt and 23m draft can be handled.

Pilotage.—Pilotage is compulsory. Pilots, which are provided by Douala, can be contacted by VHF and board in the vicinity of the anchorage, 4 miles WNW of the terminal. Boarding by helicopter may be arranged. Berthing takes place only during daylight hours. Vessels may depart at any time.

Regulations.—Vessels should send an ETA to the terminal at the start of their sea passage. Confirmation messages should be sent 72 hours, 48 hours, and 24 hours before arrival. Additional messages must be sent if the ETA changes by 6 hours or more. Vessels should then contact the terminal by VHF on arrival for berthing instructions.

A restricted area, with a radius of 0.8 mile, is centered on the SPM. Vessels must receive permission to enter this area.

Contact Information.—Kome Kribi 1 Terminal can be contacted, as follows:

1. Telephone: 237-77936586
237-77934519
2. E-mail: fso.cotco.oim@exxonmobil.com

Anchorage.—A designated anchorage area, with a depth of 40m, lies about 4 miles WNW of the terminal.

Caution.—The wind is generally from the SW at force 3, but squalls, with gusts up to 50 knots, associated with local thunderstorms may occur, especially during the wettest period (between spring and autumn).

3.45 Grand Batanga (2°50'N., 9°53'E.), a village, stands 6 miles SSW of Kribi. It has several prominent buildings, factories, and churches. The waterfall of the Riviere Lobe, in the N part of the village, is prominent during the rainy season, but is insignificant during the dry season.

Anchorage can be obtained in depths of 10 to 12m, gray sand, off Grand Batanga. Local knowledge is advised. A landing place lies between two factories, but it is reported to be very dangerous.

Baie Banoko (2°48'N., 9°54'E.) is a slight indentation which extends S for about 5.5 miles from Grand Batanga. The shores are low, wooded, and fronted by a sandy beach with several factories on it. A thick clump of large trees stands near the center of this indentation and appears as a dark hillock from a distance. There is always a surf along the shores and landing should never be attempted.

3.46 Ebome Marine Terminal (2°48'N., 9°49'E.), located about 4 miles W of Baie Banoko, consists of an offshore storage tanker (La Lobe) and an SPM. It is situated in the vicinity of the KF Oil Field.

Vessels moor to the SPM, which is located in a depth of 30m. Tankers up to 180,000 dwt can be handled.

Pilotage is compulsory. Pilots, which are provided by Douala, can be contacted on VHF channel 13 or 16 and board in the vicinity of the anchorage, 1 mile W of the SPM. Berthing takes place only during daylight hours. Vessels may depart at any time. A designated anchorage area lies about 1.5 miles W of the SPM.

Vessels should send an ETA to the terminal 72 hours, 48 hours, and 24 hours before arrival. Vessels should then contact

the terminal by VHF on arrival for berthing instructions.

Contact Information.—Ebome Terminal can be contacted, as follows:

1. Telephone: 237-33423291
2. Facsimile: 237-33424359
3. E-mail: om_ebome@cm.perenco.com

A restricted area, about 2 miles wide, surrounds the terminal. Vessels must receive permission to enter this area.

Caution.—The wind is generally from the SW at force 3, but squalls, with gusts up to 50 knots, associated with local thunderstorms may occur, especially during the wettest period (between spring and autumn).

3.47 Rocher du Loup (Rocher Wolf) (2°37'N., 9°50'E.), 9m high, is a small but prominent rock which lies close offshore, 13.5 miles S of Grand Batanga. It is shaped like a regular truncated cone and the summit is surmounted by a small beacon. This rock forms an excellent mark and is surrounded by rocks and foul ground, on which the sea breaks violently.

Pointe Nanga Bouda (Pointe Gertrude) (2°30'N., 9°46'E.), located 7 miles S of Rocher du Loup, is low, sandy, and covered with trees. It is surmounted by a beacon, but is generally hard to distinguish. Rocks extend up to 0.4 mile W of the point. A landing place lies on the N side of the point.

Pointe Weber (2°25'N., 9°49'E.) lies 5.5 miles S of Pointe Nanga Bouda. A detached patch, with a least depth of 2.7m, lies about 2.3 miles W of this point.

Baie Campo (2°23'N., 9°48'E.) is entered between Pointe Weber and Cabo Campo, 6 miles SSE.

Cabo Campo (Punta Campo) (2°19'N., 9°47'E.), although low and wooded with a sandy beach, forms a salient point. It is fronted by a line of rocks and breakers, which extends up to about 0.7 mile seaward, and should be given a wide berth.

The **Riviere Campo** (2°21'N., 9°50'E.), also known as the N'Tem River, enters the sea at the head of Baie Campo, 3.5 miles NE of Cabo Campo. The mouth is obstructed by a bar which breaks heavily, especially in the dry season, and has depths of 1.5 to 2m on it. Within the entrance, the river is wide and quite deep. A trading station, with several prominent white-roofed factories, stands on the N bank of the river entrance.

The border between Cameroon and Equatorial Guinea is situated in the vicinity of this river.

Anchorage may be obtained, according to draft, ENE of the trading station, but vessels should not proceed into depths of less than 5m because of the swell and the cross currents. During strong W winds, this anchorage is almost untenable by small vessels.

Caution.—Several dangerous wrecks, some stranded, lie offshore in the vicinity of Baie Campo and may best be seen on the chart.

The coast between Cabo Campo and Cabo San Juan (1°10'N., 9°20'E.) is reported to be imperfectly surveyed in parts; vessels are advised to stay at least 6 miles offshore when transiting this area.

3.48 Islotes Pongue (Islas de Los Pajoras) (2°12'N., 9°45'E.), a group of three rocks, lies about 3 miles offshore, 8 miles SSW of Cabo Campo. The central and largest rock, which is 5m high and whitened by guano, assumes the appear-

ance of a sail when viewed from some positions. The other two rocks, lying close N and S, are generally darker in color. However, all three rocks have been reported to appear black at times, which may be accounted for by the absence of birds at certain seasons. The sea breaks violently against these rocks and it is not known whether a safe navigable channel leads between them and the mainland.

Cabo Bata (Punta Mbonda) (2°06'N., 9°45'E.), located 13 miles S of Cabo Campo, is low, rounded, and wooded. A reef extends up to 1.5 miles seaward of the cape, beyond which the water suddenly deepens.

Punta Mbonda Light is shown from a prominent brick tower, 35m high, standing on the cape and a conspicuous tower is situated 0.8 mile NE of it.

Bahia de Bata (1°51'N., 9°48'E.) lies between Cabo Bata and Cabo Dos Puntas, 26 miles SSW. The depths along the shore of this bay are irregular and it is inadequately surveyed. The bottom is generally formed of mud, but in many places there are patches of rock, especially in the S part.

The shores of the bay are low and wooded. They are fronted by a narrow and sandy beach which is interrupted by the mouths of several rivers. The most prominent rivers are the Rio Mbía, the northernmost, which enters the sea 1.5 miles SSE of Cabo Bata and is used by small craft; the Rio Biadibe, which enters the sea 3 miles S of the Rio Mbía; and the Rio Utonde, which enters the sea 5 miles S of the mouth of the Rio Biadibe.

3.49 Utonde (1°55'N., 9°48'E.), a village and railroad terminal, stands on the N bank of the Rio Utonde and consists of a few scattered houses and a factory.

Good anchorage can be found in depths of 7 to 11m, mud, off the mouth of the Rio Utonde, but local knowledge is advised.

Punta Eviando (1°54'N., 9°48'E.) is located 11.5 miles S of Cabo Bata and fronted by a rocky ledge which extends up to 0.4 mile seaward. A group of radio masts stands 0.4 mile SE of this point, in the vicinity of an airfield. A buoy is reported to be moored about 4 miles NW of the point.

Colline Selle and Colline Table are two hills which rise 24 and 27 miles, respectively, inland from the mouth of the Riviere Campo. Both are very prominent and appear isolated from off this part of the coast. Las Siete Colinas, a mountain range, stands about 15 miles inland and presents seven distinct heights when viewed from seaward.

Monte Agudo (1°44'N., 9°54'E.), the central mountain of this range, rises to a height of 850m high and is very conspicuous.

The Ecuco River (Rio Ecuco), with a shallow bar, flows into the sea about 7 miles SW of Utonde. At the last of the ebb tidal current, the water within the bar is fresh but dark in color and full of organic matter.

Punta Ngaba (1°45'N., 9°41'E.) is located 6.3 miles SW of the mouth of the Ecuco River and 6.7 miles NE of Cabo Dos Puntas. A light is shown from a metal tower, 19m high, standing on this point.

Caution.—It is reported (1991) that shoals are extending seaward from the mouth of the Ecuco River and several dangerous wrecks lie off the entrance.

3.50 Bata (1°52'N., 9°46'E.) (World Port Index No. 46305)

is located 5 miles SSW of Utonde. A dog-legged wharf, 370m long, with depths of 3m alongside the inshore face, fronts the town. A total of five berths are available at this pier. A disused submarine pipeline, formerly used to discharge oil, extends about 0.8 mile NW from the shore in the vicinity of Bata.

A conspicuous mission building, with twin domes surmounted by an iron cross, stands in the NE part of the town. The government house, which stands on high ground, and a cathedral, which is situated close S of the mission building, are prominent. Radio masts stand in the vicinity of an airport, 2.5 miles NE of the wharf, and are prominent.

Berthing instructions are provided by the port authority on VHF channel 16. The pilot boards in position 1°50.2'N., 9°43.8'E. Vessels can anchor, in a depth of 11m, sand, about 1.5 miles offshore, but local knowledge is advisable as several dangerous wrecks lie in the approaches. The holding ground is fairly good, but the swell can be heavy. Anchorage for small vessels is also available in depths of 5 to 7m about 0.4 mile WNW of the head of the wharf.

Puerto Nuevo (Puerto Macias Nguema) (1°49'N., 9°44'E.), situated 1 mile S of the mouth of the Ecuco River, is considered to be the new part of the port of Bata. The harbor consists of an L-shaped jetty extending about 0.4 mile W from the shore. A basin, protected by breakwaters, lies near the root of the jetty. It has depths of 3 to 4m and is used by fishing vessels and small craft.

The outer leg of the jetty, which is 320m long, provides four general cargo berths, with depths of 11 to 12m alongside. Several mooring buoys are also available to assist in berthing. Vessels up to 19,300 dwt, 182m in length, and 8m draft can be accommodated.

Anchorage is available, in a depth of 20m, about 1 mile W of the head of the jetty.

A local pilot is available and boards 0.5 to 1 mile off the jetty. Berthing instructions are provided by the harbor authorities on VHF channel 16.

Caution.—It was reported (1993) that the local pilot at Puerto Nuevo spoke only Spanish.

It is reported (1999) that vessels moored at the inner berths of the jetty at Puerto Nuevo are frequently subject to a heavy swell. The jetty is constructed of concrete piles and gives little protection.

Numerous oil and gas exploration drilling rigs, platforms, structures, and well heads may be encountered in the approaches to Bata and Puerto Nuevo.

3.51 Cabo Dos Puntas (1°41'N., 9°36'E.), the S entrance point of Bahia de Bata, is low, wooded, and fringed by a sandy beach. It is fronted by a rocky reef, which extends up to about 1.5 miles offshore, and should be given a wide berth. The sea breaks over the whole of this reef, but more violently at the N end.

Punta Mbode (1°37'N., 9°36'E.) is located 2.3 miles S of Cabo Dos Puntas. A light is shown from a framework tower, 14m high, standing on this point. Several shoals, with depths of 0.9m and on which the seas break heavily during the ebb tide, extend up to about 0.8 mile seaward of the point.

The **Rio Benito** (Rio Mbini) (1°36'N., 9°37'E.) is entered between Punta Haybero, located 1.5 miles SE of Punta Mbode, and Punta Joho (Punta Arena), 0.8 mile SSW. It is navigable by small craft, with drafts up to 1.8m, for about 12 miles above the

mouth. The village of Rio Benito extends S from Punta Joho and is fronted by a small pier which can accommodate small vessels with drafts up to 4.3m.

The town of Bolondo is situated 0.5 mile N of Punta Haybero and the American Mission, with a prominent white pigeon house, stands in it. A prominent church is situated near Punta Joho and a light is shown from a framework tower standing 1 mile SW of it.

Large vessels can anchor in a depth of 12m about 4 miles NW of the river mouth. Smaller vessels can anchor in a depth of 8m about 2 miles W of Punta Joho, but during the dry season (May to November) there may be considerable swell in this position. Cargo handling is carried out at these roadsteads.

Caution.—Several wrecks, some dangerous, lie in the approaches to the Rio Benito and may best be seen on the chart.

3.52 Between the Rio Benito and Cabo San Juan, 30 miles SSW, the coast is low, undulating, and wooded. It is fringed by a narrow and sandy beach which is intersected by the mouths of several rivers. The shore is fronted in many places by rocky shoals, some of which uncover. Inland the land rises and attains a height of 585m at Monte Bombouanyoko, which stands 10 miles NE of Cabo San Juan.

La Mibia, a remarkable mountain, rises 26 miles SE of Punta Joho. It is 1,200m high and has a double summit.

Anchorage is available, in a depth of 5m, sand, off the mouth of the Rio Ndote, which flows into the sea 6 miles SE of Punta Joho. This river may be entered by boats with local knowledge.

Punta Ilende (Dione) (1°23'N., 9°28'E.) is fronted by rocky ledges which extend up to about 0.8 mile offshore.

Banco Mitra (1°25'N., 9°19'E.) lies about 10 miles WNW of Punta Ilende. This bank has depths of 29 to 31m, with depths of 69m close round it. A patch, with a depth of 11.9m (existence doubtful), lies approximately 10 miles SSW of the bank.

The **Rio Etembue** (1°17'N., 9°26'E.) flows into the sea 7 miles SW of Punta Ilende. Several off-lying reefs front the bight, which lies between Punta Ilende and the river mouth. The town of Etembue stands on the N bank of the river entrance. Punta Uloba, a headland, is located 1.7 miles WSW of the mouth of the river.

Mumunein Bank, a rocky shoal area, lies 2 miles NW of Punta Uloba and has a least depth of 1.2m. The village of Egombe-Egombe stands 1.5 miles SSW of Punta Uloba.

Several shoal patches lie up to 2 miles off this part of the coast, but the whole of this area is inadequately surveyed.

Between Punta Uloba and Cabo San Juan, 6.7 miles SSW, the coast is fringed with reefs and numerous rocks, awash, lie up to 0.7 mile offshore. Islote Ebumya, a small islet, lies on a reef, 1.5 miles SW of Punta Uloba. Roca Mumunein, with a depth of 1.5m, lies about 1.3 miles WSW of this islet.

3.53 Ceiba Terminal (1°24'N., 9°13'E.), located 16 miles NW of Cabo San Juan, consists of a Floating Production Storage and Offloading (FPSO) facility and a CALM buoy. The FPSO (Sendje Ceiba) is moored in a depth of 40m and the CALM buoy, situated 1 mile SE, is moored in a depth of 67m. Vessels up to 350,000 dwt can be handled at the buoy.

Pilotage is compulsory. Pilots can be contacted on VHF channel 15, 16, 17, or 72 and board about 3 miles N or 3 miles

SW of the FPSO. Berthing and departure may take place at any time.

Vessels must send an initial ETA by facsimile to the terminal when starting their sea passage. They should then send their ETA 72 hours, 48 hours, and 24 hours before arrival. Vessels must also report if their ETA changes by 6 hours or more. During the last 24 hours prior to arrival, vessels should report if their ETA changes by 1 hour or more. Vessels should then contact the terminal by VHF when within range but no less than 10 miles from the FPSO.

Tankers should proceed to a position located about 5 miles N of the FPSO and await instructions from the pilot. They should maintain a continuous listening watch on VHF channels 16 and 72 while approaching and operating in the terminal area.

An exclusion zone, with a radius of 500m, surrounds the terminal. Vessels must receive permission from FPSO Operations to enter this area. A reporting zone, with a radius of 10 miles, is centered on the FPSO. Vessels must report by VHF to the terminal prior to entering this zone.

Ceiba Terminal can be contacted, as follows:

1. Telephone: 870-330922710
2. Facsimile: 870-330922715

Caution.—Oil and gas development areas, which may best be seen on the chart, lie centered about 5 miles NW and 9 miles NE of Ceiba Terminal. Platforms, well heads, drilling rigs, and other associated installations may be found within these areas. Surface vessels, submarine craft, and divers engaged in servicing the installations may also be encountered. Vessels are advised to stay clear of these areas.

3.54 Cabo San Juan (1°10'N., 9°20'E.) is covered with trees and appears as three distinct heads when seen from the N. Its base is rocky and the sea breaks violently up to 0.2 mile offshore. A light is shown from a framework tower, 18m high, standing on the cape.

A large white mission building stands 2 miles ENE of the cape and is conspicuous from seaward. The Rio Nano enters the sea between the cape and the mission building. Several chimneys stand near the river mouth and a stranded wreck lies close off the entrance. A detached shoal, with a depth of 18.9m, lies about 4.8 miles W of Cabo San Juan.

Anchorage is available in a depth of 11m about 2.4 miles NNW of Cabo San Juan.

Caution.—The shores in the vicinity of the Cabo San Juan are very low and the large trees often have the appearance of hillocks when approaching from the W. In addition, the trunks of the trees assume a grayish tint and appear elongated. This distortion, which is caused by a strong mirage effect, gives the coast the appearance of being formed of cliffs intersected by broad fissures or ravines. This illusion occurs frequently, but it is dispelled when vessels get closer to the land.

The tidal currents near Cabo San Juan are complicated. The current setting NNE along the coast is influenced by the tidal currents running in and out of Bahia de Corisco.

The coast between Cabo San Juan and Cabo Campo (2°19'N., 9°47'E.) is reported to be imperfectly surveyed in parts; vessels are advised to stay at least 6 miles offshore when transiting this area.

Bahia de Corisco

3.55 Bahia de Corisco (Corisco Bay) (0°54'N., 9°16'E.) is entered between Cabo San Juan and Cap Esterias, 33 miles S (see paragraph 3.64). The name Corisco, derived from the Portuguese, was conferred upon this bay because of the frequent thunderstorms which are experienced in this locality. The E shore of the bay is known as Costa de Los Mosquitos.

Punta Corona (1°06'N., 9°23'E.) is located 5 miles SSE of Cabo San Juan. The intervening coast is composed of two shallow indentations separated by Punta Negra. The NW indentation is fringed with rocks which also extend up to 0.3 mile offshore in the vicinity of Punta Negra. The S indentation is fringed by a sandy beach.

Piedra Ugoti and Piedra Biguma, both dangerous rocks, lie 1.1 miles W and 0.6 mile SE, respectively, of Punta Corona. Banco Cakulle, with a least depth of 3m, lies about 1 mile SW of Punta Corona and a detached shoal, with a depth of 8.3m, lies 0.8 mile SW of it.

Banco Lauria (1°05'N., 9°16'E.) lies centered 7 miles WSW of Punta Corona. It consists of a stony patch and has a least depth of 3.2m.

Punta Mosquitos is located 1.5 miles ESE of Punta Corona and surmounted by several detached clumps of trees. This point, along with the bay lying W of it, is fringed by numerous rocks and the village of Calatrava is situated in its vicinity.

Good anchorage is available in a depth of 6m about 0.5 mile S of Punta Mosquitos.

Between Punta Mosquitos and Punta Yeke, 11.5 miles ESE, the coast forms a shallow bay. A shelf, with depths of less than 5m, extends in places up to 4.5 miles seaward from the shore of this bay.

Punta Dambe, Punta Bitimbe, Punta Belekeke, and Punta Betika are located 1.7 miles, 2.7 miles, 4 miles, and 5.7 miles ENE, respectively, of Punta Mosquitos. The Rio Malancha flows into the bay close W of Punta Belekeke and the Rio Odingue flows into the bay close E of Punta Betika.

Punta Eboko is located 1.7 miles E of Punta Betika. From this point, the coast trends 7 miles SSE to Punta Yeke; three small rivers discharge into the bay along this stretch. Several villages stand along the shore. The main village of Efule is situated 3.7 miles NW of Punta Yeke.

Caution.—Numerous oil and gas exploration drilling rigs, platforms, structures, and well heads may be encountered in the approaches to Bahia de Corisco.

Transiting the coast between Cabo San Juan and Punta Mosquitos is very dangerous and care should be taken, as there are no conspicuous landmarks and the seas are high during the dry season (June to August).

Due to the possibility of undiscovered dangers lying in the approaches to Bahia de Corisco, vessels navigating in this vicinity are advised to proceed into the bay from the N. They should exercise great care and keep at least 11 miles offshore until turning to head for the entrance. Vessels should then follow the recommended track, which may best be seen on the chart, leading SE between Cabo San Juan and Banco Lauria.

3.56 Isla de Corisco (Isla de Mandyi) (0°56'N., 9°19'E.) lies 14.5 miles S of Cabo San Juan and is administered by Equatorial Guinea. A light is shown from a tower, 28m high,

standing on the N extremity of the island.

Isla de Corisco is moderately high and has a diversified scenery, on a diminutive scale, consisting of hills, forests, prairies, and lakes. The climate of the island is considered unhealthy, but it is healthier than that of the neighboring coast. Gobe, the principal village, is situated near the center of the S coast.

A rocky patch, awash, lies 1.5 miles NNE of Punta Italo, the NE extremity of the island. It is located on Banco Corisco, which extends up to 3.5 miles NNE from Punta Italo and has depths of less than 9m. Banco Nengueamegue, which dries in places, extends up to 2.3 miles E from Punta Hoco (Punta Yoko), the SE extremity of the island. A small islet lies on this bank.

Punta Uguni (Punta Ugoni), the SW extremity of the island, is rocky and bare. The trees standing along the S coast of the island are thinly scattered as compared with those on the N and E coasts.

Islote Leva, which is uninhabited, lies on a shoal area, 1 mile WSW of Punta Lembue, the S extremity of Isla de Corisco. This islet is of moderate height, covered with trees, and surrounded by breakers, especially on its N and E sides. The shoals, which surrounds Isla de Corisco, extend up to 0.5 mile W and 2 miles S of the islet.

The W coast of Isla de Corisco is rocky; the rocks, especially on their S sides, are covered with patches of white which are prominent from a distance. The mirage effect of the trees lining the coast is similar to that in the vicinity of Cabo San Juan.

Punta Gueliba (Punta Cucliva) is the NW extremity of the island. The coastal bank, with a least depth of 3m, extends up to 1.3 miles NW from this point. A detached shoal, with a least depth of 7.9m, was reported (1959) to lie with its SW end about 3.1 miles NNW of the point. Another detached shoal, with a least depth of 8m, was reported (1962) to lie 1.7 miles NNW of the point.

Caution.—Vessels should not depend entirely on the chart in this vicinity, as the banks and shoals may shift from time to time.

In order to clear the banks extending from the island, vessels are advised to stay at least 2.5 miles from the N and W coasts of Isla de Corisco or in depths of more than 12m. In addition, vessels are advised to stay at least 4 miles from the NE side of the island or in depths of more than 22m.

The passages lying S of the island should only be used with local knowledge.

3.57 Banco Bane (Banco Mbane) (0°46'N., 9°21'E.) lies at the S end of the coastal bank which has depths of less than 5m and extends up to about 10 miles S from Isla de Corisco.

Banco Laval, a dangerous drying bank with several rocks, lies about 4.5 miles S of the SW extremity of the island. A stranded wreck lies 2 miles S of this bank.

Islote Conga, a rock, lies almost at the center of Banco Bane, with another above-water rock close SW of it. Islota Bane (Islote Mbane) is located 1 mile NE of Islote Conga. This islet, although low, is conspicuous, as it is covered with high trees.

Bancos del Este, an area of drying sands, extends nearly 2.8 miles ENE from Islota Bane. Islote Cocotier, a rock, lies on a small drying patch, about 2 miles E of Islota Bane. A lighted buoy is moored about 2.5 miles E of this rock.

Although Banco Bane lies about 8 miles from the S shore of Bahia de Corisco, the only available passage leads NE along the SE side of this bank. A least depth of 6.5m lies in this passage near the time of HW, but local knowledge is essential.

Tides—Currents.—Between the banks which encumber Bahia de Corisco, the currents often attain rates of 1 to 2 knots; their directions vary in accordance with the state of the tides. To seaward of Isla de Corisco, the current generally sets in a NNE direction at a rate of less than 1 knot. Within the bay, the tidal currents generally flow E on the flood and W on the ebb. In the S part of the bay, the current setting W sometimes attains a rate of more than 3 knots during the rainy season although, in the dry season, this current normally does not attain a rate of more than 2 knots.

Tidal currents in the bay can be greatly affected by the outgoing river currents.

3.58 Islas Elobey (1°00'N., 9°30'E.), administered by Equatorial Guinea, lies 11 miles ENE of Isla de Corisco, on the S side of the approach to the Rio Muni. It consists of a group of islands, islets, rocks, and shoal patches. Isla Elobey Grande and Isla Elobey Chico are the principal islands.

Bancos de Elobey, with depths of less than 5m, extend up to about 4 miles WNW from the NW extremity of the group. Several detached shoals, with depths of 5 to 7m, lie up to about 6.5 miles W of the group.

Isla Elobey Grande, inhabited by fishermen, is wooded. Isote Belobi, a small islet, lies close off Punta Belobi, the N extremity of Isla Elobey Grande. The coast is formed of small and steep cliffs, 10 to 12m high. Bancos de Bene, with several rocks awash, lies 1 mile E of this island.

Isla Elobey Chico, lying 1 mile NE of Isla Elobey Grande, is completely flat. This island has many coconut palms and fruit trees.

Anchorage.—Between Isla de Corisco and Islas Elobey, anchorage can be found, in depths of 16 to 22m, at a moderate distance from either.

Good anchorage is available, in a depth of 8m, mud, about 1.5 miles NE of Punta Hoco, the SE extremity of Isla de Corisco. This roadstead is sheltered from SW winds and the holding ground is so tenacious that local thunderstorms from the E need not be feared. Although the water is usually quite smooth, without any surf on the beach, a swell occasionally sets in without any apparent cause and rollers break on all sides of the island.

Anchorage may be obtained S of Banco Nengueamegue. At LW, the drying portions of this bank afford a guide. Anchorage, with fair shelter, is also available, in depths of 7m to 8m, mud, inside of Bancos de Elobey, about 1.2 miles NE of Isla Elobey Chico.

3.59 The Rio Muni (1°02'N., 9°35'E.) is approached between the coastal bank extending off the N shore of Bahia de Corisco and Bancos de Elobey (see paragraph 3.58). It enters the bay between Punta Yeke and Pointe Coco Beach, 1.4 miles SSW. Both of these entrance points are low, wooded, and fronted by rocks. A stranded wreck is reported to lie close off Pointe Coco Beach.

The river is navigable as far as Isla Ngande, about 9 miles above the entrance. The channel has a least depth of 6.2m. Pi-

lotage is not compulsory, but pilots are available.

The border between Equatorial Guinea and Gabon is situated along the center of the Rio Muni above the mouth.

Caution.—The ebb current in the river can attain a rate of 4.5 knots in places during the rainy season (October to May).

3.60 Cogo (Puerto Iradier) (Kogo) (1°05'N., 9°42'E.) (World Port Index No. 46340), lying 7.5 miles NE of the river entrance, is situated on the N bank of the river and used for the export of logs. It is fronted by a wharf which is used by barges. A prominent hospital surmounts the summit of the hill on which the town is built. Isote Ivelo lies off the E entrance of the Rio Congue, close SW of the town.

The roadstead, where cargo is worked, lies close SW of Isote Ivelo. It has depths of up to 11m and can accommodate vessels of up to 9,000 tons and 7.9m draft at HW. A directional light indicates the channel leading to the anchorage. The tides rise about 2.5m at springs and 2m at neaps.

Anchorage is also available in depths of 9 to 18m near a timber loading place at the estuary of the river. Local knowledge is advised due to strong tidal currents in some places.

The tributaries of the Rio Muni above Cogo are navigable only by small craft with local knowledge.

Directions.—A recommended approach route, which may best be seen on the chart, leads SE between Cabo San Juan and Banco Lauria. It then leads E and ESE to the river mouth. A lighted buoy is moored about 5 miles NW of Isla Elobey Chico.

Caution.—The buoys marking the approach channel are not to be depended upon.

The banks and shoals lying in the approaches to the river mouth are subject to frequent changes.

3.61 Pointe Ndombo (0°57'N., 9°34'E.) is located 4.5 miles SSW of Pointe Coco Beach. The village of Ndombo is situated near the point and is visible from seaward. A light is shown from a tower, 7m high, standing on the point. Small vessels can anchor off the village, in a depth of 3m, good holding ground, about 0.5 mile offshore.

The mouth of the Crique Massotie lies at the E side of the entrance to Baie de Mondah, 15 miles SSE of Pointe Ndombo. The coast between is wooded and intersected by the mouths of numerous small streams. It is also fronted by shoal water, with depths of less than 5m, which extends up to 3.5 miles seaward in some places. Recif Buyumba, a drying reef on which the sea breaks, extends about 1.5 miles SW from a point on the coast, 6.5 miles S of Pointe Ndombo. Another small patch of reef lies 1.4 miles offshore, about 2.8 miles SSE of Recif Buyumba. This patch is marked by a beacon; the sea breaks on it.

The S summit of Monts N'Keba, 209m high, rises about 7 miles E of Recif Buyumba and is surmounted by a conspicuous round tree.

3.62 Pointe Acanda (0°40'N., 9°30'E.), located 7 miles WSW of the mouth of Crique Massotie, is the W entrance point of Baie de Mondah. The S shore of Bahia de Corisco trends 11 miles in a WSW direction from this point to Cap Esterias.

Pointe Moka is located 2 miles WSW of Pointe Acanda and the Riviere Moka, which connects with Crique N'Tsini, flows

into the sea close W of it. Pointe Bouloukouhou, a salient rocky point, is located 3.5 miles W of Pointe Moka. The shore extending between Point Moka and Cap Esterias is shallow and foul.

An extensive shoal area, with depths of less than 5m, fronts the S shore of Bahia de Corisco. It extends up to about 2.5 miles N from Cap Esterias, up to about 7.3 miles N from Pointe Bouloukouhou, and up to about 4 miles N from Pointe Acanda. Banc Acanda, the SE part of this shoal area, is marked by a small, white beacon tower. Banc de l'Ouest lies close N of Banc Acanda.

3.63 Baie de Mondah (0°35'N., 9°36'E.) occupies the SE corner of Bahia de Corisco, but navigation within it is rendered difficult by numerous banks and rocks. In addition, several shoals and mud banks extend from the shores of the bay and a drying bank of soft mud lies at the head. Two long, narrow spits extend N and NW from this drying bank and divide the bay into three narrow channels. It is reported that vessels, with local knowledge, can enter the bay with a maximum draft of 6m at springs and 5m at neaps.

Pointe Nombo is located on the E shore of the bay, 4.2 miles S of the mouth of Crique Massotie. Banc Marabout, a narrow bank with a least depth of 3m, lies centered about 4 miles NW of the mouth of Crique Massotie. Several rivers flow into the head of Baie de Mondah.

It was reported (1979) that a depth of 4m lies on the bar at the S end of Banc Marabout.

The main channel leading into the bay passes between Banc Marabout and Banc de l'Ouest. Another channel leads E of Banc Marabout, but is impracticable. The recommended route leading into the bay, which is marked by buoys, may best be seen on the chart.

Anchorage is available in a depth of 5.5m at the E side of the channel, 0.7 mile SW of Pointe Nombo. Anchorage is also available in a depth of 10m off Pointe Kendje, which is located 6 miles S of Pointe Nombo. During the dry season (November to April), the currents at this roadstead attain rates of 3.5 to 4 knots at springs.

Bahia de Corisco to the Estuaire du Gabon

3.64 Cap Esterias (0°37'N., 9°20'E.) is low, rocky, and not very prominent from seaward. The land rising 2 miles SW of the cape is usually sighted first. A rocky shelf, on which the sea breaks heavily, extends up to about 0.5 mile N from the cape. A light is shown from a beacon tower, 18m high, standing on the cape.

At night, winds from seaward make anchorage off the cape undesirable. Seaward of the cape, the current generally sets N and attains a rate of up to 2 knots. However, it is influenced by the tides. At springs, the tidal currents are sometimes strong enough to cause a weak resultant flow to the S for up to 2 hours. Rates of up to 3 knots have occasionally been observed.

Pointe Megombie (0°35'N., 9°18'E.), located 2 miles SSW of Cap Esterias, is wooded and comparatively high. A mission station is situated at Averoma, close N of the point, and the village of Yocogo, with two conspicuous houses, stands 0.5 mile S of the point.

Between this point and Cap Santa Clara, 5.5 miles S, the



Cap Esterias

coast appears as an unbroken line of level trees. It is formed by a succession of cliffs, about 20m high and surmounted by trees, through which flow numerous streams during and immediately following the rainy season (November to July). A sandy beach fronts the foot of these cliffs. During the dry season, this beach is continuous and closes the mouths of the streams.

Pointe Mombaliquito (0°31'N., 9°18'E.), located 1 mile NW of Cap Santa Clara, is a slight projection which is not easily distinguished. Pointe Ouquouea, located 0.5 mile SE of the point, is prominent and easily identified as it is very high and covered with tall trees. The village of Maleca, surrounded by plantations, is situated N of Pointe Ouquouea.

A rocky ledge, with numerous below-water rocks and depths of less than 5m, extends up to about 0.5 mile W and 1.5 miles S from Pointe Mombaliquito. During bad weather there are heavy breakers on this ledge.

The Estuaire du Gabon

3.65 The Estuaire du Gabon (Riviere Gabon) (0°18'N., 9°26'E.), the native name for which is M'Pongo, is formed by several tributaries which rise in the mountains in the SE corner of Equatorial Guinea. It is accessible to deep-draft vessels and affords anchorage, with good shelter, to a large number of vessels. However, numerous and extensive shoals obstruct the entrance of the estuary and make navigation somewhat difficult.

The estuary is entered between Cap Santa Clara and Pointe Pongara, 9 miles SSE. Its banks are covered with rich vegetation and intersected by the mouths of numerous creeks. The general direction of the estuary, from its mouth upstream, is SE for about 16 miles and then ESE for about 19 miles to Pointe Pungue, a promontory located at the head. This promontory separates the mouth of the Riviere Ramboe from that of the Riviere Komo, the two large tributaries of the Estuaire du Gabon.

Cap Santa Clara (0°30'N., 9°19'E.), the N entrance point, is prominent and surmounted by a conical beacon, 5m high. A line of breakers fringes the cape and lies about 0.5 mile offshore in quiet weather; during bad weather, this line of breakers lies about 1 mile from the coast. The cape is reported (1998) to be radar conspicuous.

An extensive shoal area, with depths of less than 9m, projects SSE from a point on the coast located close E of Cap Santa Clara. This shoal area extends to within 2.7 miles of Pointe

Pongara and may best be seen on the chart. Two areas of shallow water lie 6.5 and 7 miles WSW of Cap Santa Clara, with depths of 9.9m and 16.7m, respectively.

Pointe Pongara (0°21'N., 9°21'E.), the S entrance point, is the N extremity of a low peninsula which is covered by tufts of grass. This peninsula is composed of alluvial deposits which the action of the sea has covered with sand. The ruins of a beacon stand on the point.

3.66 Pointe Ngombe (Pointe Gombe) (0°18'N., 9°19'E.), located 4.5 miles SW of Pointe Pongara, is 45m high. It has some reddish patches and distinctive trees on the landward side. A light is shown from a prominent tower, 12m high, standing on the point.



Pointe Ngombe Light

The E side of the estuary, extending 20 miles SE from Cap Santa Clara, is high and dominated by chalky hills, but most of the various summits are not easy to distinguish. Mont Bouet, 125m high, rises about 2.5 miles inland, 9.5 miles SE of Cap Santa Clara. This hill is wooded and it is the easiest to identify in the area. Mont Baudin rises 1.7 miles SE of Mont Bouet and has numerous trees with a ragged appearance. L'Ombrelle, another hill, rises close SE of Mont Baudin. It is 117m high and has an umbrella-shaped tree standing on the summit.

Several corrugated iron buildings standing 2 miles NW of Libreville (see paragraph 3.67) are prominent from offshore.

Baie d'Acquengo lies close E of Cap Santa Clara; its W side is fringed with rocks. The Riviere Otande flows into the head of this bay. Between the mouth of this river and Pointe des Normands, 7 miles SE, the coast is low and bordered by large trees. The shore consists of a sandy beach on which the sea breaks heavily in bad weather. Several radio masts stand 1.5 miles SSE of Pointe des Normands, with a conspicuous water tower situated 0.5 mile ENE of them. Another radio mast stands 5.5 miles ESE of the point.

Pointe Pandinou, located 3 miles NW of Pointe des Normands, is fronted by a rocky spit and by Banc de l'Adour which has depths of less than 3m and extends up to 1.4 miles seaward. An airfield is situated 1 mile SSE of this point.

Banc de la Themis (0°27'N., 9°15'E.), an extensive shoal area, lies in the center of the seaward approach to the estuary, 5 miles SW of Cap Santa Clara, and has a least depth of 5.8m.

Several shallow wrecks lie centered about 5.5 miles NW of

Pointe Pongara, near the NW end of Banc da la Mouche.

Winds—Weather.—Strong winds are rare in the estuary, except during the thunderstorm season (about October to May). The rainy season lasts from the middle of November to the middle of July. There is no swell in the estuary, but the sea may become extremely choppy during high winds.

Tides—Currents.—The tidal currents in Estuaire du Gabon are strong and are influenced by the outgoing river current. The flood tidal current sets N outside the estuary. When entering, this current alters its direction clockwise, until on approaching Bancs du Sud-Est, when it sets SE. It is strong in the vicinity of Cap Santa Clara and it sets NE near Banc du Caraibe, while in Passe de la Penelope it sets toward the E shoals. The flood tidal current attains a rate of 1.5 to 2 knots at springs.

The ebb tidal current sets through the approach channel, except in Passe de la Penelope where it sets toward the W shoals. Outside the estuary, this current sets S. Within the estuary, the ebb tidal current often continues for 10 hours and frequently attains a rate of 4 to 5 knots. At such times, the strength and duration of the flood tidal current are correspondingly reduced.

Freshets occur in the Estuaire du Gabon, principally at the beginning of the rainy season (November). However, they are occasionally experienced at other times and are sometimes sufficiently violent to interrupt river traffic for several days. During these floods, a foul smell pervades the whole estuary.

Rollers occur during the dry season, at which times the outer shoals break and a heavy swell sets into the estuary. The shore in the vicinity of Libreville is then rendered difficult to approach.

Pilotage.—It is reported that pilots are not available for entering the estuary, but local fishermen, who are acquainted with the approach channel and the shoal banks, may be obtained from the villages situated in the vicinity of Cap Esterias.

Anchorage.—During the dry season (June to September), vessels may anchor in a depth of 12m, mud, off the S shore of the estuary between Pointe Pongara and Crique Rogolay, 3 miles SSE. The holding ground is excellent, but this roadstead is dangerous during the thunderstorm season. Crique Rogolay is infested with crocodiles.

Directions.—**Passe de la Penelope** (0°24'N., 9°20'E.) is the main channel leading into Estuaire du Gabon. It is entered close SW of Banc da la Themis and has a least depth of 11m. This channel passes between several extensive banks and shoal areas and is marked by buoys. An outer lighted buoy, moored about 7.2 miles SW of Cap Santa Clara, marks the seaward entrance of this channel. The recommended route through the channel is indicated on the chart.

When approaching the estuary from seaward, the soundings give a good indication of the distance from the land, as depths of 180m run in a line which lies parallel to and about 25 miles from the coast. The depths increase rapidly to seaward of this line, but decrease gradually and regularly toward the land. It should also be noted that the land to the N of the estuary is high when compared with that to the S, which is very low.

On opening the mouth of the estuary, the hills and spires in the vicinity of Libreville may be easily identified. During fog or at night, vessels are advised to anchor in a suitable depth outside the estuary if the channel buoys or landmarks are not visible.

Caution.—Numerous oil and gas exploration drilling rigs,

platforms, structures, and well heads may be encountered in the approaches to Estuaire du Gabon.

The banks and shoals in the approaches are continuously acted upon by the strong currents. They may shift from time to time and too much dependence should not be placed on the chart. Banc de la Themis was reported (1986) to be extending further to the S than charted.

Buoys marking the approach channel leading into the Estuaire du Gabon are frequently reported to be out of their assigned positions and cannot be depended upon. It is reported (2003) that many of these buoys were missing.

The lights marking the estuary are unreliable, especially the one shown from Pointe Ngombe, which is frequently reported to be unlit.

It was reported that Pointe Pongara is being eroded by the action of the currents and is liable to be of a different shape from that shown on the charts.

3.67 Libreville (0°23'N., 9°27'E.), the capital of Gabon, stands along the edge of a small hill, 2.5 miles SSE of Pointe des Normands. The shore is fringed with reefs and cargo is worked by barges from vessels at anchor.

A church, with a spire, stands in the town. When the sun shines on this spire, it appears as a white obelisk and can be seen from a considerable distance.

A wharf, which extends about 250m SW from the shore, fronts the town and has depths of less than 3m alongside. It is used by small coasters, local ferries, barges, yachts, and fishing vessels. The wharf is protected by a detached breakwater, 300m long. Vessels may anchor in depths of 8 to 9m, mud and clay with good holding ground, about 1 mile SW of the wharf.

It is reported (1990) that all cargo is being worked at Port Owendo.

Caution.—A disused submarine pipeline extends about 0.9 mile WSW from a point on the shore located close SE of the wharf. Several obstructions lie on the seabed in the vicinity of the outer end of this pipeline.

A restricted area, within which anchoring and fishing are prohibited, lies close NW of the wharf. It extends up to 3 miles seaward from the shore and may best be seen on the chart.

It is reported (2006) that a dangerous wreck lies about 0.7 mile W of the SSE end of the breakwater.

3.68 Port Owendo (Port Ovendo) (0°17'N., 9°30'E.) (World Port Index No. 46435) lies on the SW side of Pointe Owendo, 6 miles SE of the S end of Libreville.

Tides—Currents.—The tides rise about 2.4m at springs and 1.9m at neaps.

Depths—Limitations.—The port is approached through Estuaire du Gabon. The entrance channel has a least charted depth of 11m (2014).

The facilities include a main cargo quay, 455m long, which is situated on the SW side of Pointe Owendo. It provides two berths, with depths of 10m alongside. Dolphins extend 150m from the W end of this quay and form another berth. There are facilities for general cargo, container, and ro-ro vessels. Vessels up to 9.5m draft can be accommodated.

A manganese ore pier, with a dolphin berth at the head, extends 0.5 mile SSW from the shore, close NW of the main quay. It has a depth of 11m alongside and can handle vessels

up to 40,000 dwt and 11.5m draft, depending upon the tide.

Vessels are usually berthed within the port at slack water, day or night.

Aspect.—Pointe Owendo, 24m high, is the S extremity of a wedge-shaped projection on which stand Montagnes de Conicou. These latter hills attain heights of 50 to 80m. A light is shown from a lattice tower, 46m high, standing on the point. It is reported (2003) that the light structure is surrounded by vegetation.

Several rivers enter the estuary ESE of Pointe Owendo. Most of these are navigable only by small craft with local knowledge.

Pilotage.—Pilotage is compulsory for vessels over 500 gt and is available 24 hours. Vessels should send an ETA and request for pilotage, through their agent, 24 hours in advance. A confirmation message should be sent 12 hours in advance. All vessels must announce their ETA at the pilot station by facsimile or via the agent. Vessels must contact the pilot station on VHF channel 12 upon arrival at the Themis Lighted Buoy (0°25.6'N., 9°13.6'E.) and maintain a continuous listening watch for further instructions. Pilots may be contacted on VHF channel 12 or 16 and board in the vicinity of (0°17'N., 9°27'E.).

Information concerning the buoys marking the approach channel is given by VHF. Vessels must announce their arrival by early morning, if intending to enter in the afternoon, or by 1800 local time, if intending to enter at night or the next morning.

Contact Information.—Owendo Pilots can be contacted, as follows:

1. Telephone: 241-704306
2. Facsimile: 241-704305

The National Port Authority can be contacted, as follows:

1. Telephone: 241-700048
2. Facsimile: 241-703735
3. E-mail: info@ports-gabon.com

Anchorage.—Anchorage for vessels loading timber is available, in a depth of 10m, about 1 to 2 miles SW of Pointe Owendo or, in depths of 7.5 to 8.5m, mud and sand, about 1 mile SSE of Pointe Owendo. The latter berth has good holding ground and is sheltered from the swell. Other vessels may also anchor, in a depth of 8.5m, about 2 miles SSE of Pointe Owendo. An outer waiting anchorage lies about 3.5 miles W of Pointe Owendo and has a depth of 11m, mud.

Caution.—The local authorities or agent should be contacted in advance, as silting may often reduce the depths alongside the berths.

Large drifting logs may be encountered in the anchorages and alongside the berths.

The river tidal currents run strongly at times and can attain rates of up to 6 knots after heavy rains.

It is reported (2008) that there is no period of slack water at the berths.

There is an area of shallow water with a depth of 3.9m approximately 2.25 miles WSW of Pointe Owendo.

The Estuaire du Gabon to Baie du Cap Lopez

3.69 Between Pointe Ngombe and Cap Lopez, 67 miles SW, the coast forms a large bight the S part of which is known as Baie du Cap Lopez. The coast in the N part of this bight, be-

tween Pointe Ngombe and the equator, is moderately high and level. It is fringed by a narrow, sandy beach which is intersected in several places by creeks.

Near the Equator, a chain of hills and dunes, about 31 m high, rises and extends S, parallel to the coast. A white sandy hill, covered with scrub, stands about 23 miles S of Pointe Ngombe. It is conspicuous from seaward and appears, over the trees which line the coast, with a reddish tint.

Pointe Ognone (Pointe Nyonie) (0°03'S., 9°20'E.) is located 21 miles S of Pointe Ngombe and a small river flows into the bight close N of it. The position of this point may be determined by a sudden break in the trees. The mouth of the river occasionally shifts by up to 0.5 mile in a short amount of time. A small airfield is situated close N of the point.

Pointe Ekoueta Niliani (0°13'S., 9°18'E.) is located 6.5 miles S of Pointe Ognone. Les Mamelles, two conspicuous hills, rise to heights of 160 m and 120 m, about 3 miles SE of this point. A conspicuous building is reported (1990) to stand about 0.5 mile NE of the point.

Batanga (0°21'S., 9°18'E.) lies 8.5 miles S of Pointe Ekoueta Niliani and is fronted by a small pier. A small airfield is situated in the vicinity of this village.

Konzi Oil Field (0°16'S., 9°13'E.), consisting of two platforms, lies centered 7 miles WNW of Batanga.

Caution.—A submarine pipeline, which may best be seen on the chart, extends NW from Batanga to Konzi Oil Field and then SW to Cap Lopez. A prohibited area, the limits of which are shown on the chart, lies in the vicinity of the oil field. A restricted area, within which anchoring and fishing are prohibited, lies in the vicinity of the NE part of the submarine pipeline and may best be seen on the chart.

3.70 Aloumbe (0°26'S., 9°17'E.), marked by a beacon, lies 13 miles S of Pointe Ekoueta Niliani and is a timber-loading site. Rafts of logs, consisting of 50 to 70 logs each, are towed to a roadstead anchorage by tugs.

Ilots Fanaes (Roche Fanaes), consisting of several small above-water rocks, lies near the seaward end of a shallow shoal which extends up to about 1.3 miles offshore in the vicinity of Aloumbe.

Three large grassy plains lie N of the town of Sangatanga, which stands 3.5 miles SSW of Aloumbe. These plains are separated by dense woods and are conspicuous from up to 10 miles offshore. Gongoue, lying 8.5 miles SSW of Aloumbe, is another timber-loading site.

Baie de Nazare is entered between Pointe Weze, located 17.5 miles SW of Aloumbe, and Pointe Apoumanda, 5.7 miles W. It is completely obstructed by shallow banks which have been formed by the mud carried down by several rivers.

The current off this part of the coast generally sets NNE and attains a rate of not more than 0.5 knot, except after a series of fresh SW winds.

Caution.—Oil and gas exploration is being carried out along this stretch of coast and offshore drilling structures, with associated objects, are likely to be encountered in the waters lying S of the Equator and E of 9°E. Vessels should exercise care when navigating off this coast, as many of these structures and objects frequently move and are not charted.

Baie du Cap Lopez

3.71 Baie du Cap Lopez (0°38'S., 8°49'E.) lies between Pointe Apoumanda, the W entrance of Baie de Nazare, and Cap Lopez, 18 miles W. The shores of the bay are very low and covered with mangroves. The Riviere d'Oranga empties into the head of the bay while the Riviere Yombe and the Riviere Kondjo empty into the SE part. The S and E parts of the bay are obstructed by extensive shoals.

Cap Lopez Oil Terminal lies on the N side of Baie de Prince, at the SE side of the cape. The harbor of Port-Gentil extends SE from Pointe Clairette and fronts the E side of Ile Lopez.

Ile Aparia lies on the W side of the entrance to the Riviere Kondjo, at the SE side of the bay. This island may be easily identified as it is covered with coconut palms and is slightly higher than the nearby coast.

The Ogooue River (Fleuve Ogooue), the delta of which forms the promontory of Cap Lopez, is one of the great rivers of Africa. It rises 550 miles from the sea in the Congo, near Zanaga (2°50'S., 13°50'E.). The river has an extensive delta which begins at Lambarene (0°42'S., 10°14'E.). The region is damp and oppressive. The entire countryside and the area from Estuaire du Gabon to Sette Cama, 130 miles SSE of Cap Lopez, is under water during the long wet season, except for the mountain region. The inhabitants of the area frequently abandon their villages.

3.72 Cap Lopez (0°37'S., 8°43'E.), which forms the S limit of the Bight of Biafra, is the N extremity of Ile Lopez. This latter island is low, wooded, and formed by the two mouths of the Ogooue River. The cape consists of a low plain, but is easy to identify because of its salient position. From the N, the cape itself appears as an island, with large mangroves towering above the scrubby vegetation.

Capitaines Light is shown from a framework pylon standing on the NE side of the cape. Several prominent chimneys are situated close W of the light. A former disused light tower, 30 m high, stands on the W side of the cape, 0.8 mile WSW of Capitaines Light, and is prominent.

It has been observed that from 7 miles N to 4 miles S of the cape, the edge of the grayish-green water flowing from the Ogooue River appears in marked contrast to the color of the ocean. This edge is also marked by tide rips.

Banc du Loiret is the former submerged extremity of Cap Lopez. It has a least depth of 3.1 m and extends up to about 0.9 mile NW from the cape.

Banc du Prince (0°37'S., 8°48'E.), with depths of less than 10 m, extends up to about 4.7 miles NE from Pointe du Prince, which is located 3 miles SE of the cape. This bank has a least depth of 2.6 m, is steep-to, and is marked by a lighted buoy at the NE end.

For a description of the waters and coast lying S of Cap Lopez, see paragraph 4.2.

3.73 Pointe Clairette (0°41'S., 8°47'E.) is located 5 miles SE of the cape. A refinery, with a prominent flare, and a conspicuous group of oil tanks are situated in the vicinity of this point.

Prominent water towers stand 1.5 miles SSW and 3.2 miles S of the point. An aeronautical radiobeacon is situated 1.4 miles



Cap Lopez Disused Lighthouse

SW of the point. A large and prominent factory building stands 1 mile S of the point.

Banc de l'Alcyon, with depths of less than 5m, extends up to about 1.3 miles ENE from a point on the shore, 1 mile S of Pointe Clairette. Banc du Talisman, with depths of less than 5m, extends up to about 1 mile NE from a point on the shore close S of Banc de l'Alcyon.

Pointe Akosso is located 3 miles SSE of Pointe Clairette and Banc Rousselot, with depths of less than 5m, extends up to about 1 mile E from it.

A prominent television tower, 124m high, stands about 0.9 mile SSW of Pointe Akosso.

Tides—Currents.—The tides at Cap Lopez rise about 2m at springs and 1.6m at neaps.

In the vicinity of Cap Lopez, an eddy current has been observed to set toward Banc du Loiret or into Baie du Prince. The ebb tidal current in the bay generally sets NNW at a distance of up to 1 mile from the shore. It usually attains a rate of less than 1 knot, but may reach 3 knots during the rainy season.

Caution.—Strong eddies and discolored water may be encountered in the vicinity of Banc de Loiret. Vessels are advised to give Cap Lopez and this bank a wide berth.

Oil and gas exploration and production are being carried out within the bay and in the waters lying off the W coast of Ile Lopez. Vessels should exercise care when navigating in the vicinity of the cape as numerous platforms, submarine pipelines, and associated structures are situated in this area.

Several wrecks, some of which are dangerous, lie in the approaches to the cape and may best be seen on the chart.

3.74 Cap Lopez Terminal (ELF Gabon Oil Terminal) (0°38'S., 8°43'E.) (World Port Index No. 46445) lies in Baie du Prince, on the SE side of Cape Lopez. An abandoned whaling station is situated at the head of the bay and several oil tanks stand close N of it.

Depths—Limitations.—The terminal, which should be approached from the NE, consists of a loading platform with dolphins which is connected to the shore by an L-shaped pier, 340m long. The berth has a charted depth of 25m alongside and can accommodate vessels of between 35,000 dwt and 250,000 dwt, between 215m and 340m in length, and up to

20.5m draft.

Pilotage.—Pilotage is compulsory. Vessels berth during daylight hours only but may depart at any time. Pilots can be contacted on VHF channel 72 and board about 1.5 miles ENE of the terminal pier. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance via Libreville.

Regulations.—A restricted area, which may best be seen on the chart, extends up to 0.3 mile seaward from the N shore of Baie du Prince and from the E side of Cape Lopez. Only vessels proceeding to the terminal may enter this area.

Vessels must maintain a listening watch on VHF channel 16 when approaching the terminal. During mooring and loading operations, vessels must maintain a listening watch on VHF channel 72.

Contact Information.—Cap Lopez Terminal can be contacted, as follows:

1. Telephone: 241-556339
2. Facsimile: 241-556478

Anchorage.—Anchorage is available in depths of 62 to 70m, sand and mud, about 1 mile ENE of the terminal pier.

Caution.—A submarine pipeline, which may best be seen on the chart, extends E and NE from within Baie du Prince to the Konzi Oil Field (0°16'S., 9°13'E.).

A risk of local thunderstorms exists between January and April.

It has been reported that anchoring is prohibited in the vicinity of position 0°38'S., 8°44'E.

3.75 Port Gentil (0°43'S., 8°48'E.) (World Port Index No. 46440), a deep sea port, extends S from Pointe Clairette. It is sheltered from winds of all directions except the N.

Depths—Limitations.—Commercial Quay, the main wharf, fronts the shore, 0.6 mile SSW of Pointe Clairette. It is 375m long and has depths of 9 to 10.5m alongside, with facilities for ro-ro and container cargo. Vessels of up to 35,000 dwt and 10.5m draft can be accommodated.

A basin, 250m wide, lies at the N end of Commercial Quay. The quay on the S side of this basin is 285m long. It has depths of 6 to 7m alongside and is mainly used by fishing vessels. The N side of the basin is used by barges and small craft associated with the exploration and production of oil and gas.

Pointe Clairette (SER) Oil Terminal lies close SE of Point Clairette and consists of two large dolphins and two mooring buoys. It has a depth of 13m alongside and can accommodate tankers up to 80,000 dwt, 183m in length, and 10.1m draft.

A naval base, with depths alongside of up to 5m and a ro-ro berth for small vessels, is located in the vicinity of Pointe Akosso.

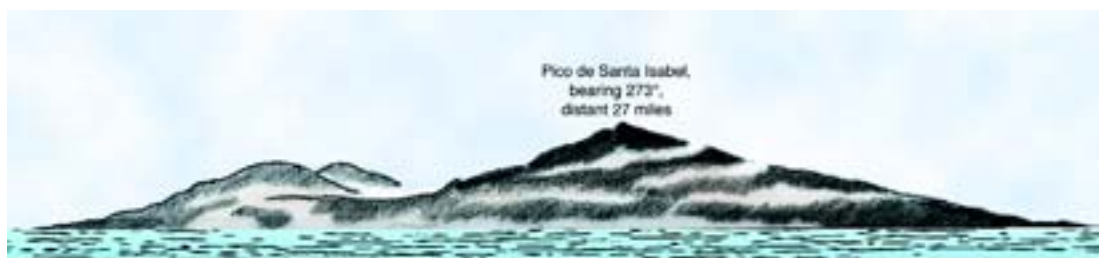
Pilotage.—Pilotage is compulsory for vessels over 150 gt.

Vessels should send an ETA to the Port Captain 48 hours and 24 hours in advance. Vessels should send a request for pilotage 12 hours prior to arrival. The initial contact with Port Control should include the gt, the master's name, and the last port of call.

After contacting Port Control on VHF channel 16, vessels should maintain a listening watch on VHF channel 12. Pilots generally board about 2 miles NE of Pointe Clairette.

Pilots for Pointe Clairette (SER) Oil Terminal are provided by the station at Cap Lopez Oil Terminal.

Regulations.—A restricted area, which may best be seen on



Isla de Bioko (Masie Nguema Biyogo) (Fernando Poo) from E

the chart, extends up to 2 miles seaward in the vicinity of Port-Gentil. Only vessels proceeding under pilotage to the harbor facilities may enter this area.

Contact Information.—Port Gentil Port Authority can be contacted, as follows:

1. Telephone: 241-553811
2. Facsimile: 241-555303

Anchorage.—Anchorage for tankers can be obtained in a depth of 22m, mud, about 0.3 mile ESE of Pointe Clairette, but vessels must only proceed to this roadstead under pilotage.

Vessels awaiting a pilot can also anchor within the restricted area in a depth of 28m, mud, with Pointe Clairette 1.9 miles SW.

Caution.—A restricted area, within which anchoring and fishing are prohibited, lies centered 3 miles ENE of Pointe Clairette. This area, the limits of which may best be seen on the chart, has gas and oil development activity and contains numerous obstructions.

Floating logs, up to 1.2m in diameter, may be encountered adrift in the approaches to the harbor.

Vessels should only turn S towards the port when well clear of Banc du Prince.

Several wrecks, some of which are dangerous, lie in the approaches to the port and may best be seen on the chart.

It was reported (1994) that the navigation aids in the vicinity of the port are unreliable.

It is reported that depths less than charted exist in the approaches to Port Gentil.

Islands in the Bight of Biafra

3.76 The islands located in the Bight of Biafra, four in number, lie nearly equidistant from each other along a line extending SW from the head of the bight. The NE and largest island is Isla de Bioko (Masie Nguema Biyogo) (Fernando Poo); next is Ilha do Principe, then Ilha de Sao Tome, and finally Pagalu (Annobon), the outer and SW island.

These islands and the Cameroun Mountains, on the mainland, are of volcanic origin. All of these features are in line and were probably formed by the same submarine upheaval. The basaltic and ferruginous rocks, of which the islands are composed, and the black sand found along the shores, are all evidences of volcanic activity.

Isla de Bioko (Masie Nguema Biyogo) (Fernando Poo) and Pagalu (Annobon) form a province of Equatorial Guinea.

Ilha do Principe and Ilha de Sao Tome are an independent republic.

Caution.—Magnetic disturbances have been observed in the approaches to the islands lying within the Bight of Biafra.

Isla de Bioko

3.77 Isla de Bioko (Masie Nguema Biyogo) (Fernando Poo) (3°30'N., 8°40'E.) is the most important of the four islands lying in the Bight of Biafra. A ridge of mountains traverses nearly the entire length of this island and culminates in the magnificent cone of Pico de Santa Isabel (3°35'N., 8°46'E.), the summit of which is 3,007m high and almost constantly enveloped in clouds. It has been considered doubtful whether this volcanic cone can yet be considered extinct, as smoke is occasionally observed issuing from it.

Winds—Weather.—On a clear day, the peak of Pico de Santa Isabel is sometimes visible from the W up to 100 miles seaward. However, the weather is sometimes so thick and hazy that the land cannot be seen. Due to the strong current setting E, vessels may even pass the island without sighting it.

The rainy season lasts from April to October and the dry season lasts from December to February. The prevailing winds are generally from the W. Mosquitoes, tsetse flies, and phalaria flies are prevalent in the cultivated areas of the island up to a height of 600m, but only sand flies and mosquitoes are encountered in the towns and villages.

Tides—Currents.—The currents in the vicinity of Isla de Bioko are variable. The Guinea Current, which sets so continuously toward the Bight of Biafra, impinges upon the shores of Isla de Bioko and the island is therefore, to a certain extent, within its influence. During the winter months, the current generally appears to set N off the W coast, E off the S coast, and S off the E coast of the island. It usually attains a rate of 1 to 2 knots. During the summer, the current generally appears to set N off the W and E coasts and W off the S coast of the island. However, the currents are variable in this locality and cannot be relied on.

The general direction of the current setting along the N coast of the island is E. It is variable, but has been observed to attain a rate of 1.5 knots. When approaching the island, particularly at night, this current should be given consideration.

Caution.—It is reported (1993-2012) that the lights on Isla de Bioko are unreliable and may be extinguished.

Navigation in the claimed territorial waters, within 12 miles

of the island, is also reported (1993) to be inadvisable.

Vessels should keep a lookout for pirates while in the waters lying off the coasts of Isla de Bioka.

3.78 Punta Europa (3°47'N., 8°43'E.), the NW extremity of Isla de Bioko, is a salient point surrounded by numerous tall trees. It is fronted by numerous above-water rocks which lie close offshore. A light is shown from a framework tower standing on the point, but both the light and the structure are obscured by trees on certain bearings. A prominent flare is reported (1990) to be situated close SW of the light.

An aeronautical light is occasionally shown from a structure standing in the vicinity of an airport, which is situated 2 miles S of Punta Europa.

Alba Gas Field (3°58'N., 8°33'E.), with three production platforms, is situated in an area centered about 16 miles NW of Punta Europa. A submarine gas pipeline extends SE and S from this area to a terminal standing close E of Punta Europa. It is marked in the vicinity of the shore by buoys. Anchoring near this pipeline is prohibited.

Caution.—Zafiro Offshore Oil Terminal (3°51'N., 8°07'E.) is situated about 37 miles W of Punta Europa (see paragraph 3.22).

3.79 Punta Europa Marine Terminal (3°47'N., 8°43'E.) (World Port Index No. 46306), an oil loading facility, serves a refinery and lies close offshore, 0.7 mile ENE of Punta Europa.

Tides—Currents.—During the rainy season (April to October), the current usually sets NW at a rate of up to 2.5 knots in the vicinity of the terminal. It is usually weak and variable during the dry season.

Depths—Limitations.—There are two berths each, consisting of four mooring buoys, situated in a depth of 37m, and there is also a LNG Terminal. A submarine pipeline extends WSW from the berth to the shore. Tankers up to 110,000 dwt and 300m in length can be accommodated at the LNG Terminal. Berth No. 1 can accommodate vessels up to 210m in length or 45,000 dwt, while Berth No. 2 can handle vessels up to 244m in length or 105,000 dwt.

Vessels should send an ETA via their agent 7 days in advance or on departure from the last port. They should then send an ETA via e-mail 72 hours, 48 hours, and 24 hours in advance of arrival. LNG vessels should send an ETA via e-mail 96 hours, 48 hours, 24 hours, and 5 hours prior to arrival. Vessels should contact the terminal on VHF channel 16, 73, or 74 or by e-mail when within 20 miles. The terminal will then designate the method or working frequency for further communications.

Pilotage is compulsory. Pilots, acting as mooring masters, usually board about 1.5 miles NNE of the terminal and remain on board the vessels throughout the loading operations. Vessels berth and depart Terminal Berths Nos. 1 and 2 during daylight hours only. The LNG Terminal allows for berthing and unberthing 24 hours. Vessels should not take any instructions from Malabo Pilots or Malabo Port Control.

Punta Europa Pilots can be contacted by telephone (1-713-328-1288).

Punta Europa Operator can be contacted, as follows:

1. Telephone: 240-222273484
240-222240456
240-222537681(LNG)

2. E-mail: egqmarinecoord@marathonoil.com

No designated anchorage berths exist due to the presence of the gas pipeline in the vicinity of the berth and reports of shoal water in the bay lying between the terminal and Malabo. Vessels are advised to anchor to the N of 3°47'N and to the E of 8°44'E. There are depths of 35 to 40m; the bottom consists of mud and sand, good holding ground.

3.80 Punta Plana Terminal (3°46'N., 8°43'E.), located about 0.8 mile SE of Punta Europa, consists of a jetty which extends seaward for 265m and then E for 100m.

Vessels should send an ETA via their agent 10 days, 5 days, 72 hours, 48 hours, and 24 hours in advance.

Pilotage is compulsory and available 0700 to 1700 hours (Local Time) Monday to Saturday. Pilotage is available by prior request on Sunday. Pilots can be contacted on VHF channel 16 and board in position 3°48.0'N, 8°44.7'E.

Punta Plana Pilots can be contacted as follows:

1. Telephone: 240-278863 (Mobile)

The terminal is operated by Bechtel International, Malabo and can handle vessels up to 8,000 dwt, 105m in length, and 8m draft.

K5 Oil Center Terminal (3°46'N., 8°45'E.) is located about 2 miles SE of Punta Europa, close W of the mouth of the Rio Sampaca. It is used as a supply base for the offshore oil and gas fields. The coast adjacent to the terminal is undeveloped and consists of dense vegetation. The harbor consists of a jetty, which extends 400m N. The main berth at the head is 130m long and has a depth of 8.5m alongside.

Caution.—Due to insufficient information concerning the depths in the approaches to these facilities and the aids to navigation, vessels are advised to contact the terminals prior to arrival.

3.81 Malabo (Santa Isabelle) (3°45'N., 8°47'E.) (World Port Index No. 46320) is situated on a plateau, 4.5 miles SE of Punta Europa. It is not only the capital of the island, but is also the capital of Equatorial Guinea.

Tides—Currents.—The tides rise about 1.8m at springs and 1.4m at neaps.

Depths—Limitations.—The entrance fairway has depths of 18 to 22m over a width of about 90m.

The old part of the harbor (Muelle Vieja), at the SE side of the bay, has a quay, 250m long, with depths of 5m alongside. A pier, 45m in length and 15m wide, projects NW from the quay. Vessels usually moor and berth stern-to at this quay.

The new part of the harbor (Muelle Nuevo), on the SW side of the bay, has a bulk quay, 200m long, with depths of 6 to 9m alongside and a container quay 350m long, with depths of 9m alongside. A recently-constructed berth exists on the NE side of the bay. It is 350m long and has charted depths alongside of 7.0 to 8.8m.

Vessels of up to 23,000 gt and 176m in length have been handled alongside in the port.

Aspect.—The town is fronted by Bahia de Malabo (Bahia de Santa Isabel) and stands at the top of some cliffs. Several prominent buildings in the town may be identified from seaward. The water tower is conspicuous when approaching from E and the cathedral is conspicuous when approaching from W.



Malabo

Punta de la Unidad Africana, marked by a light, is the NE extremity of a narrow peninsula which extends 0.5 mile NNW from the coast and forms the N and E sides of Bahía de Malabo. A prominent monument, formed by a cross, stands close SE of the point; an obelisk is situated 0.2 mile SE of it. A newly-constructed breakwater extends W from Punta de la Africana.

The W side of Bahía de Malabo consists of reclaimed land extending N from the former Punta Cristina, located 0.5 mile SW of Punta de la Unidad Africana.

Bahía de Venus lies between Punta Cristina and Punta Pilon, 0.3 mile WSW. The shores of this bay are high, steep, and rocky. A group of large fuel tanks stands 0.5 mile S of Punta Pilon.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channel 14 or 16 and generally board about 0.5 mile NW of Punta de la Unidad Africana. It is reported that pilots only berth vessels during daylight; vessels may leave at any time and are not required to use the services of a pilot. Vessels should send an ETA via Douala (TJC).

Malabo can be contacted, as follows:

1. Telephone: 240-092669
2. Facsimile: 240-092669

Anchorage.—The recommended outer anchorage lies in Ensenada de Gravina, clear of the submarine cable. The farther offshore the better the climate of the anchorage due to cooler weather and fewer mosquitoes.

Caution.—It is reported (2007) that extensive development is being carried out at Malabo, including the dredging of a new entrance channel which is marked by lighted buoys. A submarine cable runs NE from the W side of Ensenada de Gravina. Anchorage is prohibited within 0.3 miles of this cable.

3.82 Punta Hermosa (3°46'N., 8°54'E.), the NE extremity of the island, is round, sloping, and thickly wooded. A prominent volcanic hill rises about 1 mile S of the point.

Isolete de Horacio lies close offshore, 0.5 mile SE of Punta Hermosa. A light is shown at an elevation of 21m from a tower, 16m high, standing on the N part of this islet.

Punta Caracas (Fronton de Caracas) (3°25'N., 8°48'E.) is

located 21 miles SSW of Punta Hermosa. A light is shown at an elevation of 18m from a pyramidal tower, 8m high, standing on this point. Islole Leven lies 0.5 mile offshore, about 3 miles NNE of the point. This small islet is of moderate height, but does not stand out clearly.

Bahía de la Concepcion (Bahía de Riaba) is entered 1.5 miles SW of Punta Caracas. This bay, into which several streams flow, is quite exposed to E winds, which may be strong during local thunderstorms. The village of Riaba Concepcion, marked by a light, is situated near the head. Anchorage can be obtained, by vessels with local knowledge, on a very narrow bank which fronts the shore. The recommended anchorage, in a depth of 18m, sand, lies 0.3 mile ENE of the village.

Between Punta Hermosa and Punta Santiago, the S extremity of the island, the E coast of Isla de Bioko is abrupt, rocky, and indented. It consists of a succession of points, generally covered with thick vegetation and fringed by rocks, and small coves fronted by sandy beaches.

The mouth of the Rio Iledyl, an important river, lies 3.5 miles NE of Punta Santiago, but the entrance is not visible from seaward.

Punta Santiago (3°13'N., 8°41'E.), the SE extremity of the island, is very high, rocky, and covered with trees. Several conspicuous large rocks, over which the sea breaks, lie at the base of this point. A light is shown from a metal tower, 25m high, standing on the point.

Between Punta Santiago and Punta Oscura, 14.5 miles WNW, the S coast of Isla de Bioko is quite similar to that of the E side of the island, but the land rises more steeply behind the shore.

Caution.—At night or in thick weather, vessels should use care when passing Punta Hermosa, as the depths give no warning of its proximity and the high land behind the point makes it difficult to judge the distance off.

3.83 Punta Oscura (3°16'N., 8°27'E.), the SW extremity of the island, is formed by a high promontory with vertical sides and a level top. It is covered with tall trees and thick vegetation. Several waterfalls are located near the point and are prominent from seaward.

Punta Arjelejos (3°28'N., 8°29'E.) is located about 13 miles N of Punta Oscura. Between these points, the coast extends N for about 5 miles and is precipitous with numerous cliffs. It then continues NNE for about 8 miles and is moderately high, covered with vegetation, and fringed by black rocks.

Bahía de San Carlos lies between Punta Arjelejos and Punta Cabras, a rocky and steep-to point located 6.5 miles NE.

Punta Barcelonesa (3°28'N., 8°32'E.), located 4 miles E of Punta Arjelejos, is fronted by a rocky spit which extends up to 0.3 mile seaward. The shore between is indented by several small bays which are fringed with black sand. A light is shown from a tower, 16m high, standing on Punta Barcelonesa.

3.84 Luba (3°30'N., 8°34'E.) (World Port Index No. 46330), a small port, lies 0.8 mile SE of Punta Barcelonesa in the S part of a bay. It is primarily used as a supply base for the oil and gas industry and also for exporting bananas.

A new jetty, 110m long with depths alongside of 9.5m and an old jetty, 90m long with depths alongside of 9m are the primary facilities.



Ilha do Principe from W

Pilotage is compulsory. The pilots can be contacted on VHF channel 16 and board where advised after arrival in the area. Vessels should send an ETA 24 hours in advance of arrival.

Large vessels work cargo from lighters in the roadstead. This roadstead is sheltered from the predominate winds, but occasional squalls come down from the mountain sides. Vessels can anchor in a depth of 31m about 1.7 miles S of Punta Cabras. Several radio masts stand close E of the jetty.

A supply base pier is situated 0.2 mile SE of Punta Barcelonosa. It is 100m long and has a depth of about 6.6m alongside.

Luba Port Captain can be contacted, as follows:

1. Telephone: 240-275410
2. E-mail: portcaptain@lubafreeport.com

3.85 Islotos Loros (3°33'N., 8°34'E.) lies about 1.3 miles NNW of Punta Cabras and consists of three islets surrounded by breakers. The area lying between these islets and the coast is foul. A light is shown from a metal tower standing on the W islet.

Punta Achada is located 8 miles NNE of Islotos Loros. Bajo Vazquez de Castro, an extensive shoal, lies about 1.7 miles W of this point and has a least depth of 3.7m.

Rocas Primos (3°38'N., 8°34'E.) lies 2 miles offshore, about 3 miles SW of Punta Achada. It consists of three above-water rocks lying on a very narrow and steep-to reef.

Between Punta Achada and Punta Europa, 9 miles NE, the coast is moderately high and covered with vegetation. It consists of several rocky points, which are fringed by shoals, and a number of small, white sandy beaches.

Ilha do Principe

3.86 Ilha do Principe (1°37'N., 7°24'E.) lies 116 miles SW of Isla de Bioko. It has an extremely picturesque appearance formed by needle-shaped peaks and leaning mountain masses which rise abruptly from the high land of the interior.

The heavy rainfall and the great fertility of the soil have produced a growth of vegetation so rank as to render the island unhealthy. There are traces of extinct volcanoes in many parts of the island and large areas are covered with volcanic stones.

The N part of the island, although high, is not so grand in appearance as the S part, which consists of a series of steep and rugged mountains, surrounded by several gigantic and fantastically shaped natural obelisks. The whole of this latter mass culminates in Pico do Principe (1°35'N., 7°24'E.), a prominent peak which rises to a height of 947m.

The current in the vicinity of the island is variable, but is reported to usually set N or NE at a rate of 1 to 2 knots.

Caution.—Strong magnetic anomalies have been reported close off Ilha do Principe, especially in the vicinity of Baia de Santo Antonio.

3.87 Ilheu Bombom (1°42'N., 7°24'E.) forms, in reality, the N extremity of Ilha do Principe. This islet, which is 59m high, is connected to the main island by a sandy spit, on the W side of which lie two small and rocky islets. Ilheu Bombom is densely wooded and steep-to on its seaward side, against which the sea frequently breaks. A light is shown from a tower, 4m high, standing on the summit of the islet. A conspicuous radio mast is reported (1995) to be situated 0.5 mile S of the light.

Pedra de Gale, 4m high, lies 2 miles NW of Ilheu Bombom and is a small black rock on which the sea always breaks.

Ponta Banana (1°42'N., 7°26'E.), located 2.3 miles ESE of Ilheu Bombom, is high, rocky, and steep-to. A low neck lies on the inshore side of this point and it has the appearance of being detached when viewed from a distance to seaward. Between Ilheu Bombom and this point, the coast recedes to form a bay with wooded and rocky shores. Good anchorage can be taken by small vessels, with local knowledge, in a depth of 15m within this bay.

Ponta dos Mosteiros (1°41'N., 7°28'E.), located 1.5 miles ESE of Ponta Banana, is the NE extremity of Ilha do Principe. It consists of moderately high cliffs against which the sea often breaks with violence. A black rock lies close off this point and a spit, with foul ground and several rocks awash, extends up to 0.7 mile ENE from it. Vessels are advised to stay well clear of the outer end of this spit.

Ilheus dos Mosteiros, 20m high, lies close within the seaward end of the spit. A light is shown from a tower, 5m high, standing on this islet.

Ponta Capitaio, formed by a steep-to tongue of land, is located 0.8 mile S of Ponta dos Mosteiros.

3.88 Baia de Santo Antonio (1°39'N., 7°27'E.) (World Port Index No. 46375) is entered between Ponta Capitaio and Ponta da Garca, 2.5 miles S. The inner part of this bay is not easily distinguished from seaward and the shores are rocky with numerous sandy coves. The town of Santo Antonio stands near the head and is fronted by a small wharf, which is used by small craft. It is situated on a plain, sheltered by wooded hills, and is sometimes inundated by the sea. The houses are built mainly of wood and stand on piles. The climate is hot and humid.



Ilha de Sao Tome from NE

Vessels anchor in depths of 10 to 18m, good holding ground, off the town and work cargo from lighters. The tidal currents are weak, but the principal objection to this bay is that the anchorage is exposed to the prevailing winds, from the E and SE, during the thunderstorm season. Pilotage is not available.

Ponta de Mina, marked by a light, is located 2 miles NW of Ponta da Garca. This point is prominent and fringed by several rocks, with an ancient fortress standing on its summit.

Ponta da Garca (1°38'N., 7°28'E.) is the S entrance point of Baia de Santo Antonio. The coast extends SSW for 5 miles from this point and forms a wide bay with high cliffy shores.

Ponta do Pico Negro (1°32'N., 7°24'E.), the S extremity of the island, is formed by a long and narrow tongue of land, with steep cliffs on both sides.

Ilheu Caroco (1°31'N., 7°26'E.), lying 1.5 miles SE of Ponta do Pico Negro, is 305m high, rocky, steep, and wooded. It is covered with trees and brushwood. Due to the shape of this islet, which resembles a pointed cap, it is also known locally as Bone do Joqueri. A low rock lying close off the S side of this islet is prominent when seen from E or W. A light is shown from a tower, 5m high, standing on this rock.



Ilheu Caroco

The channel leading between this islet and Ponta do Pico Negro has depths of 18 to 36m, with a bottom of fine black sand. The currents in this channel are variable and caution is required.

Pedras Tinhosas (1°21'N., 7°18'E.) consists of two islets which lie 13 and 11.5 miles SW of Ponta do Pico Negro. Tinhosa Grande, the S and larger islet, is 55m high. Tinhosa Pequena, the N islet, is 64m high. Both islets are covered with brushwood and are marked by white patches of guano. A light is shown from a tower, 5m high, standing on the summit of

Tinhosa Grande.

Ponta do Grosso (1°33'N., 7°21'E.), the SW extremity of the island, is a rocky and steep-to headland located 4 miles WNW of Ponta do Pico Negro. It is dominated by a mountain, 622m high, which appears to have two peaks when seen from the SW. Several rocky points divide this stretch of coast into three bays. These bays are backed by high peaks and the sea usually breaks along their shores, which are high, rocky, and wooded.

Ponta do Focinho de Cao (1°36'N., 7°20'E.), located 3.2 miles NNW of Ponta do Grosso, is a salient headland which is fronted by rocks on its NW side and marked by a light. A peak, 263m high, stands 0.5 mile inland of this point.

3.89 Baia das Agulhas (1°37'N., 7°22'E.), providing the safest and best anchorage in the island, lies between Ponta do Focinho de Cao and Ponta Iola, 3 miles NE. This bay, which is sheltered from the SE winds of the thunderstorm season, is free from off-lying dangers; the depths decrease regularly toward the shore.

Five hills stand close to the shore of the bay and are connected by low land. They give the appearance of being separate conical islets when seen from the W. The higher peaks of the island can be seen in the background. The shore is mostly fringed by reefs and numerous streams flow into the bay through the valleys which separate the lower hills.

Good anchorage for large vessels can be found in a depth of 22m within the bay and E of the N extremity of Ponta do Focinho de Cao. Local thunderstorms blow from the E, but care should be taken, as they may be squally after coming over the high land.

Ponta Hora (1°42'N., 7°24'E.) is located 2.5 miles N of Ponta Iola and 2 miles SW of Ilheu Bombom. A few small bays lie along this stretch of the coast and afford anchorage to small vessels. They are sheltered from the prevailing wind, but are subject to violent squalls occasioned by the proximity of the mountains.

Ilha de Sao Tome

3.90 Ilha de Sao Tome (0°15'N., 6°37'E.) lies 82 miles SSW of Ilha do Principe. It is larger and of greater commercial importance than Ilha do Principe, but has a lack of sheltered anchorages. Calms, variable winds, and strong currents prevail in the vicinity of this island.

Ilha de Sao Tome is very mountainous and Pico de Sao Tome, its summit, rises at the W side of the central part. This

summit attains a height of 2,024m, but is often hidden by clouds. The sides of the peak are covered with dense forests and numerous streams flow down them. The island is reported to present three conspicuous peaks when seen from the NE at a distance of about 60 miles.

The water in the vicinity of the island is very clear and the bottom can be seen distinctly in depths of 10m. During the months of October and November, sperm whales are found off the S end of the island.

Tides—Currents.—When approaching Ilha de Sao Tome from the W, it is advisable, in order to take full advantage of the Guinea Current, for vessels to keep N of 1°30'N until the longitude of 6°E has been attained. Vessels will thereby avoid the South Equatorial Current, which is found in that latitude to the W of the above meridian and, at times, even farther N. This latter current sometimes surrounds Ilha de Sao Tome and to the N of the island, in a longitude of about 6°E, has been found to set to the W. The current usually sets between NNE and NNW at the E side of the island.

Caution.—It is reported (2004) that the navigation lights on Ilha de Sao Tome are unreliable and may be missing or extinguished.

It was reported (1995) that several fish havens had been established up to 5 miles off the coasts of Ilha de Sao Tome. They are marked by red buoys which have bamboo masts and red or yellow flags.

3.91 Ponta Cruzeiro (0°25'N., 6°40'E.) is the N extremity of Ilha de Sao Tome. Between this point and Ponta Praiao, 9.2 miles SE, the NE coast of the island is fronted by an extensive shoal with depths of less than 10m.

Porto de Ferao Dias lies 0.8 mile ESE of Ponta Cruzeiro and is fronted by a concrete pier. Large vessels can obtain anchorage in a depth of 13m, sand, about 1 mile NE of Ponta Cruzeiro.

Ilheu das Cabras (0°25'N., 6°43'E.) lies 3.3 miles E of Ponta Cruzeiro, near the edge of the coastal shoal bank. This island consists of two hills, about 90m high. A light is shown from a tower, 5m high, standing on the summit of the NE hill.

Baia de Ana Chaves (0°21'N., 6°44'E.) is entered between Ponta Okedelrey, located 5 miles SE of Ponta Cruzeiro, and Ponta Sao Sebastiao, 1 mile SE. A hospital is situated on Ponta Okedelrey and four radio masts, 30m high, stand close SW of it. A conspicuous barracks building stands 0.3 mile SSW of the hospital. Range lights, indicating the approach to the anchorages, are shown from Ponta Okedelrey.

A prominent fort, with white sides, stands on Ponta Sao Sebastiao. A light is shown from a tower, 6m high, standing on the fort.

An area of reclaimed land projects 0.2 mile NNW from this point; its N end forms a quay, 200m long, with a depth of 3m alongside.

Although open to E and NE winds, the bay offers a convenient anchorage to small vessels, except during the thunderstorm season. Depths of less than 2m front the head of the bay and extend up to 0.3 mile seaward.

Three detached banks, with depths of less than 5m, lie about 2.7 miles NNE, 2 miles NNE, and 1.8 miles NE of Ponta Sao Sebastiao.

Caution.—Unexploded ordnance is located in an area, with

a depth of 7.5m, lying about 1.2 miles NE of Ponta Sao Sebastiao Light.

A stranded wreck, which may best be seen on the chart, lies about 0.7 mile E of Ponta Okedelrey.

3.92 Sao Tome (0°21'N., 6°44'E.) (World Port Index No. 46380), the capital and main port of the island, stands along a sandy beach at the head of Baia de Ana Chaves. This town includes several good buildings of modern construction. A cathedral and several churches are also prominent.

Vessels moor within and off the bay and work cargo via lighters. Vessels of moderate to deep draft should anchor, in an appropriate depth for their draft, on the alignment of the lighted range shown from Ponta Okedelrey. It is reported (1986) that a vessel anchored, in a depth of 10m, mud and soft sand, about 0.7 mile NNE of Ponta Sao Sebastiao. There was good holding ground, but poor protection from the open sea.

Small vessels may anchor, in depths of less than 5m, within the inner part, but the sea breaks right across the bay after thunderstorms or when the swell sets in. Pilotage is not available. However, the Port Captain can be contacted on VHF channel 16.

Caution.—The transit of the lighted range situated on Ponta Okedelrey is not very restrictive and the structures are easily concealed by the afternoon shadows.

The long swell can often make lighterage operations difficult.

Vessels approaching from SE or S are advised to stay in depths of more than 35m and at least 1.5 miles offshore until they reach the lighted range leading to the anchorage.

3.93 Ponta Praiao (0°18'N., 6°46'E.), located 3.2 miles SSE of Ponta Sao Sebastiao, is the E extremity of Ilha de Sao Tome. It is a salient point of moderate height and is surrounded by drying rocks. The point is located near the SE end of a plain, which constitutes the N part of the island, and the land rises steeply to the S of it. A number of radio masts, 33m high, stand close W of the point and a church, with a prominent tower, is situated 4.5 miles W of them.

Ilheu de Santana (0°14'N., 6°46'E.) lies about 0.7 mile offshore, 3.2 miles S of Ponta Praiao. It is 50m high, rocky, and covered with bushes. A light is shown from a tower, 5m high, standing on this islet. The passage leading between this islet and the coast has no known dangers, but vessels are advised to keep outside in order to avoid squalls which prevail inshore.

Ponta do Io (Ponta Juntabudo) (0°07'N., 6°40'E.), prominent and cliffy, is located 13 miles SSW of Ponta Praiao. The coast between is irregular, with rocky heads and sandy bays. The land rises regularly from the shore and is intersected by several rivers. A light is shown from a tower, 5m high, standing on this point.

Sete Pedras (0°02'N., 6°38'E.) lies about 2.5 miles offshore, 4.7 miles SSW of Ponta do Io. It consists of a group of rocks, the largest being 42m high. When seen from N, these rocks have the appearance of a vessel under sail. By day, these rocks do not constitute a danger as they are steep-to, but they should not be approached at night.

3.94 Ponta Homem da Capa (0°01'N., 6°31'E.), the S extremity of Ilha de Sao Tome, is located 10 miles SW of Ponta

do Io. The coast between is indented by several bays.

Ilheu Gago Coutinho (0°00', 6°32'E.), known locally as Ilheu das Rolas, lies 1.2 miles S of Ponta Homem da Capa. It is 96m high, covered with large trees, and is the largest of the islets lying off Ilha de Sao Tome. Two summits rise from this islet; the N summit is a conical hill. A light is shown from a tower with a dwelling, 9m high, standing near the center of the islet.

Canal das Rolas separates Ilheu Gago Coutinho from the S extremity of Sao Tome and should be used with great caution.

Ponta Furada (0°14'N., 6°28'E.), the W extremity of the island, is located 14 miles NNW of Ponta Homem da Capa. The coast between is mostly rocky and cliffy, with a few beaches. It is fringed by several small islets. The action of the sea has eroded an opening in the cliff face at the point. A light is shown from a tower, 5m high, standing on the point.

Ponta Diogo Vaz (0°19'N., 6°30'E.), located 4.6 miles NNE of Ponta Furada, is rounded and steep-to. Enseada da Rosema, an indentation in the coast, lies between Ponta Figo, located 4 miles NE of Ponta Diogo Vaz, and Morro Carregado, 4.7 miles NE. A small bay, which lies at the S end of this indentation, is reported to offer excellent anchorage with deep water.

Morro Carregado (0°25'N., 6°37'E.), rising 4.8 miles W of Ponta Cruzeiro, is high and peaked. The point on which it stands is faced by steep, rocky cliffs. Lagoa Azul Light is shown from a tower, 5m high, standing on the point.

Caution.—Magnetic anomalies have been reported to exist in areas up to 10 miles SW of Ponta Praiao.

Pagalu

3.95 Pagalu (Annobon) (1°26'S., 5°37'E.) lies 105 miles SSW of Ilha de Sao Tome and is the smallest island lying in the Bight of Biafra. It is mountainous and rises in varied and picturesque forms to a considerable elevation in the central part, which is formed by three main peaks.

Pico del Fuego (Pico do Figo), the northernmost of these peaks, is in the form of a truncated cone. It is 454m high and has sides which are heavily wooded to within a short distance of the summit. A small fresh water lake lies close to the foot of this peak, on its SW side.

Pico del Centro, 629m high, rises 1 mile S of the lake. Pico Surcado, 654m high, rises 1 mile SE of Pico del Centro.

The prevailing winds, which are from the S and SW, blow with moderate force and little variation throughout the year, enabling vessels under the shelter of the land to ride at anchor in a smooth sea. Only during the period from March to September, when thunderstorms occur and strong E winds blow directly into the anchorages, is any danger to be apprehended. The gloominess of the sky and the heavy thunder and lightning by which they are preceded always gives timely notice of storms.

In the vicinity of the island, the current normally sets NW from November to April and NE from April to August. The strength varies and the current attains a rate of 0.5 knot to 1.8 knots. The tidal currents are always very weak.

Caution.—The present charted position of Pagalu is based on a 1991 ship's report, which placed the island 1 mile E of its previously-charted position. Charted depths are also based on old surveys. Mariners should exercise caution when navigating

in the vicinity of Pagalu.

3.96 Punta del Palmar (1°24'S., 5°37'E.) is the N extremity of Pagalu. Mision de Santo Antonio Light is shown from a tower, 46m high, standing near this point.

Punta Piramide, located 0.2 mile SE of Punta del Palmar, is low, sandy, and fronted by numerous rocks. Islote Piramide, the highest and most conspicuous of these rocks, is bare and conical.

San Antonio (1°24'S., 5°37'E.), the largest town on the island, stands close S of Punta del Palmar. It is also known as Pale. When approaching from seaward, the land in this vicinity is difficult to identify, as the mountains are nearly always covered by clouds and the town is not easily distinguished. At such times, Islote Piramide is a useful landmark.

Punta del Paso is located 1.2 miles SE of Punta del Palmar. The coast between is fronted by a shoal with depths of less than 5m. This point rises almost perpendicularly to a bluff and has needle-shaped rocks on its seaward face.

Islote Tortuga (1°24'S., 5°38'E.), 50m high, lies 0.8 mile NNE of Punta del Paso. This islet is steep-to and two rocks lie close off its NE extremity. Islote del Paso, a small and flat islet, lies 0.3 mile SW of the S extremity of Islote Tortuga.

The anchorages lying between Punta del Palmar and Punta del Paso should be approached with caution, as this area has not been thoroughly surveyed and patches of coral evidently exist. The best anchorage lies in depths of 22 to 27m, sand with good holding ground, 0.7 mile NE of San Antonio.

3.97 From Punta del Paso, the coast trends SSE for 0.8 mile to Punta Dudjiguele (Punta Budjiguele). Bahia de San Pedro, at the head of which stands the village of San Pedro, lies between this point and Punta Jasgania (Punta Jasmangania), 0.3 mile SSE.

Punta Dologany (Punta Olonganchi), located 1.3 miles S of Punta Jasgania, is a rocky and moderately high point. Pico Surcado, 655m high, rises 0.7 mile NW of this point.

Between Punta Dologany and Punta Mofina, 0.4 mile SSW, the coast is indented by two small bays.

Punta de San Antonio (Punta Manjob) (1°28'S., 5°37'E.) is located 1 mile W of Punta Mofina. The S coast of Pagalu extending between these points is dominated by high land which rises inland. Punta de San Antonio, which is marked by a light, is fronted by several rocks on which the sea generally breaks. Three conspicuous high and conical rocks lie centered about 1 mile S of this point.

Islote Adams, small and rocky, lies 0.4 mile S of Punta Mofina. This islet presents two distinct peaks when seen from E or W.

Caution.—It is reported (1999) that the light shown from Punta de San Antonio is often extinguished.

3.98 Punta Alvaro (Punta Penvadu) (1°27'S., 5°37'E.), located 0.7 mile NW of Punta de San Antonio, is surmounted by a moderately high peak, the summit and sides of which are marked by numerous pinnacle rocks.

Punta Jatupa is located 1.5 miles NNW of Punta Alvaro. The stretch of coast extending between these points is indented and Bahia de Santa Cruz is formed at the S end. The town of Santa Cruz stands at the head of this bay. The sea breaks heavily

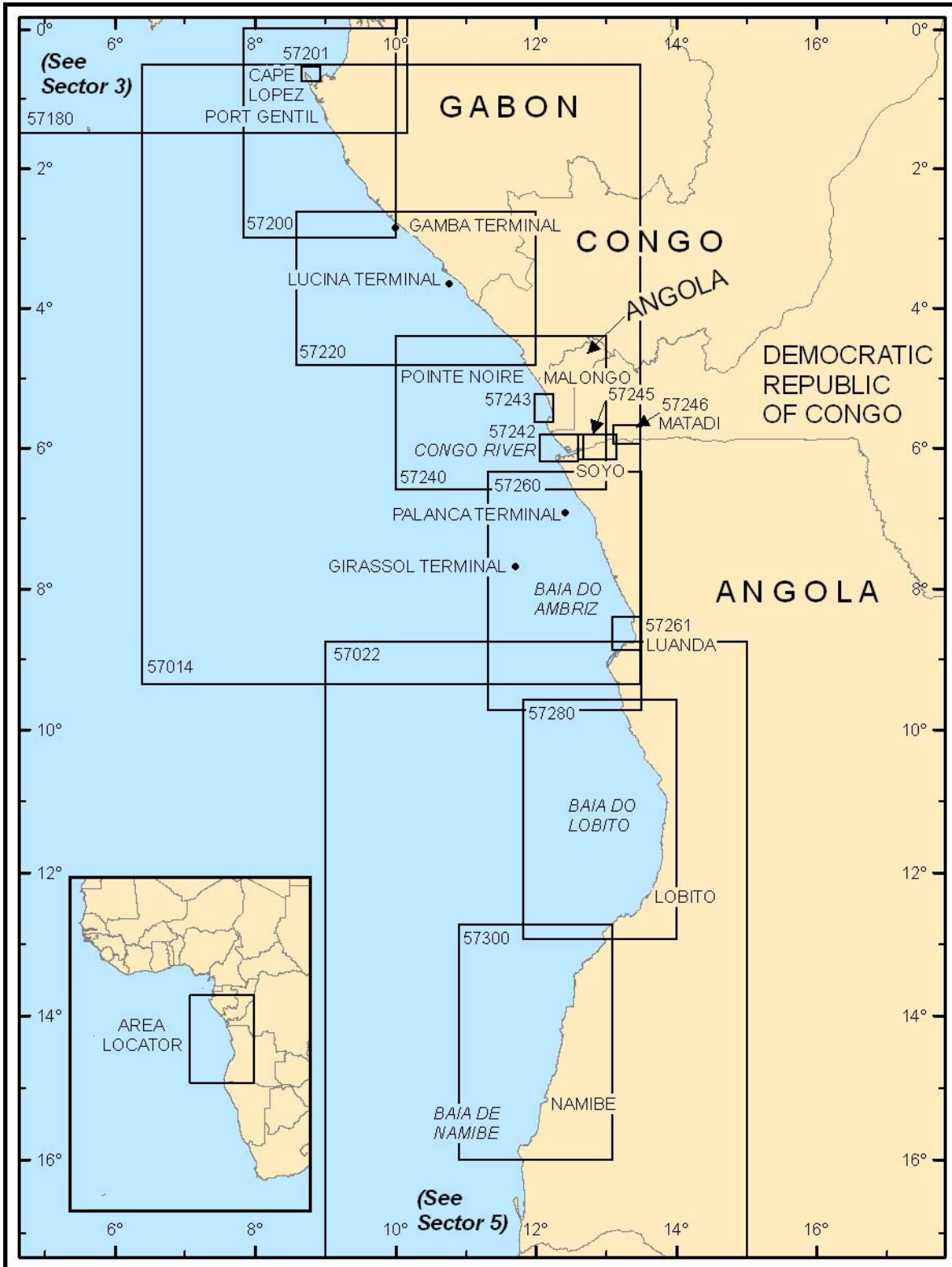
along the shore extending between Santa Cruz and Punta Jatupa.

Punta Jiscoy (Punta Dyiscoj) (1°25'S., 5°37'E.), located 0.5 mile NNW of Punta Jatupa, is the W extremity of Pagalu. A section of steep and rocky cliffs, 0.4 mile wide, is centered 0.4

mile NE of this point.

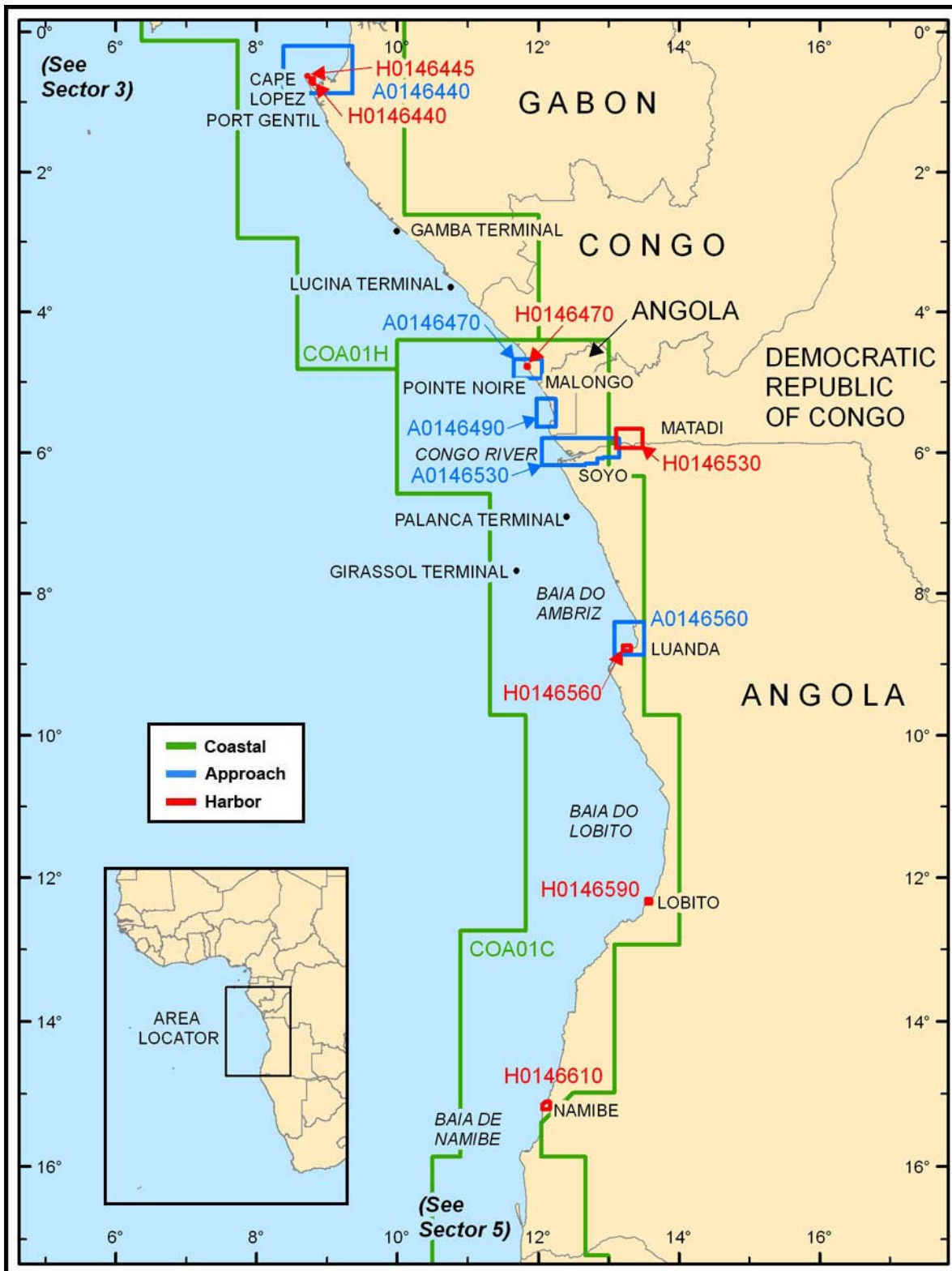
Islote Yebatelu, a small and detached islet, lies close offshore, 0.6 mile NNE of Punta Jiscoy.

The sandy shore of Pagalu extends 0.5 mile NE from abreast Islote Yebatelu to Punta del Palmar and is fringed with rocks.



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

SECTOR 4 — CHART INFORMATION



Additional DNC library coverage may be found in NGA DNC 01 (Limited Distribution) disc within the README\GRAPHICS folder.
SECTOR 4 — DNC LIBRARY INFORMATION

SECTOR 4

GABON TO ANGOLA—CAP LOPEZ TO PONTA ALBINA

Plan.—This sector describes the SW coast of Africa from Cap Lopez to Ponta Albina, including the Congo River. It includes the coasts of Gabon, The Congo (Republic of the Congo), Angola (Cabinda), the Democratic Republic of the Congo (formerly Zaire), and Angola. The descriptive sequence is from N to S.

General Remarks

4.1 The coast extending between Cap Lopez (0°37'S., 8°43'E.) and the Congo River, about 390 miles SE, is bordered by a narrow sandy beach on which the heavy surf breaks, particularly during the dry season. The landing of boats is impossible on this coast, except in a few places, and then only on exceptionally fine days.

The lagoon entrances lying along this stretch of coast change position from year to year. These river mouths, which can be often easily identified on radar, are marked by a discoloration of the water which extends, in places, up to more than 1 mile offshore during the rainy season.

All of the small coastal indentations located S of the Equator recede in a SE direction and are protected on their W sides by low tongues of land which are prolonged by shoals or spits. This peculiarity of form is probably caused by the combined action of the SW swell and the prevailing current. Most of these indentations are difficult to identify from seaward because their low entrance points cannot be distinguished from the background.

Between Cap Lopez and the Congo River, the 200m curve lies nearly parallel with the coast at a distance of about 35 miles offshore. Depths of 9 to 13m are found about 2 miles offshore. The bottom consists of mud in depths of over 100m, but consists of sand closer inshore.

At Ponta das Palmerinhas, 185 miles SSE of the Congo River, the 200m curve approaches to within 5 miles of the coast.

The coast between the Congo River and Ponta das Salinas (12°50'S., 12°56'E.) provides several anchorages, the principal ones being at Luanda, Porto Amboim (Benguela Velha), Lobito, and Baia de Benguela. Between Benguela and Tombua (Porto Alexandre), 210 miles SSW, great depths lie close to the coast and anchorage is impossible, except in a few sheltered bays.

At a distance of 9 miles off the mouth of the Congo River, the surface water is still quite fresh. It is only partially mixed with salt water at a distance of about 40 miles offshore. The resulting discoloration caused by the fresh water has, at times, been observed up to 300 miles from the coast.

Winds—Weather.—Along most of this coast, a SW or W breeze (sea breeze) is prevalent from late morning until 2100 hours. At about midnight, a SE or E breeze (land breeze) begins and becomes light and variable by morning.

Intense tropical rain storms (thunderstorms), which are known locally as tornadoes, develop in the region between Cameroon and the River Congo. They mostly occur at the be-

ginning (April and May) and end (October and November) of the rainy season. These storms generally last less than one hour but may have wind gusts of 50 knots or more. The local name, tornado, should not be confused with the turbulent phenomena common in the United States.

Tides—Currents.—The range of tide is comparatively small along this coast, only exceeding 1.8m at springs in a few of the river estuaries. The tidal currents are weak except in the vicinity of the few main rivers.

The Benguela Current flows N along the W coast of Africa from the vicinity of the Cape of Good Hope to the Gulf of Guinea. It attains rates of 1 knot within about 40 miles of the coast and 0.4 to 0.8 knot farther offshore. This current is usually stronger in December and January, when the SE trade winds are well established.

Between Cap Lopez and the Congo River, a current generally sets steadily in a NW direction, sometimes attaining a rate of up to about 2 knots. It is formed by the Benguela Current and the current which flows out of the Congo River. This resultant current then turns W off Cap Lopez and becomes part of the South Equatorial Current. Inshore, the direction and rate of the current are largely influenced by the formation of the land and the winds. During steady N winds, which are very rare, the direction of the current is sometimes reversed.

Caution.—During the rainy season, debris of all kinds may be encountered at considerable distances from the coast and as far N as Pagalu (1°26'S., 5°37'E.).

The light sandy color of the coast, as well as the extreme haziness of the atmosphere that generally prevails, may tend to cause mariners to overestimate the distance from the shore. Therefore, vessels are advised to maintain a prudent distance from the coast. This applies particularly in the area lying between Ponta das Salinas and Ponta de Sao Jose, 22 miles NE.

Oil and gas development areas and fields, with associated rigs, platforms, well heads, submarine pipelines, terminal buoys, and storage vessels (FPSO), may be encountered off the coasts described in this sector.

Vessels are cautioned that security off the West African coast and within some ports is a serious problem. In recent years, attacks by pirates and thieves have been reported. These have generally taken place at the outer anchorages, but some have occurred while vessels are berthed alongside or while underway. In the event of a piracy incident, vessels should not rely on the assistance of the local authorities, which are reported in the past to have failed to respond.

Cap Lopez to Pointe Banda

4.2 Cap Lopez (0°37'S., 8°43'E.), the N extremity of Ile Lopez (Ile Mandji), has been previously described in paragraph 3.72. Several flares are situated in the vicinity of the cape and a conspicuous flare, position approximate, stands on the shore about 57 miles SSE of them.

The coast between Cap Lopez and Ombue, 66 miles SSE, is

uniformly thickly-wooded, while between Ombue and Sette Cama, 64 miles SSE, it consists of large patches of bare ground alternating with thick jungle.

The mouth of the Animba River, which is an arm of the delta of the Ogoove, lies 24 miles S of Cap Lopez. The river is not navigable; its entrance is bordered on the W side by a long narrow tongue of sand. During the rainy season, enormous amounts of fresh water discharge from the river mouth and extend up to 4 or 5 miles offshore.

Grondin Oil Drilling Area (1°10'S., 8°40'E.), which may best be seen on the chart, lies between 7 and 60 miles S of Cap Lopez. It extends up to 28 miles offshore and is marked by lighted buoys. A light shown from a structure standing (position approximate) 66 miles SSE of Cap Lopez indicates the SE end of this area.

Numerous wells, production platforms, drilling rigs, flares, submarine pipelines, and associated obstructions lie within this drilling area.

Caution.—A restricted area, which may best be seen on the chart, surrounds the Grondin Oil Drilling Area. Only vessels employed by the oil installations and tankers proceeding to and from the terminals may navigate within this area.

Drilling rigs and associated structures and obstructions, which may be unlit and not charted, are reported to be situated within the restricted area.

A coastal fairway route, which may be used only by vessels of less than 7 tons, and an area reserved for fishing are situated adjacent to the shore within the Grondin Oil Drilling Area and may best be seen on the chart.

4.3 Gombe-Beta Marine Terminal (1°12'S., 8°56'E.) lies within the Grondin Oil Drilling Area, 37 miles SSE of Cap Lopez. It consists of a storage tanker moored in a depth of 15.2m. Vessels of up to 150,000 dwt and 280m in length can be handled. Vessels are moored to the bow of the storage tanker and their sterns are made fast to mooring buoys.

It is reported (2004) that the storage tanker has been removed and the terminal is no longer in use.

4.4 Oguendjo Oil Terminal (1°28'S., 8°55'E.) (World Port Index No. 46446) lies within the Grondin Oil Drilling Area, 51 miles SSE of Cap Lopez. It consists of an SBM to which a FSO (Fernan Vaz) is permanently moored. Production platforms are situated about 2 miles ENE and 1.5 miles SW of the terminal.

An access lane, 1.7 miles wide, leads in a NW direction to the terminal and may best be seen on the chart. It has a least depth of 21.9m and extends about 11 miles from the anchorage area. The terminal is located in a depth of 27.4m and can handle vessels up to 170,000 dwt and 18.2m draft. Vessels are berthed only during daylight but they may depart at any time. They are moored bow to bow with the storage tanker.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 8 and board about 2 miles S of Platform Charlie. While pilotage is available at all times, English speaking pilots are only available from 0600 to 1800.

Vessels should send an ETA 7 days, 72 hours, 48 hours, 24 hours, and 12 hours prior to arrival, stating any special requirements and the quantity to be loaded.

All tankers shall fly the Gabon national flag during daylight

while berthed at the terminal.

Oguendjo Oil Terminal can be contacted, as follows:

1. Telephone: 870-762732438
2. Facsimile: 870-762732436
3. E-mail: bonbateau@eikmail.com

A designated anchorage area, which may best be seen on the chart, lies centered 12 miles SE of the SBM.

4.5 Pointe Sainte-Catherine (1°53'S., 9°16'E.), a slight projection, is fronted by a reef on which the sea breaks heavily. From the N, this point appears as an isolated clump of tall trees resembling an island, but from the S, the coast appears craggy. Some hills rising close S of the point give it a bold appearance. The land behind the shore, which is fringed by a beach, rises gently with clearings here and there.

Pointe Guega is located 4.5 miles N of Pointe Sainte-Catherine and fringed by rocks.

The village of Iguela, situated 4.5 miles SE of Pointe Sainte-Catherine, stands on a narrow strip of land which separates Lagune Ngobe from the sea. An airfield is situated near this village.

Anchorage may be obtained in a depth of 9m SW of the village and about 1.5 miles offshore. Two beacons, each surmounted by a square, form a range which leads, clear of dangers, in a NE direction toward the anchorage. From this anchorage, the flagstaffs of some factories can be seen over the tops of the trees.

Lagune Ngobe, also known as Lagune d'Iguela, is an extensive lagoon which extends 20 miles SE to the mouth of the River Rembo Ngobe. The lagoon is used by small craft but the river is encumbered with weeds.

Caution.—This part of the coast should not be approached within a distance of about 4 miles by vessels without local knowledge.

4.6 Tchatamba Terminal (2°04'S., 9°10'E.), located 14 miles SW of Pointe Sainte-Catherine, consists of a Mobile Offshore Production Unit (MOPU). A submarine pipeline extends from this production platform, Tchatamba A, to the shore for the exporting of product at the Totalfina-Elf terminal near Cape Lopez.

There are two other platforms associated with this terminal. The Tchatamba West platform is situated 4 miles NW of Terminal A and the Tchatamba South platform lies 8.75 miles S of Terminal A. It is reported (2013) that this terminal is decommissioned.

4.7 Pointe Komandji (2°19'S., 9°36'E.) is located 34 miles SE of Pointe Sainte-Catherine. The coast between recedes slightly and its aspect becomes more varied. A narrow beach fronts the shore in some places and trees grow down to the water in other places. In the S part of this stretch, the mouths of rivers are indicated by narrow gaps in the trees. Inland, the country is more elevated and a few hills form a chain which runs parallel with the coast. The surf breaks heavily along this entire stretch of coast, except in a few places where landing may be effected in fine weather.

Pointe Komandji is rounded and difficult to identify from the W. However, several large green patches are located at the extremity of Pointe de Gaca, 3 miles S, which help to distinguish

this locality. The neighboring coast is slightly elevated and covered with brushwood, through which several streams wind. The large mouths of these streams form a succession of lagoons and marshes.

Drying rocks front the coast and the sea breaks about 1 mile offshore. Several villages stand between Pointe Komandji and two points named Pointe Magamba and Pointe Milango, which are located 4 miles and 7 miles, respectively, SSE.

Caution.—Oil and gas exploration is being carried out along this coastal area and vessels are warned that numerous well heads, submerged pipelines, drilling rigs, and platforms may be encountered. Vessels should also exercise care when navigating in this vicinity, as many of the associated structures and installations are often moved and are not charted. In addition, some of the platforms and structures may be disused, abandoned, and unlit.

4.8 Sette Cama (2°31'S., 9°45'E.), situated 15 miles SE of Pointe Komandji, stands at the root of a tongue of land which separates the channel leading to Lagune Ndogo from the sea. The seaward entrance of this channel lies 9 miles SE of Pointe Komandji. Several buildings, including a factory with a flagstaff, stand in the vicinity of Sette Cama. In addition, a small airfield is situated nearby. Communication with the factory can be carried out by the International Code of Signals.

Lagune Ndogo, an extensive water area, extends 30 miles ESE and is encumbered by numerous islets. Small craft associated with oil and gas development navigate within this large lagoon.

Several rocky shoals front the coast and lie up to 1 mile offshore. They have depths of less than 5m and are usually marked by breakers. A range, formed by two white beacons, indicates a passage which leads in a NE direction between the shoals to an anchorage. This passage is about 0.3 mile wide and provides access to vessels with drafts up to 5.8m. Vessels are advised to stay at least 2 miles offshore until the range beacons have been identified. When approaching the anchorage, vessels are advised to keep the front beacon open a little N of the rear beacon. Large vessels can anchor, in a depth of 11m, on the range. Smaller vessels may proceed between the shoals and anchor, in a depth of 6.7m, about 0.5 mile offshore. There is usually a heavy swell at the anchorage and the bottom is very uneven with a rocky bottom. Landing should not be attempted.

The N end of a chain of coastal hills, known as Monts Santo Espirito, rises to the S of Sette Cama and forms a good landmark. Several large clearings are located S of these hills and give the land a cultivated appearance.

Caution.—A dangerous wreck lies about 9 miles SW of Sette Cama.

4.9 Pointe Pedras (2°40'S., 9°53'E.), located 12 miles SE of Sette Cama, projects 1 mile from the line of the coast and shows up well from the S. Several isolated sand hills stand on this point and slope S to the banks of the Riviere Massetche, which is the outlet of Lagune Massetche. A shoal patch, with a depth of 3.8m, lies about 3.5 miles SW of the point and several rocks, some of which dry, lie up to about 2 miles NW of the point.

Between Pointe Pedras and Pointe Banda, 97 miles SE, the 200m curve lies parallel with the coast and about 35 to 38

miles offshore. The regularity of this depth curve may be of assistance to vessels during June, July, and August, when fog may conceal the land.

The coast between Pointe Pedras and Pointe Matouti, 65 miles SE, is low and wooded, with high flat ranges inland. Between the latter point and Pointe Banda, 32 miles SE, it consists of a sandy beach backed by forests with inland ranges of hills.

4.10 Gamba Oil Terminal (2°50'S., 10°00'E.) (World Port Index No. 46453) is situated 10 miles SE of Pointe Pedras. The tank farm stands 0.5 mile inland. Several conspicuous flares are situated in its vicinity.

The offshore loading facility, consisting of an SBM, lies 5 miles SW of the terminal and is connected to the shore by a submarine pipeline. It is situated in a depth of 22m and can handle vessels up to 150,000 dwt and 17.25m draft.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 6 or 12 and board in the anchorage area. Berthing can be undertaken by day or at night.

Vessels should send an ETA by facsimile or e-mail 4 days, 72, 48, and 24 hours in advance. The 96-hour message should include the following information:

1. ETA and intended Notice Of Readiness.
2. Cargo requirements in barrels.
3. Type, number, and SWL of bowstoppers.
4. Oil pollution certificate details.
5. Last port of call.
6. Owner, charterer, operator, flag, port of registry and year built.
7. SDWT, gt, nt, loa, beam, and maximum summer draft.
8. Master's full name.
9. Address, telephone, and e-mail addresses of operators/managers.
10. Vessel's call sign.
11. USCG identifier for bills of lading.
12. Arrival and departure drafts.
13. Vessel inerted and IG system status.
14. Name of agent.
15. IMO Number.
16. Vessel Tank Capacity.
17. Vessel ISPS security level.

Gamba Oil Terminal can be contacted, as follows:

1. Telephone: 241-07840095 (Duty Officer)
241-558465 (office hours)
241-559657 (after hours)
2. Facsimile: 31-20-7940844 ex:8577 (Attn: OLS/4)
241-558577
3. E-mail: marine-department@shell.com

Vessels should then contact the terminal on VHF channel 12 when within range.

A restricted area, 4 miles wide, extends up to 7.5 miles SW from the coast and encloses the offshore loading facility. Vessels are prohibited from entering this area without prior permission from the terminal. Fishing is prohibited within this area.

The designated anchorage area, with a depth of 25m, lies about 2 miles NW of the SBM.

It is reported (2004) that a jetty situated 0.5 mile S of the

main terminal light is radar conspicuous.

Caution.—The offshore loading facility is subject to heavy S to SW swells and operations are sometimes delayed. Local storms, with violent winds, may be experienced between October and May.

4.11 The Riviere Nyanga (2°58'S., 10°15'E.) lies with its mouth located 29 miles SE of Pointe Pedras and runs parallel to the coast, behind a narrow spit of sand, for the last 2.5 miles. The entrance, which is fronted by a large and shallow bar, was reported (1980) to be about 200m wide and radar conspicuous. It is reported to be dangerous as strong currents and a heavy sea run across the bar. Within the bar there is a depth of 7m.

A light is shown from a structure standing 1.2 miles NW of the river entrance when a vessel is expected. A shoal, with a least depth of 6m, lies about 4.5 miles SW of the light.

Vessels loading timber can anchor in depths of 12 to 13m, soft mud, about 1.5 miles SW of the light. It is reported (1980) that vessels up to 33,000 dwt and 176m in length can moor in this roadstead. However, they may roll heavily due to a combination of the NW current and the onshore SW wind.

Mayonami, a settlement located 5 miles above the river mouth, is reported (2004) to be used as a base for oil field operations.

4.12 Olowi Marine Terminal (3°08'S., 10°13'E.) lies 11 miles SSW of the mouth of the Riviere Nyanga. It consists of a FPSO (Knock Allan) connected via pipeline to three production platforms. The FPSO is moored in a depth of about 30m. An anchorage is located 4 miles W of the FPSO.

Pointe Panga (3°15'S., 10°32'E.) is located 24 miles SE of the mouth of the Riviere Nyanga. The coast between consists of a sandy beach backed by marshy and brush-covered land. It is featureless and has no prominent landmarks.

When seen from the N, Pointe Panga presents three or four saddle-shaped summits and a conspicuous dark red cliff which is surmounted by dense woods. It is one of the most prominent landmarks along this part of the coast and cannot be mistaken. A rocky reef extends up to about 1 mile W of the point and a small cove indents the shore close N of it. A pillar stands 2 miles N of the point.

Baie de Mayumba is entered between Pointe Panga and Pointe Matouti (Pointe Kouango), 12 miles SSE. It affords good shelter during S and SE winds. The shore consists of a fine sandy beach which is fronted by breakers throughout almost its entire length and is backed by wooded hills. Lagune Mbanio empties via the Riviere Mayumba into the SE part of this bay.

4.13 Pointe Matouti (Pointe Kouango) (3°26'S., 10°38'E.) consists of several low hills which slope seaward. It terminates in a low point which is surmounted by some huts. A prominent radio mast stands near the village of Mayumba about 1 mile NE of the point.

Rocks, some of which dry, fringe the point and extend up to about 0.2 mile seaward. A reef extends up to about 0.6 mile NNW from the point and an islet, just showing above the water, lies on it.

A hill rises E of Pointe Matouti and is surmounted by several houses which are conspicuous from the NW, but are not visible

from the S. The residency building, with a flagstaff, and some factories are situated at Mayumba, 1 mile NE of Pointe Matouti. These buildings and the road leading to them are prominent. A small airfield is also situated in the vicinity.

Vessels loading timber can anchor in depths of 13 to 14m, sand and mud, about 1 mile offshore, 3.8 miles N of Pointe Matouti. It is reported (1995) that vessels up to 19,500 dwt and 156m in length can moor in this roadstead.

The coast between Pointe Matouti and Pointe Banda, 30 miles SE, consists of a sandy beach which is backed by forests. Inland, the countryside rises to three ranges of hills. Lagune Mbanio lies parallel to the coast, between 16 and 37 miles SW of Baie de Mayumba.

Rocher Noir, 1.5m high, lies close offshore, 5 miles SE of Pointe Matouti. Roche Massanga, a large black rock, lies about 0.2 mile offshore, 3 miles SE of Rocher Noir. Both of these rocks are located on a coastal bank which extends up to 0.5 mile seaward.

4.14 Lucina Oil Terminal (3°38'S., 10°45'E.) (World Port Index No. 46454), an offshore loading facility, is situated about 6 miles offshore, 17 miles SSE of Pointe Matouti. The terminal includes seven production platforms which are connected by submarine pipelines. Several prominent flares are situated on these platforms. The loading facility consists of an SBM and a Floating Storage and Offloading (FSO) tanker, moored 0.5 mile SW. The SBM, to which the tankers moor, and the FSO (Banio) are situated in a depth of 32m. Vessels up to 130,000 dwt can be handled at the terminal.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF channel 8 and board in the vicinity of the anchorage area 2 miles NW of the SBM. These pilots are stationed at Gamba Oil Terminal and are transferred to the storage tanker by helicopter. They board from launches and remain on board during the entire stay.

Vessels should send an ETA 7 days, 72 hours, 48 hours, 24 hours, and 12 hours prior to arrival, stating any special requirements and the quantity to be loaded. Vessels should then contact the terminal by VHF when within range.

Lucina Oil Terminal can be contacted, as follows:

1. Telephone: 870-762732450 (INMARSAT M)
2. Facsimile: 241-550647
870-762732451 (INMARSAT M)
3. E-mail: baniogan64@eikmail.com

A designated anchorage area, with a depth of 34m, lies about 2 miles NW of the SBM.

A restricted area, which may best be seen on the chart, surrounds the SBM and the FSO. Vessels are prohibited from entering this area without prior permission from the terminal.

Pointe Banda to Pointe-Noire

4.15 Pointe Banda (3°49'S., 11°00'E.), located 30 miles SE of Pointe Matouti, is low, rounded, and difficult to distinguish. It may be identified by Colline de la Table, 75m high, standing near the coast. This hill is surmounted by a clump of palm trees and a village. The village of Sainte-Marie, situated 1.5 miles SSE of the point, is built on a hill, 20m high, and is somewhat prominent.

Anchorage may be taken by vessels, with local knowledge,

in a depth of 11m, mud with good holding ground, about 1 mile NNW of Pointe Banda.

Pointe Tshibobo (3°51'S., 11°01'E.), located 2.5 miles SSE of Pointe Banda, is surmounted by a round hill which is clearly visible from the S.

The border between Gabon and The Congo (Republic of the Congo) is situated in the vicinity of the entrance to the Lagune Mekoundgi, about 9 miles SE of Pointe Tshibobo. The Congo (Republic of the Congo) is often referred to as Congo-Brazzaville in order to distinguish it from the Democratic Republic of the Congo (formerly Zaire).

Caution.—Offshore drilling operations, including seismic surveys, are in progress inshore of the 200m curve between Pointe Banda and the mouth of the Riviere Massabi (5°02'S., 12°01'E.). Within this area, drilling rigs, platforms, wellheads, and submarine pipelines may be encountered. Vessels should exercise care when navigating in this vicinity as many of the associated structures and installations are often moved and are not charted. In addition, some of the platforms and structures may be disused, abandoned, and unlit.

4.16 Etame Terminal (3°45'S., 10°31'E.) is situated about 29 miles WNW of Pointe Banco and consists of a Floating Production Storage and Offloading (FPSO) facility. The FPSO (Petroleo Nautica) is moored in a depth of 76m and tankers berth bow-to-bow with it. Vessels up to 150,000 dwt can be handled.

Pilotage is compulsory within a 2-mile radius of the terminal. Pilots, who act as mooring masters, can be contacted on VHF channel 72 and board about 2 miles ENE of the FPSO. Berthing is carried out only during daylight hours. Vessels may depart at any time but daylight is preferred.

Vessels should send an initial ETA on departure from the previous port. Vessels should confirm the ETA 72 hours, 48 hours, and 24 hours prior to arrival. Changes of 6 hours or more to the ETA must be reported immediately. Changes of 1 hour or more to the ETA following the 24-hour message must be reported immediately. Vessels should then contact the FPSO by VHF 2 hours prior to arrival and report their draft, trim, capacity for loading, details of ballast and time required for discharge, maximum freeboard, quality of inert gas, and any other relevant information. The initial ETA notification should include the following information:

1. Vessel's name, call sign, and INMARSAT numbers.
 2. Cargo requirements.
 3. Maximum loading rates
 4. Arrival draft fore and aft.
 5. Last port of call.
 6. Confirmation of clean bill of health.
 7. Any sickness on board.
 8. Distance in meters from the bow to the vessel's loading manifold.
 9. LOA
 10. A statement with respect to the ability of the vessel to make a connection to floating hose 16 inch flange.
 11. A statement to the effect that the vessel can perform closed loading.
 12. Confirmation that the vessel is equipped with a bow stopper able to receive 76mm chain.
- Etame Oil Terminal can be contacted, as follows:

1. Telephone: 47-22627610
870-764444136 (INMARSAT M)
2. Facsimile: 47-22627611
3. E-mail: oim.nautipa@vsl.foms.no

A restricted area, with a diameter of 2 miles, is centered on the FPSO. Vessels are prohibited from entering this area without prior permission from the terminal.

There is no designated anchorage area. Vessels may anchor or drift at their discretion. The predominant current in the vicinity of the terminal sets ENE at a rate of 0.5 to 2 knots.

Caution.—Vessels approaching the terminal from the NW or SE are advised to stay well offshore to avoid the oil and gas development activities, most of which take place in depths of less than 200m.

M'bya Terminal (3°53'S., 10°56'E.), an offshore loading facility, is situated 5 miles WSW of Pointe Tshibobo. It consists of an SBM and a mooring buoy, which is for the use of a storage tanker. The terminal is situated in a depth 30m and can handle vessels up to 150,000 dwt and 18m draft.

It is reported (2005) that the storage tanker has been removed and the loading facility is no longer in use.

4.17 The coast extending between Pointe Tshibobo and Pointe Tchitembo, 29 miles SE, provides no shelter and is moderately high. It rises from a thick belt of trees to one or two ranges of hills which are less elevated than those farther to the N. Depths of less than 10m lie up to 4 miles seaward of the shore in places.

The **Riviere Konkouati** (4°00'S., 11°14'E.) lies with its entrance located about 15.5 miles SE of Pointe Tshibobo. The sea breaks heavily about 0.4 mile off the mouth of this river, which is reported to be about 45m wide and radar conspicuous. Depths of less than 5m are reported to lie up to about 1.8 miles WSW of the mouth. The village of Konkouati is situated on a tongue of sand at the S side of the river entrance.

The mouth of the Numbi River, lying 10 miles SE of the Riviere Konkouati, is also reported to be radar conspicuous. It is narrow, discharges black water, and is encumbered with numerous black rocks. The village of Madingo is situated close inside the river mouth, on the E side.

Banc du Haoussa, with a least depth 8.8m, lies about 3.5 miles W of the mouth of the Numbi River, in the approaches to Baie de Lekonde. This latter bay is a slight indentation in the coast lying between the mouth of the Numbi River and Pointe Tchitembo (4°12'S., 11°23'E.), 4.5 miles S. The bay can only be entered by vessels with light drafts and local knowledge. A heavy swell sometimes sets into the bay and landing is often very difficult because of the surf.

Pointe Lekonde, located 1 mile N of Pointe Tchitembo, can be identified by a small bare hill, with a flat top, which rises close N of it. A conspicuous road descends from this hill. An isolated shoal, with a depth of 6.4m, lies about 2.5 miles NW of this point.

Banc du Promethee extends up to about 3 miles W from the coast between Pointe Lekonde and Pointe Tchitembo. It has depths of less than 5m, but does not break in calm weather.

An isolated shoal (existence doubtful), with a depth of 4m, lies about 4.2 miles W of Pointe Tchitembo.

4.18 The Kouilou River (4°29'S., 11°42'E.) lies 25 miles SE of Pointe Tchitembo (4°12'S., 11°23'E.). The coast between consists of a sandy beach backed by forests. Several streams flow into the sea along this stretch and a few small and land-locked lagoons lie close inland.

A line of low, bare hills stands behind the forests and is broken, 11.5 miles SE of Pointe Tchitembo, by a river. The village of Longobonda is situated in the vicinity of this river. The coast between this village and the mouth of the Kouilou River consists of sand dunes which appear white from seaward and are surmounted in a few places by palm trees.

Banc du Mulet (4°28'S., 11°33'E.), with a least depth of 5.8m, lies centered about 8 miles W of the entrance to the Kouilou River. It is a narrow ridge of hard sand and rock which lies parallel to the coast. An obstruction is reported to lie about 5 miles S of the N end of this bank.

The entrance to the Kouilou River is encumbered with shifting sand banks and a dangerous bar, on which the sea breaks heavily. During the rainy season, discolored water extends up to 7 miles seaward of the river mouth. The village of Bas Kouilou, a small wood-loading terminal, is situated close within the mouth of the river. Ocean-going vessels can anchor in a depth of 9m about 2 miles W of the river mouth, but cargo operations are frequently interrupted by winds, swells, and the condition of the bar.

Loango Oil Field (4°30'S., 11°16'E.), with several platforms, lies centered 26 miles W of the mouth of the Kouilou River.

Ikalou Oil Field (4°33'S., 11°21'E.), with several well heads, lies centered 22 miles WSW of the mouth of the Kouilou River.

Kombi Oil Field (4°37'S., 11°21'E.), with several well heads, lies centered 23 miles WSW of the mouth of the Kouilou River.

Zatchi Oil Field (4°31'S., 11°25'E.), with several platforms, lies centered 17 miles W of the mouth of the Kouilou River.

Marine XI Oil Field (4°45'S., 11°34'E.), with several well heads, lies centered 18 miles SSW of the mouth of the Kouilou River.

Marine VI Oil Field (4°41'S., 11°24'E.), with several well heads, lies centered 22 miles SW of the mouth of the Kouilou River and close N of Yanga Oil Field.

Caution.—Several platforms, some of which have prominent flares, and numerous well heads are situated between about 15 and 26 miles W of the mouth of the Kouilou River. These structures are connected by submarine pipelines which may best be seen on the chart.

4.19 Yombo Oil Terminal (4°27'S., 11°06'E.) (World Port Index No. 46460), situated about 30 miles W of the mouth of the Kouilou River, consists of a Floating Production Storage and Offloading (FPSO) facility. The FPSO (Conkouati) is moored in a depth of 100m and connected by submarine pipelines to production platforms which are situated 1.5 miles SSW and 1.5 miles SW of it. The terminal can handle vessels up to 155,000 dwt, 280m in length, 53m beam, and 15m draft.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 12 or 16 and board 4 miles N of the FPSO. Berthing is carried out only during daylight hours but vessels may depart at any time. Tankers berth starboard

side-to alongside the port side of the FPSO.

Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance. The terminal should also be notified if the ETA changes by more than 2 hours. Vessels should then maintain a listening watch on VHF channel 12 and 2182 kHz beginning 12 hours before arrival and contact the terminal when within range.

Yombo Oil Terminal can be contacted, as follows:

1. Telephone: 33-1-53576296
33-1-53576297
2. Facsimile: 33-1-53576296
3. E-mail: cooffsis@cg.perenco.com

A designated anchorage area, with a radius of 1 mile, is centered about 12 miles NE of the FPSO, in a depth of 38m.

A restricted area, about 6 miles wide, surrounds the terminal and may best be seen on the chart. Vessels are prohibited from entering this area without prior permission from the terminal. All tankers shall fly the Republic of Congo national flag during daylight while berthed at the terminal.

Caution.—Vessels approaching the terminal from the NW or SE are advised to stay well offshore to avoid the oil and gas development activities, most of which take place in depths of less than 200m.

Local storms, with violent winds for brief periods, may be experienced between November and March, with January being the month of greatest frequency.

4.20 Baie de Loango (4°38'S., 11°49'E.) is easily identified and lies between the entrance of the Kouilou River and Pointe Indienne, 12 miles SSW. The head of the bay, when seen from a distance of about 3 miles, appears as a thick line of trees of uniform height surmounting the beach. A flat-topped hill with precipitous shoulders shows above the treetops to the N and close inland of the head. A continuous chain of hills extends S from the vicinity of the head and decreases in elevation. Two prominent groups of hills, with bare summits, stand close S of the bay. The vegetation on these hills grows in lines and forms the appearance of cultivated fields separated by hedges.

Pointe Indienne (4°39'S., 11°47'E.) is low, wooded, and surmounted by the ruins of a lighthouse. It is easily identified from the N or S. Low cliffs, covered with vegetation, rise close inland of the point and are surmounted by several bare hills with a reddish tinge. A conspicuous white building stands 1.5 miles E of the point and a flare is situated 0.7 mile SSE of it. The town of Loango is built on two bluffs, 1.8 miles ENE of the point.

A rocky spit, with depths of less than 10m, extends up to about 3 miles NW of Pointe Indienne and the sea breaks violently over it. A strong current, setting NNE, may be experienced off this spit. Another spit, narrow and sandy, extends up to about 3 miles NE of the point and encloses a salt water lagoon.

Good anchorage can be obtained in a depth of 8m, excellent holding ground, about 2.5 miles N of Pointe Indienne. However, vessels should guard against E squalls, which are sometimes violent during the rainy season.

A conspicuous stranded wreck lies 1.3 miles S of Pointe Indienne.

Banc du Conflict (4°42'S., 11°45'E.), with a least depth of

8.4m, lies centered about 3 miles SSW of Pointe Indienne.

A prominent tank farm stands 4.8 miles SE of Pointe Indienne and a refinery, with a prominent flare, is situated 1.2 miles SE of it.

Caution.—A submarine pipeline extends 1.3 miles SW from a point on the shore located in the vicinity of the tank farm.

Pointe-Noire (4°47'S., 11°50'E.)

World Port Index No. 46470

Pointe-Noire Home Page

<http://www.papn-cg.org>

4.21 The Port of Pointe-Noire lies within Baie de Pointe-Noire, which is entered between Pointe Indienne and Pointe Noire, 8 mile SSE. The port is the principal harbor of the Republic of the Congo and includes several factories, saw mills, and palm oil production facilities.

Tides—Currents.—The tides rise about 1.6m at springs and 1.3m at neaps.

The current within Baie de Pointe-Noire usually sets NNE under the influence of the prevailing winds. It generally attains a rate of less than 1 knot, but may attain a rate of 1.1 knots during the month of May. The tidal currents within the harbor are weak.

Depths—Limitations.—Digue Exterieur, the main outer breakwater, extends 1 mile N in a curve from Pointe-Noire and forms the W side of the harbor. Digue Interieure, the inner breakwater, extends 0.5 mile E from near the head of Digue Exterieur and forms the N side of the harbor. A detached breakwater, 0.4 mile long, forms the E side of the harbor and may best be seen on the chart.

The main harbor entrance lies between the NW head of the detached breakwater and the E head of Digue Interieure.

Banc de l'Astrolabe lies about 1.7 miles NNE of the head of the outer breakwater. It has a least depth of 5.8m and lies parallel to the coast.

Banc Songolo, with a least depth of 6.4m, lies about 1.5 miles NE of the head of the outer breakwater.

Banc des Anglais, with a least depth of 13m, lies about 1.5 miles WNW of the head of the outer breakwater.

Banc du Sagittaire, with a least depth of 10m, and Banc de la Syzygie, with a least depth of 9.8m, lie about 1 mile WSW and 0.7 mile SW, respectively, of the head of the outer breakwater.

Banc de la Pointe, with depths of less than 4.5m, extends up to about 0.3 mile W of Pointe-Noire.

A minimum depth of 9.8m lies in the approach to the harbor.

Quay G, situated at the N side of the harbor basin, is 520m long. It provides three berths for general cargo and ore and has depths of 10.2 to 13.2m alongside.

Quay D, situated at the W side of the harbor basin, is 720m long. It provides five berths for general cargo and has depths of 7.6 to 9.4m alongside.

Mole Quay No.1, situated at the S side of the harbor, is 440m long. It provides two berths for general cargo, containers, and ro-ro vessels and has depths of 4 to 9.4m alongside.

An oil and gas tanker berth, with a depth of 11m alongside, is situated on the N side of Mole Quay No.1.

A quay, 600m long, fronts the shore 1 mile E of the harbor entrance. It has depths of 4.5 to 6m alongside and is used by oil installation service vessels.

The maximum permissible draft in the port is 10.45m.

Aspect.—Two conspicuous silos, 47m high, stand 0.5 mile S of the head of the outer breakwater. A conspicuous white spherical tank is situated 1.3 miles SSE of the head of the outer breakwater.



Pointe-Noire Light

Pointe-Noire Light (4°48'S., 11°50'E.) is shown at an elevation of 35m from a prominent tower, 28m high, standing 0.4 mile E of the spherical tank. A prominent building, 74m high, and two radio masts, each 69m high, are situated 0.7 mile ESE and 1.6 miles ENE, respectively, of the light. A conspicuous cathedral, surmounted by two red lights, stands 0.6 mile SE of Pointe-Noire Light. A pylon, which acts as a range for the outer approach to the harbor, lies NNE of the cathedral. An aeronautical radiobeacon is situated about 4 miles SE of Pointe-Noire Light.

A disused potash pier, 0.8 mile long, extends SW from a point on the shore located 2 miles SE of Pointe-Noire. It is reported to be in ruins.

An outer lighted buoy is moored about 0.4 mile NE of the head of the outer breakwater. Two pylons, standing in the S part of the harbor, form a range which indicates the passage through the main entrance.

Pilotage.—Pilotage is compulsory for all vessels over 100 gross tons. Cargo vessels may enter at any time but tankers may only berth during daylight hours. Pilots can be contacted on VHF channel 16 and board about 0.6 mile NNE of the head of the outer breakwater.

Regulations.—Vessels should send an ETA 24 hours and 12 hours in advance.

Vessels over 130m are required to take one tug. Vessels over 160m are required to take two tugs.

Contact Information.—The port of Pointe-Noire may be contacted, as follows:

1. Telephone: 242-22-2940013
2. Facsimile: 242-22-2940287
3. E-mail: info@papn-cg.org

Anchorage.—Vessels generally anchor in a depth of 14m

about 0.8 mile N of the head of the outer breakwater. The rollers at this anchorage are heavy and vessels are advised to keep an underkeel clearance of at least 3m.

An anchorage area, which may best be seen on the chart, lies close NE of the N head of the detached breakwater. It is used by vessels loading timber and has depths of 5.9 to 8.5m.

A designated anchorage (waiting area) lies about 4.5 miles NW of the head of the outer breakwater. It has a depth of 25m and is generally used by large vessels proceeding to Djeno Offshore Terminal (see paragraph 4.23).

Caution.—It is reported (1995-2004) that the authorized maximum draft for entry is reduced at times due to silting. Vessels are advised to contact the port authority for the latest information in regard to depths within the harbor.

A number of dangerous wrecks lie in the approaches to the harbor and may best be seen on the chart.

It is reported (2004) that a disused (unlit) oil platform is situated in the N part of the bay, about 2 miles N of the head of the outer breakwater.

The sandy shoals and drying banks lying NE and E of the N part of the outer breakwater are reported (1994) to be extending seaward.

A spoil ground area lies 1.5 miles NE of the head of the outer breakwater, between Banc de l'Astrolabe and Banc Songolo.

A log pond area, with several mooring buoys, lies adjacent to the E side of detached breakwater.

Vessels approaching from the N should use care to avoid Banc du Conflict. Vessels from the S should use care to avoid the dangers lying up to 2 miles W of Pointe-Noire.

The head of the outer breakwater should be given a wide berth, as the swell forms heavy rollers, especially between May and October.

An anchorage prohibited area, which may best be seen on the chart, extends up to 0.5 mile N of the main harbor entrance.

Offshore oil drilling and production operations are in progress within the approaches to the port. Drilling rigs, platforms, well heads, and submarine pipelines may be encountered. Vessels should exercise care when navigating in the approaches, as many of the associated structures and installations are often moved and are not charted. In addition, vessels are prohibited from anchoring or fishing in the vicinity of the submarine pipelines.

Oil production platforms may often be anchored within Baie de Pointe-Noire.

Pointe-Noire to the Riviere Massabi

4.22 The coast between Pointe-Noire and Pointe Mvasa, 7 miles SE, consists of a narrow beach backed by a ridge, about 12m high. The shore is exposed to the prevailing wind and swell and the surf breaks very heavily along it.

Pointe M'vassa (Fausse Pointe Noire) (4°53'S., 11°54'E.) is 7m high, rocky, and steep. The mouth of Lagune M'Vassa lies close N of this point.

The N end of Lagune Malonda lies about 11 miles SE of Pointe-Noire. This lagoon lies close inland and extends parallel to the coast for about 4 miles.

The **Riviere Massabi** (5°02'S., 12°01'E.) lies 19 miles SE of Pointe-Noire. Its mouth, which forms a common entrance with the Riviere Loeme, is only about 60m wide and has a least

depth of 0.5m. Anchorage can be taken, by vessels with local knowledge, in a depth of 10m, fairly good holding ground, about 1 mile offshore. This stretch of coast has very few prominent landmarks.

The border between The Congo (Republic of Congo) and Angola (Cabinda) is situated in the vicinity of the mouth of the Riviere Massabi and is marked by beacons.

4.23 Djeno (4°55'S., 11°56'E.), a submarine pipeline landing terminal, is situated 10 miles SE of Pointe-Noire. A light, which indicates the offshore oil installations, is shown from a framework pylon structure, 17m high, standing on the shore. A prominent radio mast, with an elevation of 110m high, is situated close to the light.

Djeno Offshore Terminal (4°56'S., 11°54'E.) (World Port Index No. 46472) consists of two loading SBMs, which are moored about 2 miles SW of Djeno, in a depth of 23m. The terminal can handle vessels of between 40,000 and 140,000 dwt, up to 320m in length, and up to 16m draft. Partially-loaded vessels up to 240,000 dwt can also be handled.

The terminal is approached from the NW via Baie de Pointe-Noire. The prevailing current in the vicinity of the terminal runs strongly NW.

Pilotage is compulsory. Pilots, who act as mooring masters, are provided by the station at the Port of Pointe-Noire. They can be contacted on VHF channel 16 and board about 2.3 miles W of the head of the outer main breakwater. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance.

An outer designated anchorage area (waiting area) is situated about 4.5 miles NW of the head of the Pointe-Noire outer breakwater (see paragraph 4.21).

A restricted area, with a radius of 1 mile, is centered on the SBMs. Vessels are prohibited from entering this area without prior permission from the terminal.

Caution.—If weather conditions are poor, the maximum authorized draft allowable for entry may be reduced.

4.24 Yanga Oil Field (4°44'S., 11°24'E.) lies centered 33 miles WNW of Djeno. A prominent flare is located at the central platform.

Kitina Oil Field (4°55'S., 11°23'E.) lies centered 9 miles SSW of Yanga Oil Field.

Tchibouela Oil Field (4°54'S., 11°40'E.) lies centered 17 miles W of Djeno.

Tchendo Oil Field (5°02'S., 11°39'E.) lies centered 18 miles WSW of Djeno.

Emeraude Oil Field (5°03'S., 11°47'E.), an extensive field with several platforms, lies centered 11 miles SW of Djeno.

Likouala Oil Field (5°07'S., 11°46'E.), an extensive field, lies centered 22 miles SW of Djeno.

Caution.—Restricted areas, the limits of which may be seen on the chart, enclose some of the above oil fields. Vessels without permission are prohibited from navigating within these areas.

Numerous submarine pipelines and submarine cables lie in the vicinity of the above oil fields and may best be seen on the chart. Vessels are prohibited from anchoring or fishing in their vicinity.

Oil and gas exploration and production operations are in progress in the vicinity of the above offshore fields. Numerous

drilling rigs, platforms, and well heads may be encountered. Vessels should exercise care when navigating in this area as many of the associated structures and installations are often moved and may be unlit or not charted.

4.25 N’Kossa Oil Field (5°15’S., 11°34’E.) lies 30 miles SW of Djeno. It consists of two production platforms and a large production barge, which displays a conspicuous flare at an elevation of 83m.

N’Kossa Terminal (5°15’S., 11°36’E.) (World Port Index No. 46473), operated by Elf Congo, consists of two Floating Storage and Off loading (FSO) vessels. One FSO (N’Kossa 1), is used for crude oil storage; the second FSO (N’Kossa 2), which is moored 2 miles NW, is used for LPG storage. Vessels up to 280,000 dwt can be handled at N’Kossa 1, which is moored with a bow turret in a depth of 126m.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 9 and board about 3 miles N of the terminal. Berthing is done only during daylight hours but vessels may depart at any time. Tankers moor bow to stern in tandem with the FSO. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance.

A designated tanker waiting area, with a radius of 3 miles, is centered 13 miles NW of the N’Kossa Terminal. Vessels waiting in this area must not allow themselves to drift E of 11°27.5’E. A designated (waiting area) anchorage, with a radius of 1.5 miles, is centered 12 miles W of Djeno. A designated approach channel leads through the oil fields from this anchorage area to the terminal. The channel, which is 2.5 miles wide, extends SSW for 14 miles. This anchorage is also used by vessels proceeding to Djeno Offshore Terminal (see paragraph 4.23).

There is no designated outer anchorage area due to the depth of water.

A restricted area, which may best be seen on the chart, surrounds the oil field and the terminal. Vessels are prohibited from entering this area without prior permission from the terminal.

The Riviere Massabi to the Congo River

4.26 Between the Riviere Massabi (5°02’S., 12°01’E.) and the mouth of the Congo River, 62 miles SSE, the prevailing nature of the bottom near the coast and in depths of up to 20m is mud. Farther offshore, the bottom consists of gray muddy sand, sand and gravel, and sand mixed with coral. The latter is more general in the mouth of the Congo River.

A dangerous wreck, consisting of a former drilling platform, lies 11.5 miles SW of the mouth of the Riviere Massabi

Caution.—An extensive area, where oil and gas exploration and production operations are in progress, extends up to about 40 miles offshore between the mouth of the Riviere Massabi and the mouth of the Congo River. Numerous drilling rigs, platforms, submarine pipelines, and wellheads may be encountered. Vessels should exercise care when navigating in this area as many of the associated structures and installations are often moved and may be unlit or not charted.

4.27 Kuito Oil Field (5°28’S., 11°32’E.) lies centered 40 miles SW of the mouth of the Riviere Massabi and about 10

miles S of N’Kossa Oil Field.

Kuito Oil Terminal (5°28’S., 11°30’E.) (World Port Index No. 46488), operated by Cabinda Gulf Oil Company Angola, consists of a Floating Production Storage and Offshore (FPSO) facility and an SBM. The FPSO (Kuito) and the SBM, to which the tankers moor, are situated in a depth of 414m. Vessels up to 320,000 dwt and 350m in length can be handled.

Pilotage is compulsory. Pilots, who also act as mooring masters, can be contacted on VHF channel 16 or 69 and board about 3 miles NW of the SBM. Berthing is carried out only during daylight hours but vessels may depart at any time. Vessels should send an ETA 72, 48, and 24 hours in advance. They should then contact the terminal by VHF when within range. The ETA message should contain the following information:

1. Vessel name.
2. ETA in GMT.
3. Master’s name.
4. Estimated arrival draft (fore and aft) and displacement.
5. Amount of clean ballast on board.
6. Any delays involved in travel to intermediate port.
7. Quantity of cargo required and any special requirements.
8. Vessel’s INMARSAT telephone, e-mail and facsimile numbers.
9. Any defects in the vessel or equipment.

Kuito Oil Terminal can be contacted, as follows:

1. Telephone: 1-925-842-1111 (ext. 2775)
2. E-mail: amrmr@chevron.com

A designated waiting area, with a radius of 3 miles, lies centered about 10 miles SW of the terminal. There is no designated anchorage area due to the depth of water.

A restricted area, which may best be seen on the chart, surrounds the oil field and the terminal. Vessels are prohibited from entering this area without prior permission from the terminal.

4.28 Takula Oil Field (5°15’S., 11°50’E.) lies centered 17 miles SW of the mouth of the Riviere Massabi and consists of several platforms, some with prominent flares.

Wamba Oil Field (5°12’S., 11°50’E.) lies centered 15 miles SW of the mouth of the Riviere Massabi and adjacent to the N side of Takula Oil Field.

Banzala Oil Field (5°11’S., 11°55’E.) lies centered 10 miles SW of the mouth of the Riviere Massabi and 6 miles NE of Takula Oil Field.

Numbi Oil Field (5°19’S., 11°55’E.) lies centered 17 miles SSW of the mouth of the Riviere Massabi and 6 miles SE of Takula Oil Field.

Nemba Oil Field (5°24’S., 11°40’E.) lies centered 31 miles SW of the mouth of the Riviere Massabi and 13 miles SW of Takula Oil Field.

Lombo Oil Field (6°52’S., 12°24’E.) lies centered 30 miles SW of the mouth of the Riviere Massabi and 4 miles NNW of Nemba Oil Field.

Caution.—Restricted areas, the limits of which may be seen on the chart, enclose some of the above oil fields. Vessels without permission are prohibited from navigating within these areas.

Several production platforms are situated within the above oil fields. In addition, numerous submarine pipelines, submarine cables, and well heads lie in the vicinity of the above oil fields and may best be seen on the chart. Vessels are prohibited from anchoring or fishing in their vicinity.

4.29 Takula Oil Terminal (5°13'S., 11°47'E.) (World Port Index No. 46485) is situated 16 miles W of the mouth of the Riviere Massabi and at the NW side of the Takula Oil Field. The terminal, which can handle vessels up to 300,000 dwt, consists of an SBM moored in a depth of 69m. Pilotage is compulsory. Pilots, who act mooring masters, can be contacted by VHF and board about 1.5 miles NW of the SBM. Berthing is carried out only during daylight hours but vessels may depart at any time.

A designated anchorage area about 1.5 miles NW of the SBM.

A restricted area, which may best be seen on the chart, encloses the oil field and terminal. Vessels are prohibited from entering this area without prior permission.

Takula Terminal is only used in an emergency as oil is presently stored and exported via the Malongo Terminal.

4.30 The Rio Chiloango (5°12'S., 12°08'E.), with its mouth lying 12 miles SSE of the Riviere Massabi, is indicated by several red hills which fall steeply to the beach. Discoloration of the sea has been observed up to about 7 miles seaward of the entrance to this river. The bar fronting the river entrance can be crossed by small vessels with local knowledge, but it is dangerous because of the surf.

The coast between the Riviere Massabi and the Rio Chiloango rises to moderately high hills. A ridge of hills extends S from the vicinity of the Rio Chiloango to the mouth of the Congo River. It stands between 5 and 8 miles inland and attains heights of 120 to 156m.

Ponta Cacongo (Ponta de Landana) (5°14'S., 12°07'E.) is located 2.5 miles S of the mouth of the Rio Chiloango. It is conspicuous and presents a bold and bluff appearance. Ponta Cacongo Light is shown from a square tower with a dwelling, 9m high, standing on the point. A prominent hospital, with a red roof, is situated 0.5 mile NNE of the light.

Baia de Cacongo (Enseada Landana) (5°14'S., 12°09'E.) lies between the mouth of the Rio Chiloango and Ponta Cacongo. The village of Cacongo (Landana) (Vila Guilherme Cape-lo) is situated at the head of this bay. A conspicuous administration building, with a flagstaff, stands on a bluff close S of the village. Cargo can be worked at the roadstead by lighters, but this bay is little frequented as the anchorage is poor, a considerable distance offshore, and subject to bad swells. Small vessels, with local knowledge, can anchor in a depth of 9m, mud, about 3 miles W of the administration building. The bottom is rocky in depths of less than 5m.

4.31 Ponta de Malembo (5°20'S., 12°10'E.) is located 5.6 miles SSE of Ponta Cacongo. It lies at the S end of Baia de Malembo and consists of a grassy tongue of land extending NNW from the base of several abrupt and red chalky cliffs. These cliffs, which are surmounted by vegetation, line the coast to the N and S of the bay and are about 30m high. They assist in identifying the bay, which is reported to be difficult to

distinguish from offshore.

A narrow rocky shoal, with depths of less than 5m, extends up to about 1 mile NW of Ponta de Malembo.

The village of Malembo is situated 1 mile SE of Ponta de Malembo; a prominent water tower stands in its S part. Another prominent water tower surmounts the red cliffs, 1 mile ENE of the point. Large vessels usually anchor, in a depth of 11m, well to the N of the bay and NW of Ponta de Malembo. Small craft can anchor within the bay, but are exposed to the heavy swell. Rollers are also frequent and heavy. They occur, more often than not, during calms.

Caution.—Vessels without local knowledge are advised not to approach the coast between Baia de Cacongo and Baia de Malembo in depths of less than 11m.

Baia de Malembo lies within a restricted area. Vessels should receive permission from the authorities prior to anchoring within this area.

4.32 Malongo Oil and Gas Field (5°24'S., 12°04'E.) lies between Ponta de Malembo and Ponta de Tafe, 15 miles S. This field extends up to 13 miles offshore and may best be seen on the chart. It consists of Malongo North Field, Malongo South Field, Malongo West Field, Limba Field, Lifuma Field, and Kungulo Field.

Platform Juliet (5°25'S., 11°59'E.), which is situated 12.5 miles W of Malongo, in Kungulo Oil Field, is equipped with a racon. The platform close W may display a gas flare.

Vuko Oil Field (5°23'S., 11°57'E.) lies centered 15 miles W of Malongo and 3 miles NW of Platform Juliet.

Caution.—Numerous production platforms, well heads, submarine pipelines, and flares exist within the above fields, some of which may be unlit or not charted.

A restricted area, which may best be seen on the chart, encloses the Malongo Oil and Gas Field. Vessels not proceeding to or from the facilities or terminals are prohibited from entering this area without prior permission.

4.33 Malongo (5°24'S., 12°12'E.), a submarine pipeline landing terminal and supply base, is situated 4 miles SSE of Ponta de Malembo. A prominent tank farm and a flare are situated near the shore and are fronted by an L-shaped jetty. This jetty, which extends WSW for 183m and then NW for 91m, is used by small coasters and oil production service vessels, but is subject to a heavy swell. It has depths of 5 to 7.6m alongside. A lighted range, which may best be seen on the chart, indicates the approach. The structures are situated in the vicinity of the tank farm. A prominent radio tower, 121 high, stands about 0.5 mile SE of the rear range structure. Pilotage is compulsory except for small vessels which call regularly. Local knowledge is advised.

Oil production support vessels anchor in an area lying about 3.2 miles WNW of the landing terminal. Cargo vessels anchor in the Malongo Freighter Anchorage (see Baia de Cabinda in paragraph 4.37).

Caution.—Several dangerous wrecks lie in the approaches to the terminal and may best be seen on the chart.

Numerous submarine pipelines, which may best be seen on the chart, extend from various offshore fields and are landed close SSE of the jetty.



Malongo Jetty

4.34 Malongo Terminal (5°26'S., 12°05'E.) (World Port Index No. 46487), which is known locally as Cabinda Terminal, consists of an offshore oil-loading facility and an offshore LPG-loading facility.

The oil facility consists of four SBMs. Malongo SBM No. 1 is moored in a depth of 23m about 6 miles ESE of Platform Juliet. It can handle vessels up to 325,000 dwt and 16.8m draft. Malongo SBM No. 2 is moored in a depth of 32m about 3.5 miles SE of Platform Juliet. It can handle vessels up to 325,000 dwt and 350m in length. Malongo SBM No. 3 is moored in a depth of 31m about 7.6 miles SSE of Platform Juliet. It can handle vessels up to 325,000 dwt and 350m in length. Malongo No. 4 is moored in a depth of 31m about 6.2 miles S of Platform Juliet. It can handle vessels up to 350,000 dwt and 350m in length.

During the rainy season, from the middle of October to the end of April, local thunderstorms may be experienced, particularly from December onwards. These storms are usually accompanied by heavy rains, which last up to 3 or 4 hours, and occasionally by sudden squalls with winds of up to 75 knots. Generally, the winds are mostly from the S and at less than 20 knots. During the dry season, a long SW swell affects this area and may exceed 4.5m in height.

In the vicinity of the anchorage area, the current generally sets between NW and NNW. It sometimes exceeds 3 knots, being affected by the outflow from the Congo River. In the dry season, a SSW current can be experienced.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 73 or 16 and board in position 5°28.0'S, 11°58.0'E. Berthing is carried out only during daylight hours but vessels may depart at any time.

Malongo Terminal Marine Operators can be contacted, as follows:

1. Telephone: 1-925-8421111 (ext. 2775)
2. E-mail: amrmr@chevron.com

A designated anchorage (waiting area), with a radius of 1 mile, lies centered about 4 miles SSW of Platform Juliet and has depths of 38 to 40m.

Restricted areas, which may best be seen on the chart, enclose the various loading facilities and terminals. Vessels are prohibited from entering these areas without prior permission.

Vessels must fly the national flag of Angola during daylight and at night when moored at the terminal.

Caution.—Numerous production platforms and submarine pipelines are situated in the approaches to the terminal. Vessels are advised to approach the terminal during daylight hours. At

night, the lights and flares of the various structures may be confusing and some obstructions may be unlit.

4.35 Praia de Futila (5°26'S., 12°13'E.), a village, stands 3.5 miles SSE of Malongo. The coast in this vicinity is formed by a broad, low plain which is studded with palm trees. The River Lulondo flows into the sea 1.5 miles S of this village.

A bank of sand and rock, with depths of less than 5m, fronts this village and extends up to about 1.5 miles offshore. This bank also fronts the coast to the S and extends up to about 3 miles seaward from the head of Baía de Cabinda. Shoal depths of less than 5m lie on the outer edge of this bank, but the sea does not usually break on it. Vessels without local knowledge are advised to give this stretch of coast a wide berth.

Ponta de Tafe (5°33'S., 12°11'E.), low and covered by bushes, is located 9.5 mile S of Malongo and forms the SW entrance point of Baía da Cabinda. Ponta de Tafe Light is shown at an elevation of 27m from a tower with a hut, 20m high, standing on the point. A prominent monument surmounts a cliff about 0.5 mile SSW of the point. A radio mast, 57m high, stands 1 mile SE of the point. An aeronautical light is occasionally shown from a structure standing in the vicinity of the airfield, about 2.5 miles SSE of Ponta de Tafe.

Several rocks, on which the sea breaks, front Ponta de Tafe and the coastal bank, with depths of less than 5m, extends up to about 2 miles WSW of it.

4.36 Futila Oil Terminal (5°27'S., 12°11'E.) (World Port Index No. 46495), an offshore facility, is located 2.3 miles SW of Praia de Futila. It consists of a CBM situated in a depth of 6.8m. A submarine pipeline extends NE from the berth to the shore. Vessels up to 6,500 dwt and 4.5m draft can be handled.

Vessels must send an ETA via the agent in Cabinda 72 hours, 48 hours, and 24 hours in advance. The message must state the vessel's name, ETA, master's name, arrival draft (fore and aft), time to discharge ballast, quantity of segregated ballast on board, and quantity of cargo to load or discharge. Vessels should then contact the terminal when within VHF range. They should approach the terminal from the S.

Pilotage is compulsory. Berthing is carried out only during daylight hours but vessels may depart at any time. The pilot (mooring master) can be contacted on VHF channel 16 or 74 and boards in the Malongo Freighter Anchorage (see paragraph 4.37).

The terminal is situated within the restricted area which surrounds the Malongo Oil and Gas Fields. Vessels are prohibited from entering this area without prior permission.

4.37 Baía de Cabinda (Enseada de Cabinda) (5°32'S., 12°12'E.) (World Port Index No. 46490) lies E of Ponta de Tafe and is mostly encumbered by the coastal bank. Baixo do Bele, a rocky shoal, lies in the middle of the bay. It has a least depth of 2.5m and is located 2 miles NNE of Ponta de Tafe (see paragraph 4.35).

The head of the bay consists of a sandy beach backed by lofty cliffs, green hills, and deep valleys. The town of Cabinda is situated 0.7 mile E of Ponta de Tafe and is hidden by the trees which stand on the sides and summit of an area of elevated land. A prominent three-story structure stands in the town, 1 mile SE of Ponta de Tafe. It was originally used as a light-

house, but is now a clock tower. An airfield is situated on the S side of the town.

Several factories stand along the bay and an L-shaped pier, 100m long, fronts the shore, 0.5 mile E of Ponta de Tafe.

Vessels may anchor, to discharge or load cargo from barges, in a depth of 9m, mud, about 2.3 miles WNW of Ponta de Tafe or closer inshore according to their draft. Small vessels with light drafts may anchor in a depth of 4.6m about 0.4 mile N of the head of the L-shaped pier. A lighted range, which may best be seen on the chart, indicates this inner roadstead. Pilotage is not available.

Malongo Freighter Anchorage, a designated anchorage area, lies centered about 3.5 miles NW of Ponta de Tafe Light and has depths of 10 to 11m.

Caution.—Several dangerous wrecks lie in the approaches to Baia de Cabinda and may best be seen on the chart.

4.38 Between Ponta de Tafe and the entrance to the Congo River, 30 miles SSE, the country is particularly fertile and well-populated.

A prominent radio tower stands close to the shore, 5 miles SSW of Ponta de Tafe.

The coast between Ponta de Tafe and Ponta Vermelha, 7 miles SSW, is fronted by a shoal bank which extends up to about 1.5 miles offshore and is generally indicated in places by breakers. Vessels should not approach this stretch of the coast in depths of less than 22m, as rollers have been known to break in depths of 13m and up to about 5 miles offshore.

The shore extending to 4 miles SSE of Ponta Vermelha is low and fringed with forests. A chain of reddish-colored hills, with nearly uniform height, rises close inland 3 miles S of Cabinda and extends almost to the N bank of the Congo River.

The border between Angola (Cabinda) and the Democratic Republic of the Congo (formerly Zaire) is situated about 8 miles SSE of Pointe Vermelha and is marked by three beacons.

Pointe Kipundji (Kupundji) (5°53'S., 12°18'E.) is located 17 miles SE of Pointe Vermelha. The shore between is fringed by a narrow sandy beach. Pointe Kipundji Light is shown from a metal tower, 9m high, standing on this point and the conspicuous village of Vista (Nsiamfumu), consisting of 30 houses, stands 1 mile NW of it. The village of Muanda (Moanda), with an airfield, is situated 4 miles SE of Pointe Kipundji.

Mona Mazea Bank (Banc Mona Mazea), an extensive shoal, fronts the coast between a point located 5 miles SSE of Ponta Vermelha and the entrance to the Congo River. This shoal has depths of less than 5m and extends up to about 5.5 miles offshore in places. Vessels are advised to avoid this shoal bank and remain in depths of over 10m, as a constant swell, frequent rollers, and a strong current from the river are frequently experienced in this vicinity. The bank is also reported to be extending in a W direction.

Caution.—Numerous fishing canoes may be encountered close off the coast between Ponta de Tafe and the Congo River.

4.39 Kokonga Oil Field (5°36'S., 11°42'E.), with several production platforms, lies centered 30 miles WSW of Ponta de Tafe.

N'Dola North Oil Field (5°41'S., 11°46'E.), with several platforms, lies centered 26 miles SW of Ponta de Tafe.

South Sanha Oil Field (5°41'S., 11°49'E.), with several

platforms, lies centered 24 miles SW of Ponta de Tafe.

Kambala Oil Field (5°43'S., 12°05'E.), with several production platforms, lies centered 12 miles SSW of Ponta de Tafe.

Caution.—Numerous platforms, well heads, submarine pipelines, and flares exist within the above fields, some of which may be unlit or not charted.

Restricted areas, which may best be seen on the chart, surround several of the above fields. Vessels not proceeding to or from the facilities or terminals are prohibited from entering these areas without prior permission.

4.40 Sanha LPG Terminal (5°38'S., 11°51'E.) is situated 20 miles WSW of Ponta de Tafe and about 2 miles NE of the South Sanha Oil Field. It consists of a Floating Production Storage and Offshore (FPSO) facility, which is moored in a depth of 62m. Vessels berth either in tandem or alongside the FPSO.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF channels 16, 90A, or 91 and board about 3.5 miles NE of the FPSO. Berthing and departing are carried out only during daylight hours.

Vessels should send an ETA via the agent in Cabinda 7 days, 72 hours, 48 hours, and 24 hours in advance. The message should state vessel name, ETA, master's name, estimated arrival draft (fore and aft) and displacement, delays expected at any enroute ports, quantity of cargo required and any special requirements, vessel's INMARSAT telephone and facsimile numbers, any defects in vessel equipment, whether cargo tanks cooled and ready to receive cargo, and parallel body measurement. Vessels should contact the terminal and the security patrol boat (patrol boat DA or DB) on VHF channel 16 when within range.

Vessels should approach the terminal from the NW or SW. There is a least depth of 53m in the NW approach and 47m in the SW approach. Vessels should avoid passing between the various restricted areas surrounding the oil fields lying up to 30 miles NW of the terminal.

A restricted area, which may best be seen on the chart, surrounds the terminal, the South Sanha Oil Field, and the N'Dola North Oil Field. Vessels are prohibited from entering this area without prior permission.

4.41 Lukami Oil Field (5°51'S., 12°08'E.), with several platforms, lies centered 10 miles WNW of Pointe Kipundji.

Motoba Oil Field (5°51'S., 12°10'E.), with several platforms, lies centered 8 miles WNW of Pointe Kipundji.

Mibale Oil Field (5°50'S., 12°12'E.), with several platforms, lies centered 5 miles NW of Pointe Kipundji.

Mwambe Oil Field (5°51'S., 12°14'E.), with several platforms, lies centered 4 miles NW of Pointe Kipundji.

Moko Oil Field (5°53'S., 12°07'E.), with several platforms, lies 10 miles W of Pointe Kipundji.

Libwa Oil Field (5°56'S., 12°15'E.), with several platforms, lies centered 3.5 miles SW of Pointe Kipundji.

GCO Oil Field (5°57'S., 12°10'E.), with several platforms, lies centered 8 miles SW of Pointe Kipundji.

Caution.—A restricted area, which may best be seen on the chart, encloses the above fields and extends up to about 12 miles offshore. Vessels not proceeding to or from the facilities or terminals are prohibited from entering or anchoring in this

area without prior permission.

4.42 Moanda Terminal (Muanda Terminal) (5°58'S., 12°07'E.), located 10 miles SW of Pointe Kipundji, consists of a Floating, Storage and Offshore (FSO) facility and a SBM. The FSO (Kalamu) and the SBM to which it is moored, are situated in a depth of 27m. Vessels up to 160,000 dwt and 16.5m draft can be handled.

The current at the terminal usually sets NW in direction and attains a rate of 2 to 3.5 knots. It is modified by the tidal currents and greatly affected by the flow of water from the Congo River. When the water level in the river is high, the current experienced at the terminal may attain a rate of 5 to 7 knots. A heavy swell is also often experienced at the terminal between March and September.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF channel 16 and board 2.5 miles NW of the FSO Kalamu or in the vicinity of the anchorage area. Berthing is carried out only during daylight hours but vessels may depart at any time.

Vessels should send an ETA, preferably via e-mail, to the terminal or the agent in Kinshasa as soon as possible. Confirmation messages should be sent 72 hours, 48 hours, and 24 hours before arrival. The messages must state the vessel's name, ETA, Master's name, arrival draft (fore and aft), arrival displacement, any anticipated delays enroute, cargo requirements, and name of agent. Vessels should then contact the terminal when within VHF range.

The Moanda Terminal may be contacted by e-mail as follows:

zmoore@cd.perenco.com
zfso@cd.perenco.com

A designated anchorage area is situated about 2 miles NW of the SBM. It has a depth of 28m over a bottom of soft mud.

Moanda Terminal is situated within a restricted area which extends up to 12 miles offshore and may best be seen on the chart (see paragraph 4.41). All tankers shall fly the Democratic Republic of Congo national flag while berthed at the terminal.

The Congo River (Flueve Zaire)

4.43 The Congo River (Flueve Zaire), the second largest river in Africa, is over 2,700 miles long and is the fifth longest river in the world. However, in volume of water, depending on the season, it is second only to that of the Amazon. The Congo River is navigable by ocean-going vessels as far as Matadi, about 80 miles from the sea.

Above Matadi, the Congo River runs at rates of up to 10 knots between the cliffs. The water is generally deep, but whirlpools render navigation difficult. Rapids are located about 3.5 miles and 6.5 miles upriver from Matadi.

The Inga Dams (5°30'S., 13°37'E.) are situated about 21 miles above Matadi. They were built across a once dry valley. Rapids are located at regular intervals upriver between the Inga Dams and Kinshasa (4°20'S., 15°19'E.). This latter town stands on the S side of the river, at the SW end of Pool Malebo, an extensive lake. Brazzaville is situated on the N bank, opposite

Kinshasa. Pool Malebo is about 22 miles long and 14 miles wide.

The river between Pool Malebo and the town of Kisangani (0°31'N., 25°12'E.), about 940 miles upstream, is navigable by river craft of up to 800 dwt. Stanley Falls are located opposite the E end of Kisangani. Between Kisangani and Bukama (9°13'S., 25°51'E.), there are many areas of rapids, rivers, and swamp. The river source lies about 382 miles upstream from Bukama. Two dams have been built on this stretch of the river and it is not used as a means of transportation.

The border between the Democratic Republic of the Congo (formerly Zaire) and Angola is situated, in the lower part, in the vicinity of the middle of the river.

Tides—Currents.—The lower part of the Congo River is well-supplied with water throughout the year, since the tributaries of this river are distributed on both sides of the Equator. The levels of the river system are usually either rising or falling and seldom remain at their mean level for any length of time. The tributaries of the left bank, on the S side, have two periods of high level and two periods of low level during the year. Those of the right bank, on the N side, have only one period of high level and one period of low level in the course of the year. The river is low in March and July, and high in May and December. The July low level is usually lower than that in March. The mean river level at Matadi is about 26m above mean sea level.

The difference between the high river level and the low river level at the following places are, as follows:

1. Banana (6°02'S., 12°25'E.)—0.6m.
2. Mateba (25 miles above Banana)—1.5m.
3. Pedra do Feitico (10 miles above Mateba)—2.1m.
4. Boma (7 miles above Pedra do Feitico)—2.7m.
5. Matadi—7m.

At Boma, the tidal influence is perceptible, but the range is less than 0.3m. At Matadi, the tidal influence is reported to be almost not perceptible, being about 0.1m.

Currents in the Congo River		
Location	High River Level	Low River Level
Banana to Boma	3 to 4.7 knots	2 to 3.5 knots
Boma to Matadi	7 knots	6 knots
Chaudron d'Enfer	10 to 11 knots	6 knots
Rade de Matadi	7.5 knots	—

The river current always runs seaward. During the rainy season, this current is very rapid and usually carries along with it floating islands of papyrus and water hyacinths which have been torn away from the banks. Some of these floating islands may be more than 100m long and may be dangerous to vessels underway or at anchor. In addition, they frequently sweep away the buoys marking the channels. These floating islands may also be encountered during the low river season, but they are usually not of sufficient size to be dangerous.

Observations indicate that the fresh water of the river, extending from the surface to the bottom, is found until just below Quissanga (6°02'S., 12°39'E.), where a body of salt water is encountered in a deep gully. The fresh water then flows over

the denser water with decreasing depth and increasing velocity. It also decreases in depth as the estuary widens, but is deeper on the ebb current than on the flood current.

About 5 miles below Quissanga, the layer of fresh water extends from 5.5 to 9.1m below the surface, whereas after passing Pointe Bulabemba (6°03'S., 12°26'E.), it is only about 1m in depth. The deep body of salt water is reported to be either perfectly still or to have a very slight tidal flow.

In the Congo River, the nature of the bottom is invariably sand, but hard clay may be found in a few places. The exception is within the deep gully lying at the mouth of the river, where deposits of soft mud and decayed vegetable matter are found. The latter is proof of the tranquillity of the water near the bottom.

Mud is found within the small creeks in the upper part of the river and also on the mangrove-covered banks extending downriver from Quissanga. The water of the river is heavily charged with sand and it would appear that a very large proportion of the mud found in the deep gully at the mouth is from the washings of the immediate neighborhood.

Depths—Limitations.—Depths of more than 200m extend into the mouth of the river and may be found in the channel up to the vicinity of Lighted Buoy No. 16 (6°02'S., 12°34'E.). The authorities endeavor to maintain a depth of 9.1m throughout the year by surveying and dredging in the sandy passes of the wandering portion of the river below Boma. However, sometimes this depth cannot be maintained due to the break-up of banks or intensive shifting of sands. These periods are relatively short and every effort is made to re-establish a depth of 9.1m as soon as possible.

The controlling depths in the river vary. It was reported (1995) that, due to the sandbanks lying between Banana and Boma, vessels with drafts of 6.4 to 8.5m were permitted to make the river transit, depending on the season. It was reported (1998) that, after the civil war, the maximum draft for river transit was reduced to 5.5m.

Consequently, the authorities should be contacted in advance for the latest depth information.

Aspect.—The estuary of the Congo River, which extends about 50 miles inland to Boma, is entered between Ponta Vermelha (5°39'S., 12°08'E.) and Ponta da Moita Seca, 29 miles SSE.

The continental shelf, with depths of less than 200m, extends up to about 40 miles W of this estuary. It is cut by a remarkable deep gully, 2 to 8 miles wide, which has depths of over 1,400m at the outer end. This gully, which has steep and irregular sides, leads directly into the entrance of the Congo River. It is useful when approaching the entrance in foul weather, as depths of over 200m extend into the river mouth.

Presqu'île de Banana (6°01'S., 12°24'E.), located 26 miles SE of Ponta Vermelha, is a low and narrow peninsula. This sandy peninsula extends 2.5 miles S to Pointe Francaise, its S extremity. Several prominent white buildings of the town of Banana are situated on the peninsula and two conspicuous radio masts stand 1.2 miles N of Pointe Francaise. The prominent flare of an oil refinery is situated about 2.5 miles NNE of the radio masts. When rollers occur along this part of the coast at the time of the equinoctial tides, the greater part of this peninsula is submerged.

This part of the coast is fronted by a continuation of Mona

Mazea Bank and depths of less than 5m lie up to 2 miles offshore. Banc Stella, a sandbank, extends up to about 0.5 mile S of Pointe Francaise. Its S edge is steep-to, but depths of less than 5m lie up to 1.5 miles W of the point. This bank was reported (1990) to be extending to the W and vessels should exercise caution when navigating in its vicinity.

Stella Buoy No. 2 is moored about 1.8 miles WSW of Pointe Francaise and marks the edge of the coastal bank.

Pointe Bulabemba (6°03'S., 12°26'E.), a low point, is located 2.7 miles SE of Pointe Francaise. A light is shown from a metal tripod standing on this point.

Ponta da Moita Seca (6°07'S., 12°17'E.) is of moderate height and appears as a steep cliff when seen from the N at a distance of about 7 miles. It is surmounted by a mound which is covered by stunted bushes. Ponta da Moita Seca Light is shown from a fiberglass tower, 21m high, standing on the point.

A stranded wreck is reported (2000) to lie about 1 mile NE of the point.

Ponta Padrao (Ponta do Padrao) (6°04'S., 12°20'E.), located 4 miles ENE of Ponta da Moita Seca, is the NE extremity of a long and low peninsula.

A village stands on Ponta Padrao and an old cemetery is situated about 0.3 mile within the point. A prominent marble column, 5m high, stands near the extremity of the point. It was set up by the famous Portuguese navigator Diego Cam in 1486.

Baia de Diogo Cao lies on the S side of the entrance to the Congo River and is entered E of Ponta Padrao. This bay is mostly shallow and not recommended as an anchorage.

4.44 Angola LNG Terminal (Soyo)(Santo Antonio do Zaire) (6°07'S., 12°20'E.) (World Port Index No. 46545), consists of the newly completed Angola LNG Terminal, built on reclaimed land. The terminal has three berths, one each for LNG, LPG and pressurized butane. It is reported (2014) that the terminal has suspended operations.

Tides—Currents.—The tides rise about 1.5m at springs and 0.6m at neaps.

The rate of flow and the mixing of salt and fresh water at the mouth of the Congo River can cause significant variations between actual and predicted water levels.

At the outer parts of the Soyo (Pululu) approach channel, the W'yly current is the predominant force, in some cases exceeding 5 knots. In this area, the flow is generally perpendicular to the axis of the channel. Upon entering the channel, the current weakens and gradually aligns with the channel axis.

At the LNG berth, currents are parallel to the shore, seldom exceeding 1 knot, while at the other berths, they may be stronger and less predictable.

Depths—Limitations.—The Angola LNG Terminal and port of Soyo are approached by the Pululu channel. This channel has a width at the entrance of 700m, a least width of 250m, with a maintained depth of 14m.

The LNG jetty can accommodate vessels up to 315m in length and 147,000 tons displacement. The LPG jetty can accommodate vessels up to 250m in length and 143,000 tons displacement. The pressurized Butane jetty can accommodate vessels up to 115m in length, 7,000 tons displacement and has a maintained depth alongside of 7.5m.

Aspect.—The Pululu Approach Channel, marked by lighted

buoys, is assisted by two sectored lights, the first of which leads into the channel, NE of Ponta Padrao, the second leading up the channel to the turning basin in the vicinity of the cargo berths.

Pilotage.—Pilotage is compulsory for all vessels bound for the Angola LNG terminal.

Pilots board vessels of 120m and over in position 6°02'S, 12°10'E, approximately 10 miles from the Pululu channel entrance. Pilots can be contacted on VHF channels 9 and 16 as well as by e-mail (pilots@alngopco.com).

Regulations.—Vessels underway within the port limits must maintain an underkeel clearance of at least 1m. The maximum permitted draft is 13m.

Vessels should send an ETA upon departure from discharge port, 7 days, 5 days, 3 days, 2 days, 24 hours and when in VHF range.

Pululu Channel is closed to traffic while Angola LNG vessels are underway in the channel or turning basin. In addition, the channel is closed 30 minutes prior to any planned Angola LNG ship arrival or departure. Angola LNG pilots will notify Soyo Port Control when the channel is open to traffic.

Contact Information.—The Angola LNG Terminal can be contacted, as follows:

1. VHF: VHF channel 9
2. Telephone: 244-232-675792
3. E-mail: ptms@alngopco.com

Soyo Port Control can be contacted, as follows:

1. VHF: VHF channels 11 and 16
2. Telephone: 244-232-675790
3. E-mail: traffic@portofsoyo.com

Caution.—Vessels may need to allow for considerable set while transiting the approach channel. Such conditions may result in an unexpected heading in order to maintain track in the channel. A fast transit speed may also be necessary in the outer parts of the approach channel in order to counter the strong currents present.

The Pululu Channel lighted buoys may be absent or off station due to strong currents or floating islands of vegetation.

4.45 Kwanda (6°07'S., 12°19'E.), an oil industry support base, is situated at the head of Baia de Diogo Cao, immediately SW of the Angola LNG Terminal. The base is fronted by four quays, ranging from 100 to 170m long and has a maintained depth of 7.5m. They are mostly used by vessels servicing the offshore oil and gas installations and by fishing craft.

Saizaire Oil Terminal (6°06'S., 12°23'E.), consisting of a lighted platform, is situated about 1 mile offshore, 3.7 miles ESE of Ponta Padrao. A submarine pipeline extends SSE from the platform to the shore. This terminal is used by small local tankers and barges which transfer oil to larger vessels anchored in the vicinity of Ponta Padrao. An anchorage, with depths of 7 to 9m, lies 0.7 miles WNW from the oil terminal.

Pilotage.—Pilotage is compulsory for all vessels exceeding 500 gt. Pilots for the Congo river, Boma, Ango-Ango, and Matadi are provided from the station at Banana. They can be contacted on VHF channel 16 and board between Stella Lighted Buoy No. 2 and Pointe Bulabemba or about 8 miles above Pointe Bulabemba or in the vicinity of Buoy No. 16.

Vessels should send an ETA 6 to 2 days in advance, if possible, and a confirmation message 24 hours before arrival

through Banana (9PA) radio station. Pilotage is available by day only; this may result in vessels having to anchor at Boma or Ango-Ango overnight if there is insufficient time for them to reach Matadi during daylight.

Regulations.—For the safety of navigation, vessels proceeding to Matadi must be capable of speeds of 10.5 to 11 knots, and sometimes of speeds greater than 12 knots, depending on the season and prevailing local conditions.

The buoyage in the river is placed in accordance with IALA System A.

Anchorage.—Vessels awaiting daylight to enter the river can find good anchorage, out of the current, in depths of 13 to 17m between 1 and 5 miles W of Ponta da Moita Seca. Another anchorage frequently used is in depths of 8 to 18m, on the edge of the bank, between 2 and 2.8 miles WSW of Pointe Francaise.

Good anchorage may also be obtained in a depth of 14m about 1 mile WSW of Ponta Padrao. The surface current at this anchorage has been reported to set continually W, slackening only on the flood tide.

Caution.—Offshore oil and gas exploration and production operations are being carried out in the vicinity of the approaches to the river. Drilling rigs, platforms, submarine pipelines, FSOs, and well heads may be encountered up to 80 miles seaward of the river mouth. Vessels should exercise care when navigating in the approaches as many of the associated structures and installations are often moved and are not charted.

The great difference between the rates of the surface currents and undercurrents in the estuary of the Congo River accounts for the often reported difficulties in steering. Vessels proceeding with good speed, either directly with or against the surface current are not so much affected. However, vessels proceeding at a slow speed and broadside to the current may, at times, become almost unmanageable.

Vessels grounding on the banks where the current is strong have observed the sand to pile up against one side nearly to the surface of the water in a few hours. However, a sudden swirl of the current has then washed all the sand away and the vessel has been left in deep water.

It is stated by one local authority that, on grounding, the anchor should never be dropped, as sooner or later, the current will wash the vessel, along with part of the bank, down the river and into deep water. However, another local opinion is that the above statement is open to question, depending upon the position of the grounded vessel in relation to the bank. Consideration of the action to be taken is therefore necessary in each case.

The charts of the river should be used with care, as considerable changes in the configuration of the islands and river banks may have taken place since the last surveys. The channels are constantly changing, especially during the wet season, and at times new islands are formed and old ones swept away by the violence of the current.

Navigation aids are reported to be frequently moved, damaged, unlit, or missing. Local knowledge is necessary. The channel buoys are often towed under by the current or are swept away altogether by the floating islands and debris which flow down the river during the wet season. The numerous beacons and range markers along the river may be unlit.

Vessels are advised to give Ponta Padrao a berth of at least 1

mile as depths in its vicinity have been reported to be less than charted.

Vessels should head E to approach the river entrance, but allowance must be made for the strong current which sets N or NW. In addition, vessels should exercise care in order not to be set onto the shoal bank extending W from Pointe Francaise.

Crocodiles, which grow up to 9m long, are numerous in the part of the river above Quissanga Beacon (6°02'S., 12°37'E.).

The Congo River (Flueve Zaire)—Banana to Boma

4.46 Banana (6°01'S., 12°24'E.) (World Port Index No. 46510), the site of the pilot station, lies within Crique de Banana, which is entered between Pointe Francaise and Pointe des Pecheurs, 0.4 mile E. An oil refinery, with a prominent flare, is situated close NE of the town which stands on Presqu'île de Banana. A channel, marked by buoys, leads N into the creek. The bar at the entrance to this channel has a depth of 5.5m at LW. The town is fronted by a quay, 75m long, which has a depth of 5.2m alongside. Vessels can anchor in the middle of the creek, about 0.5 mile N of Pointe Francaise. The creek is subject to strong tidal currents, but boats can ascend up to about 15 miles within it.

Vessels with drafts too deep to enter this creek can anchor to the E of Pointe Bulabemba and work cargo from barges. Tankers of up to 220m in length and 11m fresh water draft can anchor E of Pointe Bulabemba. Cargo operations are carried out continuously by large tanker barges. The current in the vicinity of this roadstead sets seaward at 4 to 5 knots.

Pilots are not always available for this anchorage, but experienced officers from the oil refinery will assist vessels in berthing, if requested. Vessels generally depart without the services of a pilot.

A detailed description of the islands and banks of the river cannot be provided, as the channels are constantly changing, especially during the wet season which starts in October.

4.47 Between Pointe Bulabemba (6°03'S., 12°26'E.) and Ponta da Quissanga, 13 miles ENE, the banks of the river are formed by alluvial deposits and are covered with a dense growth of palms and giant mangroves. Some of the latter vegetation grows to considerable size. One species reaches heights of over 30m and has a straight stem which is supported by an arch of roots rising up to 6m from the ground. The spaces between these giant mangroves are usually filled by various smaller trees.

The countryside near the river is low and swampy, but low ranges of hills rise some distance inland on either side. The hills are 60 to 150m high and are covered with grass and occasional patches of trees.

Canal do Porto Rico, entered 4 miles SE of Pointe Bulabemba, is obstructed by sandbanks and a shallow bar fronts its entrance. The settlement of Cafumbila is situated 1.5 miles ENE of the entrance.

Quissanga Beacon (6°02'S., 12°37'E.) is an overgrown structure, 8m high, standing on the N side of Ilha da Quissanga, 1.5 miles NE of the W end of the island. Ponta da Quissanga is located at the NE end of Ilha da Quissanga. The countryside in this vicinity consists of one huge swamp which

is intersected by numerous creeks. Giant mangroves stand on the banks of these creeks. Above Ponta Quissanga, this dense vegetation tends to disappear and its place is taken by low banks of coarse hippopotamus grass.

Anchorage.—Anchorage can be taken, in a depth of 11m, to the W of the entrance to Canal do Porto Rico. However, care should be taken as depths of 9m lie close inshore of this roadstead and the bottom shoals very rapidly. A strong current sets at this anchorage and rough water is often experienced when the afternoon sea breeze is blowing, but not as much as on the N side of the river. Anchorage can also be taken, in a depth of 11m, off the settlement of Cafumbila. It was reported (1973) that these two anchorages were unsatisfactory.

Above Ponta da Quissanga, the Congo River widens and is obstructed by numerous islands and banks. Several channels lead between these obstructions, but only one main fairway is kept open for shipping by dredging. The islands are low and covered with grass and bushes which are almost level with the water. They are intersected by creeks and fringed by drying banks. Crocodiles are particularly numerous in this part of the river and grow up to 9m in length.

4.48 Ponta do Feitico (5°55'S., 12°58'E.), formed by the termination of a ridge of ironstone, projects boldly into the river from the edge of a grassy plain and is 35m high. A shallow rock lies about 200m N of the point. The village of Quissacala, with an airfield, is situated about 1 mile S of the point. It is reported (1999) that a military observation tower stands on the point.

Between Ponta do Feitico and Ile des Princes, 9 miles ENE, the character of the countryside changes. The low, swampy land is replaced by hills, some of which rise to heights of over 150m.

After passing Ponta do Feitico, a very strong current, with numerous eddies and whirlpools, is often experienced. Vessels tend to be set away from the S side of the river due to the volume of water flowing W through the channel leading S of Ile Selonga.

Several ranges indicate the fairway in this part of the river. Ile Selonga (5°53'N., 13°02'E.) is low and grassy. Ile Sacra Ambaka (Mebaca), lying close E of Ile Selonga, is only just above the level of the river, except near its NE end, which is surmounted by a wooded hill, 74m high. A 2,000m measured distance lies N of these two islands and is indicated by three pairs of beacons. It was reported (1982) that most of these beacons were missing.

Fingal's Shield, a conspicuous granite monolith, stands near the summit of a hill, 150m high, which rises 2.3 miles NW of the W end of Ile Selonga.

Fort Shinkakasa, situated 2 miles E of Fingal's Shield, stands 41m above the river. Large pythons are frequently found in this vicinity. The town of Boma stands 1 mile E of this fort.

4.49 Boma (5°51'S., 13°03'E.) (World Port Index No. 46520) lies on the N side of the Congo River, 50 miles above the river mouth. The town stands in the center of a semicircle of hills and consists of two sections. The business section is situated on the flat ground, close to the river. The residential section is situated about 60m above the river and includes official residences, hospitals, and barrack buildings, etc.

A main quay, 450m long, provides three general cargo and

bulk berths and has depths of 7.9 to 9.8m alongside. A current, with a maximum rate of 3 knots, is normally experienced at this quay.

The controlling depths in the river vary and vessels should ascertain the latest information from the authorities. Vessels with drafts of 6.4 to 8.5m draft can transit the river to this port, depending on the season.

Vessels can also anchor off the N side of Ile Sacra Ambaka (Mebaca) in good holding ground. Vessels can load or discharge cargo if necessary with the use of barges.

The Congo River (Flueve Zaire)—Boma to Matadi

4.50 Ile Rocca (5°53'S., 13°05'E.), lying E of Ile Sacra Ambaka (Mebaca), rises near its E end to a rocky and wooded hill, 87m high. A shoal extends N from this island and is the only danger lying between Boma and Ile des Princes (5°53'S., 13°07'E.). Several ranges indicate the fairway in this part of the river channel.

Above Ile des Princes, the character of the scenery undergoes a change. The river, previously broad and uninteresting, is now confined within narrower limits by high hills on either side. These hills are covered with luxuriant vegetation for some distance.

Although the currents and eddies are stronger in this part of the river than in the lower part, vessels with good speed can reach Matadi without much difficulty.

The S bank of the river between Ponta Bumbu (5°53'S., 13°10'E.) and Sango-Bongo rises steeply to hills, 60 to 90m high. Vegetation lies at the foot of these hills, which are generally bare, but a few trees may be seen on the skyline.

Binda (5°51'S., 13°14'E.), a town, stands on the N bank of the river, close W of the mouth of the Riviere Belizi. Ponta Senga is located on the S side of the river, about 2 miles ESE of the town.

Ilot Oscar (5°53'S., 13°18'E.) lies in the middle of the river, 2 miles ESE of Ponta Senga. It is wooded and marked by a beacon. The main channel passes to the S of this islet. It was reported (1982) that the islet was below-water, but the light structure remained visible.

Sango-Bongo (5°54'S., 13°19'E.) lies in the middle of the river, about 1.7 miles ESE of Ilot Oscar. This rock is marked by a beacon and dries 0.6m during the dry season. The main channel passes to the N of it.

Ponta Tridente (5°54'S., 13°20'E.), marked by a light, projects from the S side of the river, 1 mile ESE of Sango-Bongo. Les Trois Soeurs, a group of three islets, lies on the N side of the river, opposite this point, and narrows the channel to a width of about 600m. It was reported (1982) that the S islet of the group was below-water.

4.51 Pointe Muzuku (5°54'S., 13°22'E.) is located on the N bank of the river, 1.5 miles E of Ponta Tridente. On the S side of the river, opposite this point, the land rises to several hills which stand 2 to 3 miles inland. These hills are about 300m high and covered with dense vegetation. The intervening countryside is very rough with isolated hills and ridges.

Three small islets lie in the center of the river, E and NE of Pointe Muzuku; a light is shown from the middle islet. Shoal

water lies between these islets and the NW bank of the river. Ilot Kongolo lies about 0.2 mile offshore, 1 mile NNE of Pointe Muzuku. A shelf, with depths of less than 5m, extends along the NW bank of the river in the vicinity of this islet.

Ponta Diamants (5°52'S., 13°23'E.) is fronted by Rocha Diamants, a dangerous rocky shoal, which covers at HW. A beacon is situated 0.2 mile NW of this point.

Pointe Luze is located on the N bank of the river, 0.7 mile NE of Ponta Diamants; the town of Ikungulu stands 1 mile E of it.

The town of Noqui is situated on the S side of the river, 2.6 miles E of Ponta Diamants. A beacon is shown from an elliptical tower on rocks, 2m high, standing on a point near this town. River ferries link Noqui with Soyo and Boma.

The border between the Democratic Republic of the Congo (formerly Zaire) and Angola lies close N of Noqui.

4.52 Ango-Ango (5°51'S., 13°26'E.) is situated on the SE side of the Congo River, 1.2 miles N of Noqui and 2.5 miles below Matadi. It is used for the discharge of dangerous goods and by vessels not powerful enough to pass through Chaudron d'Enfer (Devil's Cauldron).

A floating pontoon, 61m long, fronts the SE side of the river. It is connected to the shore by two bridges and forms a berth with a depth of 9.1m alongside. Vessels of up to 8,000 dwt and 195m in length can be accommodated. A strong current is normally experienced at this berth. It has rates of 3 to 7 knots, depending on the height of the river. Palm oil can also be loaded at this berth, but oil tankers have priority for berthing. A quay, 123m long, is situated 0.7 mile S of the pontoon and is used for the discharge of dangerous cargo. It is reported that berthing at these facilities is permitted only during daylight hours and vessels must keep their engines available for immediate use.

4.53 Pointe Underhill (5°50'S., 13°26'E.) is located on the SE side of the river, about 1 mile W of Matadi. An overhead telephone cable, with a minimum vertical clearance of 40m, spans the river in the vicinity of this point.

A road bridge spans the river close E of Pointe Underhill. It has a vertical clearance of 52.7m, which allows for a maximum rise of 8m in the river level, during the rainy season.

The high hills standing on the NW bank of the river, opposite Pointe Underhill, fall 183 to 244m in sheer precipices to the dark and gloomy basin below, which is known as Chaudron d'Enfer (Devil's Cauldron). The river in this vicinity is very deep and the currents are violent. Numerous eddies and heavy whirlpools necessitate special care in steering and a fast speed. Although the current is not very formidable during the dry season, it generally attains rates of 10 to 13 knots, in places, during the wet season.

The river pilots advise that steering for vessels of over 170m in length is extremely difficult within Chaudron d'Enfer and such vessels are almost unmanageable.

Anchorage.—Anchorage is reported to be possible in several places lying between Boma and Matadi. These places are known to the river pilots and local knowledge is necessary. The anchorages are, as follows:

1. Kinlele (5°52'S., 13°06'E.), lying on the N side of the river, 2.5 miles above Boma.
2. Iles des Princes (5°50'S., 13°26'E.), lying off the SE

side of the island.

3. Bumbu (5°53'S., 13°09'E.), lying between Ponta Kimmongoa and Ponta Bumbu.

4. Binda (5°51'S., 13°14'E.).

5. To the N of Ilot Oscar (5°53'S., 13°18'E.).

6. Muzuku (5°54'S., 13°21'E.), lying on the N side of the river, 1 mile ESE of Les Trois Soeurs.

7. Diamants (5°52'S., 13°23'E.), lying on the N side of the river, opposite Ponta Diamants.

8. Ikungulu (5°52'S., 13°25'E.), lying on the N side of the river, 1.5 miles W of Noqui. This anchorage is for vessels waiting to berth at Matadi.

9. Off Ango-Ango (5°51'S., 13°26'E.), in a depth of 15m.

Caution.—Between Sango-Bongo and Pointe Muzuku, exceptionally strong currents have been experienced.

In the past, vessels generally encountered no whirlpools of sufficient size to render steering difficult below Les Trois Soeurs. However, severe whirlpools were often encountered between Les Trois Soeurs and Matadi. A vessel of 1,320 dwt and 86m in length reported (1947) that it was best to use full helm at once to counteract the slightest tendency to swing, as, if even a small sheer were taken, the current tended to turn the vessel rapidly broadside to the channel.

A vessel of 25,000 dwt and 170m in length reported (1982) that while it was necessary to use the helm at once to counteract the slightest swing, full helm was neither necessary nor desirable, as this tended to overcorrect very quickly before the helm could be removed. The vessels also reported that the pilots preferred to use 10° or less helm in order to maintain a steady course.

4.54 Matadi (5°49'S., 13°27'E.) (World Port Index No. 46530) lies along the S bank of the Congo River, at the limit of navigation for ocean-going vessels, about 80 miles from the sea. The town is built on the steep and rocky slope of the river bank and is shut in on all sides by high mountains. It is extremely unhealthy in the hot season, although there are now few cases of malarial fever.

Winds—Weather.—Heavy thunderstorms and torrential rains occur during the wet season. The prevailing winds are from the W.

Tides—Currents.—Matadi has no perceptible tidal rise, but a seasonal difference of 7m occurs between the high river water level and the low river water level.

In the dry season, the current close inshore is weak. However, it runs strongly during the wet season and sometimes vessels experience considerable difficulty when berthing alongside. The rate of this current varies between 1 knot and 9 knots. At the most downstream part of the quay, the current is particularly strong and sets towards the berths. The current is felt the least at the center berths.

Depths—Limitations.—The port has 1,610m of total main quayside, which provides ten berths. These berths are 143 to 188m long and have depths of 6 to 10m alongside. Vessels up to 24,800 dwt, 179m in length, and 8.2m draft can be accommodated. There are facilities for general cargo, bulk, container, and ro-ro vessels.

The controlling depths in the river vary and vessels should ascertain the latest information from the authorities. Vessels

with drafts of 6.4 to 8.2m can transit the river, depending on the season.

Caution.—At the most downstream part of the quay, vessels must use care when dropping the anchor to assist in berthing, as deep water lies close alongside. Vessels generally berth starboard side alongside owing to the current.

The Congo River (Flueve Zaire) to Luanda

4.55 The coast extending S for many miles from a point located 3 miles S of Ponta da Moita Seca Light (6°07'S., 12°16'E.) consists of red cliffs. Inland of these cliffs, a tableland runs parallel to the coast in a continuous double line. This tableland is visible in places from offshore, but has no definite landmarks which can be identified.

An aeronautical light beacon (Soyo-Quinfruenta) is shown from a conspicuous mast standing about 9 miles SSE of Ponta da Moita Seca.

The **Rio Lombo** (6°23'S., 12°26'E.) enters the sea 19 miles SSE of Ponta da Moita Seca.

A small local oil terminal, consisting of a lighted platform, is situated 1.5 miles offshore, about 6.5 miles SSE of the mouth of this river. A submarine pipeline extends NE between the terminal and the coast.

Cabeca da Cobra (6°33'S., 12°30'E.), a rounded headland with a rocky base, is located 10 miles SE of the mouth of the Rio Lombo and is surmounted by a moderately high hill. Cabeca da Cobra Light is shown from a tower with a dwelling, 13m high, standing on this headland. The village of Lubombe is situated about 1 mile E of the light.

A bank, with depths of less than 5m, extends up to about 2.3 miles W from Cabeca da Cobra. Baixo de Dentro, a group of shallow rocks, lies on this bank, about 0.7 mile W of the headland. Baixo de Fora, a rocky shoal with a least depth of 4.4m, lies about 3.5 miles WSW of the headland.

Ponta do Quipai, located 8 miles SSE of Cabeca da Cobra, consists of lofty cliffs which are surmounted by shrubs and overlooked by a hill with a round, bare summit. A conspicuous clump of mangroves stands within this point and is visible from a considerable distance offshore.

The mouths of the Rio Lukulo and the Rio Sange lie 1.8 and 4.5 miles, respectively, SE of Ponta do Quipai.

Ponta do Quinzau (6°54'S., 12°45'E.) is located 18 miles SE of Ponta do Quipai. The coast between is fringed by an uninterrupted sandy beach which is backed by rocky cliffs and surmounted by bare, rounded hills. The cliffs in the vicinity of Ponta do Quinzau are about 40m high. Ponta do Quinzau Light is shown from a tower with a dwelling, 15m high, standing about 0.5 mile N of the point. A prominent tower, 50m high, stands about 4 miles inland, 6.5 miles N of the light.

Caution.—Depths of less than 10m extend up to about 6 miles offshore between Ponta da Moita Seca and Nzeto (Ambrizete), 76 miles SSE. Vessels should exercise care when navigating in this area and keep in depths of over 15m. Rollers often form without warning and frequently break in depths of up to 9m.

An artificial reef area, which may best be seen on the chart, lies centered about 22 miles WSW of Cabeca da Cobra Light.

Oil exploration and production are being carried out along this coastal area and vessels are warned that numerous plat-

forms, submerged pipelines, drilling rigs, and FSO facilities may be encountered up to 60 miles offshore. Vessels should exercise care when navigating in this vicinity as many of the associated structures and installations are often moved and are not charted. In addition, numerous well heads lie within the 100m curve, but are not considered to be a danger to surface navigation.

4.56 Safueiro Oil Field (6°07'S., 12°04'E.), with a single platform, lies centered 13 miles W of Ponta da Moita Seca.

Essungo Oil Field (6°13'S., 12°10'E.), with several wells and platforms, lies centered 10 miles SW of Ponta da Moita Seca.

Cuntala Oil Field (6°18'S., 12°19'E.), with several wells, lies centered 9 miles NW of the mouth of the Rio Lombo.

Raia Oil Field (6°21'S., 12°18'E.), with several wells and platforms, lies centered 9 miles WNW of the mouth of the Rio Lombo.

Estrela Oil Field (6°26'S., 12°21'E.), with several platforms, lies centered 6 miles WSW of the mouth of the Rio Lombo.

Bagre Oil Field (6°26'S., 12°18'E.), with several platforms, lies centered 10 miles WSW of the mouth of the Rio Lombo.

Lombo East Oil Field (6°51'S., 12°24'E.), with several platforms, lies centered 22 miles W of Ponta do Quinzau Light.

Sulele Oil Field (6°51'S., 12°26'E.), with several platforms, lies centered 20 miles W of Ponta do Quinzau Light.

Tubarao Oil Field (6°54'S., 12°24'E.), with one platform, lies centered 21 miles W of Ponta do Quinzau Light.

Tamboril Oil Field (6°54'S., 12°26'E.), with one platform, lies centered 19 miles W of Ponta do Quinzau Light.

Palanca Oil Field (6°58'S., 12°23'E.), with several platforms, lies centered 23 miles WSW of Ponta do Quinzau.

Impala Oil Field (7°00'S., 12°23'E.), with several platforms, lies centered 24 miles WSW of Ponta do Quinzau Light.

Pacassa Oil Field (7°08'S., 12°26'E.), with several platforms and wells, lies centered 28 miles SW of Ponta do Quinzau Light.

Kizomba Terminal (6°03'S., 11°01'E.), is reportedly decommissioned (2011) with no surface infrastructure remaining.

Caution.—Numerous well heads and submarine pipelines exist within the above fields.

Restricted areas, which may best be seen on the chart, surround several of the above fields. Vessels not proceeding to or from the facilities are prohibited from entering these areas without prior permission.

4.57 PSVM Terminal (6°15'S., 10°44'E.) is situated 93 miles W of Ponta da Moita Seca. It consists of a Floating Production Storage Offloading Tanker (PSVM), which is equipped with AIS, and moored in 2,000m of water.

A designated waiting area, with a radius of 5 miles, lies centered 10 miles NW of the FPSO.

Pilotage is compulsory. Berthing is carried out during daylight hours. Pilots board in position 6°11.0'S, 10°40.4'E

Vessels should send an ETA upon commencement of voyage to the terminal, then at 96 hours, 72 hours, 48 hours, 24 hours, and 4 hours prior to arrival.

The PSVM Terminal can be contacted by e-mail (aglapsvm-trmnl@za.bp.com).

A restricted area, with a radius of 5 miles, surrounds the FPSO. Vessels are prohibited from entering this area without prior

permission from the terminal.

4.58 Kizomba A Terminal (6°19'S., 11°03'E.) is situated about 75 miles WSW of Ponta da Moita Seca in the vicinity of an oil field. It consists of a Floating Production Storage and Offshore (FPSO) facility, a drilling platform, and a CALM buoy. The FPSO (Kizomba A), which is equipped with a racon, is moored in a depth of 1,180m; the CALM buoy is situated 1 mile NNW of it.

A designated waiting area, with a radius of 1.5 miles, lies centered 5 miles NW of the FPSO.

Local thunderstorms, which occur in the vicinity of the terminal, are usually preceded by a dense cloud belt and can be accompanied at times by wind gusts exceeding 50 knots.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 11 or 16 and board in the tanker waiting area. Berthing is carried out only during daylight hours but vessels may depart at any time.

Vessels should send an ETA 72 hours, 48 hours, 24 hours, and 4 hours prior to arrival. Vessels should then contact the terminal when within VHF range. Changes to the ETA of more than 1 hour during the last 24 hours should be reported immediately.

Kizomba A Terminal, operated by Esso Exploration Angola, may be contacted, as follows:

1. Telephone: 1-713-767-3287
870-330373871 (INMARSAT B)
2. Facsimile: 1-713-767-9292
870-330373872 (INMARSAT B)
3. E-mail: kiza.mooring.masters@exxonmobil.com

A restricted area, with a radius of 4 miles, surrounds the FPSO. Vessels are prohibited from entering this area without prior permission from the terminal.

4.59 Kizomba B Terminal (6°21'S., 11°09'E.) is situated about 70 miles WSW of Ponta da Moita Seca in the vicinity of an oil field. It consists of a Floating Production Storage and Offshore (FPSO) facility, a wellhead platform, and a CALM buoy. The FPSO (Kizomba B), which is equipped with a racon, is moored in a depth of 1,163m and the CALM buoy is situated 1.2 miles NNW of it.



Kizomba B FPSO

A designated waiting area, with a radius of 1.5 miles, lies centered about 9 miles N of the FPSO.

Local thunderstorms, which occur in the vicinity of the terminal, are usually preceded by a dense cloud belt and can be accompanied at times by wind gusts exceeding 50 knots.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 16 or 77 and board about 4.5 miles NNW of the terminal. Berthing is carried out only during daylight hours but vessels may depart at any time.

Vessels should send an ETA 72 hours, 48 hours, and 24 hours prior to arrival. Vessels should then contact the terminal when within VHF range. Extensive changes to the ETA should be reported immediately.

The Kizomba B Terminal, which is operated by Esso Exploration Angola, may be contacted, as follows:

1. Telephone: 1-713-767-9087
870-330374370 (INMARSAT B)
870-330374373 (INMARSAT B)
2. Facsimile: 1-262-314-3739
870-330374371 (INMARSAT B)
3. E-mail: kizb.mooring.masters@exxonmobil.com

A restricted area, with a radius of 4 miles, surrounds the FPSO. Vessels are prohibited from entering this area without prior permission from the terminal. This area overlaps the restricted area surrounding the Kizomba A Terminal (see paragraph 4.56) and vessels may not pass between them without prior permission.

4.60 Kizomba C Terminal (6°14.0'S., 11°16.5'E.) is situated about 60 miles WSW of Ponta da Moita Seca in the vicinity of an oil field. It consists of the FPSO Mondo situated in position 6°09.6'S, 11°16.2'E and is surrounded by a restricted area with a radius of 2.5 miles. The FPSO Saxi-Batuque is situated in position 6°19.3'S, 11°16.8'E and is surrounded by a restricted area with a radius of 4 miles



FPSO Mondo

The largest vessel accommodated by either of these FPSO's can be no larger than 350,000 dwt. Off loading tankers moor in tandem with the FPSO's, with the off loading tankers bow to the FPSO's stern. A floating hose arrangement is utilized for the transfer of cargo.

Pilotage is compulsory for both facilities. Pilots, who act as mooring masters, can be contacted by VHF channels 16, 11, and 72 and board for the FPSO Mondo in position 6°06'S, 11°16'E, and for the FPSO Saxi-Batuque in position 6°16'S, 11°14'E.



FPSO Saxi-Batuque

Vessels should send an ETA 72 hours, 48 hours, 24 hours, and 4 hours prior to arrival. Vessels should then contact the terminals when within VHF range. Extensive changes to the ETA should be reported immediately.

The Kizomba C Terminals, which are operated by Exxon Mobil Angola, may be contacted, as follows:

1. Telephone: 870-761117524 (Mondo INMARSAT)
870-761135175 (Saxi INMARSAT)
2. Facsimile: 870-761117526 (Mondo INMARSAT)
870-761135176 (Saxi INMARSAT)
3. E-mail: mmaster.fpsosaxi@sbmoffshore.com
oim.fpsosaxi@singlebuoy.com

An exclusion area of 1,000m exists around each FPSO. Entry into this area requires permission.

A designated waiting area for FPSO Mondo lies centered approximately 11 miles NE of the FPSO. A designated waiting area for FPSO Saxi-Batuque lies centered approximately 10.5 miles NE of the FPSO.

4.61 Lombo East Oil Terminal (6°50'S., 12°22'E.) is situated about 23 miles WNW of Ponta do Quinza Light. It has a depth of 36.5m and can handle vessels up to 175,000 dwt.

It is reported (2005) that this terminal is no longer used and the SBM has been removed.

4.62 Palanca Terminal (6°57'S., 12°24'E.) (World Port Index No. 46547), situated about 22 miles WSW of Ponta do Quinza Light, consists of several production platforms, an SBM (CALM), and a Floating Production Storage and Off-shore (FPSO) facility. The FPSO (Palanca) is moored to an SBM in a depth of 44m. Tankers are moored bow to bow with the FPSO and vessels up to 150,000 dwt can be handled. The SBM (CALM) is moored in a depth of 42m. It is used as an auxiliary loading buoy and can handle vessels up to 300,000 dwt.

A designated anchorage area, in depths of 40 to 43m and a bottom of sand with good holding ground, lies about 5 miles NW of the SBM. The swells in the vicinity of the terminal are predominantly from the SSW, with heights of 1.5 to 2.5m. They are strongest from May to October and reach a maximum 2 to 3 days before spring tides.

Pilotage is compulsory. Pilots, who act as mooring masters,

can be contacted on VHF channel 16 or 67 and board about 2 miles N of the SBM. Berthing is carried out only during daylight hours but vessels may depart at any time.

Vessels should send an ETA 72 hours, 48 hours, and 24 hours in advance and then contact the terminal when within VHF range.

The Palanca Terminal, which is operated by Sonangol P&P, may be contacted, as follows:

1. Telephone: 870-322688191 (INMARSAT B)
2. Facsimile: 581-322688190 (INMARSAT B)
3. E-mail: exp-ops-term@sonangolpp.com

A restricted area surrounds the terminal and may best be seen on the chart. Vessels are prohibited from entering this area without prior permission from the terminal.

4.63 Canuku Terminal (7°06'S., 12°28'E.), situated 22 miles SW of Ponta do Quinza Light in the vicinity on an oil field, consists of a Floating Production Storage and Off loading (FPSO) facility. The FPSO (Ocean Producer) is moored in a depth of 83m and vessels berth in tandem bow to bow with it. The terminal can handle vessels up to 150,000 dwt. It is reported (2010) that the FPSO has been sold and the terminal is closed.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 16 or 68 and board about 2.5 miles NE of the terminal. Berthing is carried out only during daylight hours but vessels may depart at any time, subject to agreement.

Vessels are requested to report their ETA 48 hours in advance and send a confirmation message 24 hours prior to arrival. Changes to the ETA of more than 2 hours must be reported immediately. Vessels should then contact the terminal when within VHF range.

The Canuku Terminal, which is operated by Sonangol P&P, may be contacted, as follows:

1. Telephone: 1-713-329-4797
2. Facsimile: 1-713-329-4738
3. E-mail: captop@oceanengineering.com

A designated waiting anchorage area lies centered 3 miles NE of the FPSO.

A restricted area, with a radius of 500m, surrounds the FPSO. Vessels are prohibited from entering this area without prior permission from the terminal.

4.64 The Rio Lucunga (6°57'S., 12°48'E.) flows into the sea 4.5 miles SE of Ponta do Quinza Light (see paragraph 4.53). The mouth of this river is indicated by several clumps of trees standing close to the beach. A number of prominent white factory buildings are situated at Mucula, 0.5 mile SE of the mouth.

A bank, with depths of less than 8m, lies about 3 miles offshore, SW of the river mouth. Enseada de Mucula, a slight indentation, lies S of the mouth of the river. Vessels with local knowledge can approach this indentation and obtain anchorage in a depth of 6m off the factory buildings.

The coast extending up to about 7 miles S from the mouth of the Rio Lucunga is bordered by a sandy beach. Between the S end of this beach and the Rio M'bridge, 8 miles S, it consists of low, rocky cliffs which are intersected by ravines. These ravines are of a yellowish color and contrast with the blue tint of

the sea and the green tint of the inland countryside.

The **Rio M'bridge** (Rio Mebridege) (7°12'S., 12°51'E.), which is used only by local craft, can easily be recognized by Ponta Palmas, its N entrance point. This point is wooded and the dark hue of the trees contrasts strongly with the yellowish tint of the cliffs on the S bank of the river. The river mouth is fronted by breakers which extend up to 0.3 mile seaward. The land to the S of the entrance is formed by low cliffs, which are surmounted in a few places by thick clumps of trees. A range of hills stands inland of the river mouth.

Baia de Ambrizete (Baia de N'zeto) (7°14'S., 12°51'E.), a slight indentation, lies between the Rio M'bridge and a bluff, 3.5 miles S. This latter bluff rises in a high and almost sheer cliff which is covered with herbage. From the S, the bluff appears as a projecting point and is very prominent. Within the bluff stands, a range of hills. The S and highest hill of this range has a conspicuous flat top which can be easily recognized from a considerable distance.

N'zeto Light (Ambrizete Light) (7°15'S., 12°51'E.) is shown at an elevation of 34m from a prominent tower, 20m high, standing on the bluff. A disused light structure and a small white dwelling are situated close N and close W, respectively, of the light.

4.65 N'zeto (Ambrizete) (7°14'S., 12°51'E.), a small town, stands at the head of the indentation, 1.5 miles S of the mouth of the Rio M'bridge. It is situated on the rising ground, which stretches toward the bluff, and is fronted by a small breakwater. Two prominent radio masts stand close together in the town.

Depths of less than 5m lie up to about 1 mile offshore between the town and the bluff and vessels should give this area a wide berth.

Anchorage can be taken in a depth of 9m, sand and mud, about 2.5 miles SW of the mouth of the Rio M'bridge, but only vessels with local knowledge should use this roadstead. The bottom changes to rocks and stones to the S of the anchorage and the depths shoal rapidly. A constant swell is experienced at the anchorage and rollers are reported to frequently break in a depth of 9m off the town.

Baia de Juma (7°20'S., 12°54'E.), a slight indentation in the coast, extends SE for 5 miles from the S entrance point of Baia de Ambrizete. The Rio Ambrizete, with a mouth barred by sand, flows into the N part of this indentation, about 3 miles SE of Nzeto. The S part of the indentation is fronted for about 3 miles by a sandy beach. Anchorage, with local knowledge, can be taken in this indentation, but the bottom is very foul and there is a heavy swell.

The coast extending SSE from Baia de Juma is bold and cliffy with occasional sandy coves. The high white cliffs are surmounted by trees.

4.66 Gimboa Terminal (7°33'S., 12°10'E.) consists of the FPSO (Gimboa). Vessels should send an ETA by e-mail 7 days prior to arrival or upon departure of last port. E-mails should also be sent 72 hours, 48 hours, and 24 hours in advance. They should then contact Gimboa Control on VHF channel 12, 3 hours prior to arrival, and once again when the vessel is 10

miles from the terminal. Changes to the ETA of more than 6 hours following the 72-hour or 48-hour notice or changes of more than 1 hour during the last 24 hours should be reported immediately.

The Gimboa Terminal, which is operated by Sonangol P&P, may be contacted, as follows:

1. Telephone: 39-025-2027500
2. E-mail: radio.gimboa@saipem.com

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted on VHF channel 12 or 16 and board approximately 2 miles N of the terminal. Berthing is carried out only during daylight hours but vessels may depart at any time.

A safety zone with a radius of 500m surrounds the FPSO. Vessels are prohibited from entering this area without prior permission from the terminal.

A designated waiting area, with a radius of 2.5 miles, lies centered about 6 miles NE of the FPSO in position (7°28.8'S., 12°14.7'E.).

Vessels should contact Gimboa Control upon clearing the terminal vicinity and again when departing the 10 mile zone.

4.67 Ponta da Musserra (7°36'S., 13°00'E.), located 22 miles SSE of N'zeto (Ambrizete), forms the S entrance point of a small bay. The shores of the bay are low, but high cliffs rise abruptly at the S entrance point and are surmounted by a prominent cross. Several factories are situated at Musserra, near this bay.

The bottom fronting the bay is rocky and foul in places. Vessels without local knowledge should not anchor in depths of less than 16m or less than about 2 miles offshore.

The Ararat Hills rise inland, close S of Ponta da Musserra, and stand parallel to the coast for 5 to 6 miles. They attain heights of up to 200m and are the highest peaks between the Congo River and Luanda. These hills are of basaltic formation, steep, and mostly bare except for a little brushwood. They are brown and arid in appearance and are covered with superb masses of pink-colored granite, which rise in picturesque forms.

A very conspicuous mass of granite surmounts the summit of one of these hills, which rises about 5 miles inland, 28 miles SSE of N'zeto (Ambrizete). This mass is about 18m high and is in the form of a pillar.

The mouth of the Rio Sembo (Rio Quicembo) lies 8.7 miles SSE of Ponta da Musserra. This river is insignificant and, except between January and June, its entrance is obstructed by a barrier of sand. Two villages are situated on the S slope of Ararat Hills. The S village stands abreast a sandy beach, 2 miles NNW of the mouth of the Rio Sembo. It is conspicuous from seaward, as the conical huts are much lighter in color than the dark trees which form the background.

Ponta Two Trees, located 2 miles NNW of the Rio Sembo, is a low, sloping, and grassy point. Two conspicuous isolated palm trees are reported to stand on this point.

The N entrance point of the Rio Sembo is low and wooded. The bluff, which forms the S entrance point, consists of a perpendicular whitish cliff, about 1 mile long. A sandy coast extends from this cliff to the mouth of the Rio Loge, 5 miles SSE. Vessels with local knowledge can obtain good anchorage off the Rio Sembo.



Girassol FPSO

4.68 Girassol Terminal (7°39'S., 11°41'E.) (World Port Index No. 46549) is situated about 80 miles W of Ponta da Musserrais in a depth of 1,360. This terminal consists of a Floating Production Storage and Offloading (FPSO) facility and a SBM moored 1 mile NNE of it. The FPSO (Girassol) is surmounted by a conspicuous flare. Vessels up to 400,000 dwt can moor to the SBM, which is the primary berth. Vessels up to 250,000 dwt can moor in tandem bow-to-bow with the FPSO, which is the secondary berth.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF and board 4 miles N in position 7°35'S., 11°41'E. They utilize a berthing aid with power provided by the export tanker. Berthing is carried out only during daylight hours but vessels may depart at any time.

The Girassol Terminal may be contacted as follows:

1. Telephone: 870-322689862 (INMARSAT B)
870-763239662 (INMARSAT M)
2. Facsimile: 870-762851497
3. E-mail: ep-ao-db17.gir-marine-ballast@total.com

Vessels should send an ETA 7 days, 4 days, 72 hours, 48 hours, 24 hours, and 12 hours in advance. They should then contact the terminal on VHF channel 16, 4 hours prior to arrival.

A designated waiting area, with a radius of 2 miles, lies centered about 4 miles WSW of the FPSO.

A restricted area, with a radius of 7 miles, lies centered on the FPSO. Vessels are prohibited from entering this area without prior permission from the terminal.

4.69 Dalia Terminal (7°41'S., 11°46'E.) is situated about 75 miles W of Ponta da Musserrais and about 5 miles ESE of Girassol Terminal, in a depth of 1,260m. The terminal consists of a Floating Production Storage and Offloading (FPSO) facility and an SBM moored about 1 mile ENE of it. The FPSO (Dalia) is equipped with a racon and surmounted at the bow by a conspicuous flare. Vessels up to 400,000 dwt can moor to the SBM or berth in tandem bow-to-bow with the FPSO.

Pilotage is compulsory. Pilots, who act as mooring masters, can be contacted by VHF and board about 3 miles N of the FPSO. Berthing is carried out only during daylight hours. Vessels should send an ETA 72 hours, 48 hours, and 24 hours in ad-



Dalia FPSO

vance. They should then contact the terminal 4 hours prior to arrival on VHF channels 16 and 72.

The Dalia Terminal can be contacted, as follows:

1. Telephone: 870-322740462 (INMARSAT B)
870-322740466 (INMARSAT B)
870-764568924 (INMARSAT M)
2. Facsimile: 870-322740463 (INMARSAT B)
870-322740467 (INMARSAT B)
3. Telex: 581-435169110 (INMARSAT C)
581-435169111 (INMARSAT C)

A designated waiting area, with a radius of 2 miles and a depth of 1,100m, lies centered about 6 miles N of the FPSO. Vessels should approach this area from the N.

The FPSO is located within the restricted area, with a radius of 10 miles, which is centered on Girassol Terminal. Vessels are prohibited from entering this area without prior permission.

4.70 Ponta do Ambriz (7°50'S., 13°06'E.), located 15 miles SSE of Ponta da Musserra, is formed by a high, white, and perpendicular cliff. This point, which is fringed by foul ground, assumes the appearance of being detached, especially in misty weather, as the land extending to the N of it is low.

Ambriz Light is shown at an elevation of 33m from a square tower, 14m high, standing 0.3 mile ENE of the point and a disused light structure is situated near it. Two radio masts, about 50m high, stand close SSE of the light.

A narrow and rocky bank, with a least depth of 3m, extends up to about 1 mile NNW of Ponta do Ambriz and is marked by a lighted buoy.

Baia do Ambriz, a slight indentation in the coast, lies between Ponta do Ambriz and Ponta Loge, 3 miles NNW. The latter point is low, sandy, and fringed by a bank on which the sea always breaks. It was reported (1989) that a light was shown from a tank standing on Ponta Loge.

The Rio Loge flows into the head of this indentation, 1.5 miles N of Ponta do Ambriz. The mouth of the river, which is marked by several unusually light-green lofty trees, is blocked by a bar; only small boats can cross it. Within the entrance, there are depths of over 3m and the river is reported to be navigable by small craft almost to its source, about 180 miles upstream. A rock, awash, lies about 0.3 mile off the head of the indentation.

Porto do Ambriz (7°50'S., 13°06'E.) (World Port Index No. 46550) lies at the S end of Baia do Ambriz. This small harbor consists of a basin, which has a dredged depth of 5m and a quay along its W side. It is approached through a channel 0.5 mile long and about 90m wide. This channel, which has a least

depth of 3.3m, is marked by buoys and indicated by a lighted range. The tides rise about 1.7m at springs and 1.4m at neaps. Pilotage is compulsory. Pilots can be contacted on VHF channel 6 or 16 and are available only during daylight hours. Vessels must not enter the approach channel without prior permission.

The harbor is mostly used by fishing boats and vessels supporting the offshore oil and gas installations.

Good anchorage may be found off the harbor in a depth of 10m about 1.2 miles NE of Ponta do Ambriz.

Caution.—Passage through the approach channel is reported to be difficult when the swell, which usually runs at right angles to the fairway, is accompanied by a cross wind.

4.71 Enseado do Capulo (7°59'S., 13°11'E.), lying 9.5 miles SSE of Ponta do Ambriz, is 1.5 miles wide between its rocky entrance points. The village of Capulo stands at the head of this bay near the Rio Uezo, a small stream. Monte Bamba, with a rounded summit and sloping sides, rises 2 miles inland, E of the bay. This hill appears detached from the others in the vicinity when seen from the W.

The coast in this vicinity presents an arid appearance, with an occasional clump of trees. A rocky shoal, with a least depth of 7m, lies about 0.5 mile off the N entrance point of the bay. A rocky bank, with depths of less than 11m, extends up to about 0.5 mile WNW from the S entrance point. Vessels with local knowledge can anchor in a depth of 11m, sand and shells, about 0.7 mile NNW of the S entrance point.

The coast between Enseada do Capulo and Enseada do Mussulo, 16 miles SSE, consists of steep white cliffs and is bordered by a reef which extends up to about 1 mile offshore. The Rio Onzo flows into Enseado do Mussulo; its mouth is indicated by a deep fissure in the cliffs which forms a valley filled with a mass of dark verdure. A range of hills, irregular in outline, runs parallel with this stretch of coast, a short distance inland. In addition, the peaks of the Mussulo Hills rise 10 to 11 miles inland and are conspicuous.

The village of Mussulo Grande, with some factories near it, is situated on the shore of Enseada do Mussulo and is visible from seaward. Anchorage can be taken by vessels, with local knowledge, in a depth of 15m within this bay.

The coast extending SSE for 8 miles from Enseada do Mussulo is cliffy. The mouth of the Rio Lifune lies 13 miles SSE of the bay and can be distinguished by masses of lofty trees which line the coast in this vicinity and appear in contrast to the red color of the land.

4.72 Ponta do Dande (8°28'S., 13°21'E.) is located 4 miles SW of Ponta do Catumbo, the S entrance point of the Rio Lifune. This point is formed by the sloping base of some steep cliffs which front a bold headland. These cliffs, which appear vertical from the SW, extend E for 1.5 miles from the point and end in a sheer bluff at the mouth of the Rio Dande.

A light is shown from a prominent square tower standing on Ponta do Dande; a radio mast, 49m high, is situated 1.2 miles E of it.

Baia do Dande lies between Ponta do Catumbo and Ponta do Dande. A rocky shoal, with a least depth of 4m, lies about 1.7 miles NNE of Ponta do Dande. The coastal bank, with depths of less than 5m, extends up to about 1 mile offshore at the head



Ponta do Dande Light

and in the N part of the bay. Anchorage can be taken in a depth of 10m about 0.5 mile N of Ponta do Dande Light.

Baia do Bengo is entered between Ponta Spilimberta, located 7.2 miles SSE of Ponta do Dande, and Ponta das Lagostas, 11 miles SSW. The coast between Ponta do Dande and Ponta Spilimberta consists of high, red and white cliffs. The town and fort of Cacuaco are situated on the S shore of the bay. They stand at the termination of some red and white cliffs, which contrast with the low land at the head of the bay.

Ponta das Lagostas (Morro das Lagostas) (8°45'S., 13°18'E.) is formed by a perpendicular cliff of yellowish tint which is surmounted by trees. A light is shown from a tower, 14m high, standing on this point but it is reported to be partly hidden by trees. A prominent chimney is situated 1 mile ESE of the light.

A T-shaped jetty is located about 0.8 mile ESE of Ponta das Lagostas.

Caution.—The navigation light shown from Ponta das Lagostas has been reported to be difficult to distinguish from other lights in the vicinity.

Luanda (8°48'S., 13°15'E.)

World Port Index No. 46560

4.73 The port of Luanda, one of the finest harbors on the W coast of Africa, is entered between Ponta das Lagostas and Ponta da Ilha, 2.4 miles WSW. The latter point is the NE extremity of Ilha de Luanda (Ilha do Cabo), a low and narrow island which shelters the seaward side of the port. This island, which is about 3.5 miles long, is connected to the mainland by a causeway at its SW end.

Luanda, the capital of Angola, stands along the S part of the harbor and extends toward the interior on the adjacent plateau.

Winds—Weather.—Winds from the WNW, WSW, and SE usually predominate. Winds occasionally blow from the N, but very rarely from the NE quadrant. During the day, the wind generally effects a complete rotation of direction. In the morning, the wind is weak and usually from the S and E quadrants.

In the afternoon, it then blows from the N and W, becoming fresh. At nightfall, the wind weakens and blows from the W and S quadrants.

During the period between December and May, tropical disturbances of short duration may occur, although rarely. These disturbances may consist of gusts from NNE and ESE, with velocities of up to about 50 knots.

Precipitation occurs from September to May in the form of showers. March and April are the hottest months and also the months with the greatest rainfall. These showers are generally preceded by gusty winds from the E. Thunderstorms occur frequently in March and April, but are not very frequent during the remaining months. During the dry season, no rain occurs, but morning fog may appear. The fog forms particularly during June, July, and August, but rarely causes any difficulty.

Tides—Currents.—The tide rises about 1.8m at springs and 1.4m at neaps.

In the vicinity of Luanda, the current has been reported to set E, or directly onto the coast, at a rate of 0.7 knot. Although this current is not constant, it is by no means infrequent.

Off Luanda, the characteristic West African swell is felt throughout the year, but it is usually strongest from April to September. The interior of the harbor is well-protected and always calm.

Depths—Limitations.—A shoal bank, with depths of less than 10m, extends up to about 0.3 mile seaward from the NW side of Ilha de Luanda. This bank, which is steep-to at its NE end, also extends up to about 0.6 mile NE from the NE extremity of the island. The harbor entrance has depths of 15 to 30m.

The principal commercial pier and wharf are situated in the SW part of the harbor. They provide 2,020m of main quayage, with depths of 3 to 11m alongside, which affords ten berths for ocean-going vessels. The port has facilities for general cargo, ro-ro, bulk, tanker, and container vessels. Cargo vessels up to 305m in length and 10.4m draft can be accommodated.

An offshore oil and gas terminal berth, consisting of several mooring buoys and a floating platform, is situated in the E part of the harbor. A submarine pipeline extends ESE and connects this berth to the shore. Tankers up to 230m in length and 13m draft can be handled.

A naval installation is situated at the SW side of the harbor. It is fronted by a wharf, 295m long, which has a depth of 12m alongside.

A cement loading facility is situated outside the bay, about 0.8 mile ESE of Ponta das Lagostas. It consists of a T-shaped jetty, with dolphins, which extends 0.5 mile NNW from the shore. The jetty head is 210m long and has a depth of 14.3m alongside.

It is reported (2013) that reclamation works are under way close SW of the Commercial Quay.

Aspect.—A light is shown from a prominent tower, 11m high, standing at the NE end of Ilha de Luanda (Ilha do Cabo). Lighted Buoy No. 1 is moored about 0.9 mile NE of this light.

An aeronautical radiobeacon is situated 2 miles S of Ponta das Lagostas.

A prominent oil refinery and a cement factory are situated 1.3 miles SSW and 1 mile ESE, respectively, of Ponta das Lagostas. Chestnut-yellow smoke can normally be sighted from seaward rising in the vicinity of the cement factory.

Fortaleza de Sao Miguel stands in the SW part of the harbor.



Ilha de Luanda (Ilha do Cabo) Light

This fort is conspicuous, yellow in color, and floodlit at night. An observatory, with a square tower, and a yellow-colored conspicuous hospital stand about 0.4 mile S of the fort. An airport is situated 2.7 miles SSE of the fort.

A bank building, one of the highest buildings of the city, stands 0.6 mile ESE of the fort. Its sign, which is illuminated until about 0100, forms an excellent landmark and has been reported to be visible from more than 25 miles.

Fortaleza de Sao Pedro do Barra stands on the E side of the harbor, 1.4 miles SW of Ponta das Lagostas. This fort is low, formed by a cutting in the solid cliffs, and has a double tier of gun ports. A prominent monument is situated near the shore, 0.6 mile NNE of the fort. A prominent chimney stands 0.8 mile S of the fort.

Several stranded wrecks lie along the shores of the harbor and may best be seen on the chart.

Pilotage.—Pilotage is compulsory for vessels over 300 gt. Pilots can be contacted on VHF channel 8 and generally board about 1 mile S of Lighted Buoy No. 1. Vessels should send an ETA 72 hours, 48 hours, 24 hours, 12 hours, and 6 hours in advance. Generally, vessels are berthed during daylight hours only.

Contact Information.—Luanda Port Control can be contacted, as follows:

1. Telephone: 244-222-33629
2. E-mail: portoluanda@snet.co.ao

The Petrangol Refinery can be contacted by telephone (244-222-83390).

Anchorage.—A designated anchorage area for waiting vessels, about 1 mile square, has been established. It has depths of 24 to 31m and lies centered 1.3 miles NNW of Ponta das Lagostas.

Caution.—A large number of vessels may normally be anchored within the port limits.

Due to some unknown cause, large quantities of dead fish are occasionally washed up on the shoal bank which extends NE from the NE end of Ilha de Luanda.

With high SW winds, the sea breaks over part of Ilha de Luanda and drives quantities of sand into the harbor. In addition, quantities of soil are washed down from the heights during the rainy season. Both of these actions have resulted in the SW part of the harbor becoming very shallow and drying in places at

LW.

Prohibited anchorage areas, which may best be seen on the chart, lie in the SW and NE parts of the harbor.

A measured distance (1,833.2m), which may best be seen on the chart, lies on the seaward side of the N part of Ilha de Luanda and is marked by beacons.

Oil and gas exploration is being carried out along this coast and vessels are warned that numerous wellheads, submerged pipelines, drilling rigs, and platforms may be encountered in the approaches to the port. Vessels should exercise care when navigating in this vicinity as many of the associated structures and installations are often moved and are not charted.

A dangerous wreck lies 0.3 miles ENE from the commercial quay.

Luanda to Lobito

4.74 The coast between Ilha de Luanda and Ponta das Palmeirinhas, 22 miles SW, consists of a low, sandy spit which encloses an extensive, but mostly shallow lagoon.

Ponta do Mussulo (8°52'S., 13°09'E.), located about 5 miles SW of Luanda, is the S entrance point of Barra da Corimba, the mouth of the lagoon. A group of prominent radio masts is situated 3 miles SE of this point. Morro da Cruz rises on the mainland, 6.5 miles SSW of the point. This hill is 54m high and prominent.

Ponta das Palmeirinhas (9°06'S., 13°00'E.) derives its name from the clump of palm trees standing on it. A light is shown at an elevation of 40m from a prominent square tower, 38m high, standing 1.7 miles N of this point.



Ponta das Palmeirinhas Light

Enseada do Buraco is entered 4.5 miles NNE of Ponta das Palmeirinhas. This small bay provides anchorage in a depth of 11m about 0.6 mile offshore.

The **Rio Cuanza** (9°21'S., 13°09'E.) flows into the sea 16 miles SE of Ponta das Palmeirinhas. This shallow river is of considerable importance and its muddy waters discolor the sea for up to about 10 miles offshore. The river mouth lies close N of a long and sandy spit and is fronted by a bar which is continually changing. The sea frequently breaks right across the bar and it is extremely dangerous for boats. However, small craft, with drafts of 2.4 to 2.7m, can cross the bar at HW and ascend

the river for many miles. A smooth sea and local knowledge are necessary.

A conspicuous monument stands on the coast, 2.5 miles NNW of the mouth of the Rio Cuanza. Anchorage can be taken off the river entrance by vessels with local knowledge. Vessels are advised to anchor, in depths of 22 to 27m, about 9 miles offshore, or, in a depth of 16m, about 3 miles offshore.

The land extending inland for 40 miles between the Rio Cuanza and the Rio Longa, 58 miles SSE, is a national park. It is reserved for wild animals and has few inhabitants.

The coast between the Rio Cuanza and Cabo Ledo, 20 miles S, is bordered by red cliffs of moderate height.

Caution.—Oil and gas exploration is being carried out along this stretch of the coast and vessels are warned that numerous well heads, submerged pipelines, drilling rigs, and platforms may be encountered up to about 20 miles offshore. Vessels should exercise care when navigating in this vicinity as many of the associated structures and installations are often moved and are not charted.

4.75 Baia do Suto (Enseada de Suto) (9°38'S., 13°13'E.) is entered between Ponta do Sangano and Cabo Ledo, 7 miles S. A rock, awash, lies about 1.2 miles WNW of Ponta do Sangano and Baixo do Suto, with a least depth of 5.3m, lies about 2.7 miles NNE of Cabo Ledo.

A small and sandy cove lies in the S part of the bay and the Rio Suto flows into its head. This river has a good flow in the rainy season, but its mouth is often choked with sand. Vessels with local knowledge may obtain anchorage, sheltered from SW winds, in a depth of 10m about 0.9 mile NE of Cabo Ledo. However, a strong swell sets around the cape at times and causes vessels to roll heavily.

Cabo Ledo (9°41'S., 13°12'E.), a high and black promontory, is rugged and covered with trees. This cape is easily recognized from seaward as it is a salient point and presents the appearance of a truncated cone. A light is shown at an elevation of 102m from a stone tower with dwellings, 12m high, standing on the summit of the cape. A prominent radio tower, 50m high, stands 7 miles ENE of the light.



Cabo Ledo Light

The coast between Cabo Ledo and Cabo de Sao Braz, 19 miles SSE, is bordered by remarkable white cliffs. The latter cape is steep-to and Enseada Sao Braz (Baia de Sao Braz) lies close N of it. A sandy spit encloses a salt water lagoon in the S part of this bay and a large swamp lies at the foot of the hills

rising close S of the bay. Anchorage can be taken by vessels with local knowledge, in depths of 6 to 14m, within the bay.

The coast between Cabo de Sao Braz and Ponta do Longa, 15 miles SE, is backed by a high tableland. The latter point is formed by a bluff headland which is covered with brushwood.

Cabo das Tres Pontas (10°23'S., 13°32'E.), a projecting headland, is located 13.5 miles SSE of Ponta do Longa. A light is shown at an elevation of 51m from a tower with a dwelling, 14m high, standing on this cape.

The Rio Longa empties into the head of the bay which extends between Ponta do Longa and the cape. Except at the mouth of the river, which is thickly wooded, the shores of the bay consist of high, unbroken cliffs.

4.76 Ponta do Morro (10°45'S., 13°43'E.), located 25 miles SSE of Cabo das Tres Pontas, is very high, with perpendicular cliffs on its seaward side. This point forms one of the most remarkable headlands along this part of the coast and its summit is covered with tall cactus trees. Porto Amboim Light is shown from a square tower with a dwelling, 12m high, standing on this point.

Morro Cambiri, a headland, is located 2.3 miles NE of Ponta do Morro. It is 65m high and marked by a light shown from a hut. A prominent monument stands on the coast, 0.3 mile NNE of the headland. An airfield is located 1 mile NE of the headland and an aeronautical radiobeacon is situated at a mast standing in its vicinity.

Porto Amboim (Benguela Velha) (10°44'S., 13°45'E.) (World Port Index No. 46570), a small port, lies close NE of Morro Cambiri. Vessels anchor and work cargo from lighters in the roadstead. A jetty, 120m long, fronts the town and has a depth of 2m alongside.

Anchorage can be taken in convenient depths, but the roadstead is somewhat exposed to the SW swell. Good anchorage can be taken in a depth of 18m about 0.3 mile NNW of the light on Morro Cambiri. Good anchorage can also be taken in a depth of 22m, mud, WNW of Morro Cambiri. Local knowledge is advised.

Caution.—A wreck, with a least depth of 3m, lies about 0.4 mile WSW of Morro Cambiri.

Several piers, which carry suction pipes, extend seaward from the shore between 0.5 mile and 2 miles NE of Morro Cambiri. The pipes convey fish from vessels moored at the pier heads to several fishmeal factories situated on the shore.

4.77 The Rio Cuvo (10°52'S., 13°48'E.) flows into the sea through a low, wooded plain, 8 miles SE of Ponta do Morro. The cliffy nature of the coast along this stretch disappears in the vicinity of the river mouth. However, the cliffs reappear to the S of the river entrance and continue, almost without interruption, for 90 miles to Porto do Lobito. Several yellow patches, the result of landslides, can be seen in these cliffs.

The summits of several high mountains, which rise inland, may be observed during clear weather, especially in December, January, and February.

Novo Redondo (Gunza-Kabolo) (Sumbe) (11°12'S., 13°50'E.) (World Port Index No. 46580), a small anchorage port, lies 27 miles SSE of Ponta do Morro. The town is partially obscured by heights which extend from the beach and on which two conspicuous water tanks stand. A light is shown

from a tower, 7m high, standing near the ruins of a structure.



Sumbe (Novo Redondo) Light

An airfield lies 2 miles NNE of the light and an aeronautical radiobeacon is situated in its vicinity. Two radio masts stand 0.5 mile SSE of the fort.

The Rio Gunza empties into the sea close N of the town. For 5 or 6 months of the year, this river is absorbed by the porous sand through which it flows.

A pier, used by lighters, fronts the shore near the light. Vessels anchor and work cargo in the roadstead. Depths of less than 5m extend up to about 1 mile offshore and Baixo do Inconcon, with a least depth of 0.6m, lies about 0.2 mile offshore, between 0.5 and 0.9 mile SSW of the light. Anchorage can be taken, in depths of 7 to 13m, sand, about 1.8 miles W of the fort, but this roadstead is exposed to a predominant SW swell.

4.78 Enseada do Quicombo (11°18'S., 13°49'E.), into which the Rio Cubai flows, lies 7.5 miles S of Novo Redondo. The small town of Quicombo, which stands along the S part of the bay, may be recognized from the N and W by a remarkable zigzag road. This conspicuous road ascends from the back of the town and leads over the mountains behind it.

The S entrance point of the bay is formed by a red bluff. Baixo de Salvador Correia, a rocky shoal, extends up to about 0.7 mile NW of the point. This shoal has a least depth of 3.8m and the sea frequently breaks on it.

The town is fronted by a small wharf and anchorage can be taken in a depth of 9m, sand and mud, about 1 mile NW of it. The bay affords good anchorage, except during the time of the heaviest rollers (December to August).

Ponta do Quicombo (Ponta Vermelha) (11°22'S., 13°48'E.), located 2.5 miles SSW of the S entrance point of the bay, may be recognized by patches of red marking its SW face. A light is shown from a square tower, 14m high, standing on this point.

Caution.—An isolated shoal, with a depth of 18m, is reported (1984) to lie about 17.5 miles W of Ponta do Quicombo Light.

4.79 Cabeça da Baleia (11°35'S., 13°46'E.), located 15.5 miles S of Enseada do Quicombo, is a dark-colored point which projects about 1 mile from the coast. It may be identified by a tableland which rises near the beach, 2 miles to the N.

The coast between Cabeça da Baleia and the mouth of the Rio Balombo, 23 miles S, consists of high and perpendicular chalky cliffs, which may be seen from a considerable distance to seaward in the rays of the afternoon sun.

Baía dos Pombos, lying close S of Cabeça da Baleia, is a slight indentation in the coast. It has a fine sandy beach and terminates to the S in a rocky point. This indentation is about 5 miles wide and the sea breaks with considerable violence along its shores.

The mouth of the Rio Eval (Rio Tapado) lies 12 miles S of Cabeça da Baleia and may be identified by some vegetation rising in a somewhat steep ravine. Anchorage can be taken by vessels with local knowledge, in a depth of 15m, about 1 mile W of the river mouth.

Egito Praia (11°58'S., 13°46'E.) stands at the mouth of the Rio Balombo, 11 miles SSW of the mouth of the Rio Eval. This small town may be identified by a large white house, which stands half way up the cliff of a deep gorge. In addition, a conspicuous cliff, in the shape of a wedge, rises close S of the river entrance. Several houses are situated close to the beach at the bottom of the gorge and some factories stand in the town. Good anchorage can be taken by vessels with local knowledge, in a depth of 12m, about 1.5 miles offshore.

Ponta do Egito (12°00'S., 13°43'E.) is located 3 miles SW of Egito Praia. A ruined light tower, largely obscured by vegetation stands on this point.

Enseada do Binge, an indentation in the coast, lies between a point, located 5 miles SSW of Ponta do Egito, and Ponta do Binge, 5 miles SSW. A large village, fronted by a sandy beach, is situated in the middle of this indentation. Landing can be effected along the shore of the indentation by boats, even though the sea breaks on the beach with considerable force.

Caution.—In some places along this stretch of coast, depths of less than 15m have been found lying up to 3 miles offshore.

Lobito (12°20'S., 13°34'E.)

World Port Index No. 46590

4.80 Lobito, which resembles by its configuration the port of Luanda, is an excellent and secure natural harbor. The bay is sheltered on its NW side by a narrow and sandy spit which extends parallel to the shore. The port, having been developed since the end of the civil war, is also the terminus of the reconstructed Benguela railway, which connects with the Democratic Republic of the Congo (formerly Zaire) and Zambia.

Winds—Weather.—Throughout the year, sea breezes predominate during the afternoon and vary between SW and NW. At other hours of the day, the winds are variable and it is generally calm at night. Precipitation, usually in the form of showers, occurs from November to April, with the months of March and April having the most rainfall. Precipitation is weak from November to January and there is practically no rain from May to October. Thunderstorms are rare and fog is infrequent.

Tides—Currents.—The tides rise about 1.7m at springs and 1.3m at neaps.

The tidal currents in the vicinity of the harbor are negligible. A swell from the WSW predominates outside the port, but the harbor is always calm.

Depths—Limitations.—The harbor extends along the entire enclosed bay. Anchorage berths are located at the E side and

the commercial quays are situated in the SW part. The main commercial facilities include Quay No. 1, which extends along the SE side of the sandy spit and Quay No. 2, which extends along the head of the harbor.

A new terminal is nearing completion, located 1.3 miles S of the harbor entrance.

Quay No. 1 is 570m long and has a depth of 10.4m alongside. Quay No. 2 is 552m long and has depths of 10.3 to 10.6m alongside.

There are facilities for general cargo, bulk, tanker, passenger, and container vessels. Vessels up to 275m in length and 10.3m draft can be accommodated.

It is reported (2012) that extensive new and rehabilitative works are nearing completion in the port.



Lobito Harbor



Ponta da Restinga Light

Aspect.—The harbor bay is sheltered on its NW side by a narrow and sandy spit which extends NE for about 3 miles to Ponta da Restinga, the NE extremity. Numerous bungalows and buildings are situated along this spit. The seaward side of the spit is protected by a number of groynes.

A light is shown from a framework tower, 11m high, standing on Ponta da Restinga and a prominent radio mast is situated 1 mile SW of it. The government residence, with a large conspicuous tower, and a conspicuous church tower are situated 1 mile SW of the radio mast.

Lighted buoys, which mark the entrance to the fairway, are moored E of Ponta da Restinga.



Lobito Harbor (South)



Ponta da Restinga

Lobito Light ($12^{\circ}19'S.$, $13^{\circ}34'E.$), the main harbor light, is shown at an elevation of 106m from a prominent tower with a dwelling, 15m high, standing on the top of the mainland cliffs, 0.7 mile E of Ponta da Restinga.



Lobito Light

A cement factory, with a prominent chimney, is situated 1.5 miles SW of the light and a radio tower stands 0.4 mile S of it. It has been reported that the yellowish-brown smoke rising from this chimney can be seen from a considerable distance.

Several prominent oil tanks stand on a small area of reclaimed land lying 0.4 mile SW of the cement factory.

Several conspicuous port installations, including silos, stand in the SW part of the harbor. The head of the harbor is occupied by an extensive bank which dries at LW and gives off an offensive odor.

Pilotage.—Pilotage is compulsory within the harbor entrance and is only available during daylight hours. Vessels should send an ETA by radio 24 hours before arrival on weekdays and 48 hours before arrival on weekends. The port can usually be contacted on VHF channel 9 or 16 during daylight hours. Pilots usually board inside the harbor, between Lighted Buoy No. 4 and Lighted Buoy No. 6. Pilots can board outside the harbor on request with prior notice.

Regulations.—The maximum speed permitted in the harbor is 8 knots.

Contact Information.—The port of Lobito may be contacted, as follows:

1. Telephone: 244-272-23439
244-272-23058
2. Facsimile: 244-272-22719
3. E-mail: dop@eplobito.com

Anchorage.—The harbor provides sheltered and calm anchorage with good holding ground. The designated anchorage area, which may best be seen on the chart, lies in the middle of the harbor. It has depths of 14 to 31m and is marked by buoys.

Caution.—The sand spit at the NW side of the harbor is reported to be extending NE at a rate of about 30m a year. It was reported (1988) that shoaling extended up to about 200m ESE from Ponta da Restinga and vessels should give this point a wide berth.

Anchorage is prohibited within the harbor between the N side of the designated anchorage area and the sandy spit in order to provide free passage for vessels proceeding to the quays.

Several wrecks lie within the harbor and may best be seen on the chart.

Numerous fishing vessels may be encountered (moored) in the N part of the designated anchorage area.

A measured distance (1 mile), which may best be seen on the chart, lies on the seaward side of the N part of the sandy spit, and is marked by beacons.

The buoys marking the seaward entrance of the harbor fairway are often moved and should not be relied upon.

Lobito to Namibe (Mocamedes)

4.81 The coast between Ponta da Restinga and Baía de Benguela, 18 miles SSW, is low and wooded with few landmarks.

The **Rio Catumbela** (12°27'S., 13°29'E.) flows into the sea 10 miles SW of Ponta da Restinga. Its mouth may be identified from the W by a remarkable niche in the hills, located 4 miles inland, through which the river flows. The town of Catumbela stands close W of this niche. Two hills, each 150m high, rise on the S bank of the river, about 0.3 mile E of the town and 3.5 miles inland. They are both surmounted by old forts, which consist of a long building, with a red roof, surrounded by a stone wall. When approaching the river, these forts are prominent, but they would probably be mistaken for ordinary dwellings from farther seaward.

Several factories, with tall chimneys, are situated on the N bank of the river, 0.5 mile W of the town, but they are mostly

hidden by vegetation.

The river overflows its banks during the rainy season and inundates a large area, but it is no more than a large stream in the dry season.

Baía de Benguela (12°35'S., 13°24'E.) lies between the mouth of the Rio Cavaco, located 8 miles SW of the Rio Catumbela, and Ponta do Sombreiro, 6.3 miles WSW. The shore of this bay is chiefly composed of a sandy beach. The city of Sao Felipe de Benguela stands in the NE part of the bay on a marshy plain which is almost inundated during the rainy season (March and April). The land situated about 7 miles E of the city attains an elevation of 450m.

A lighted range is shown from the vicinity of the city and indicates the anchorage. The front light is shown from a tower, 7m high, standing in front of an old fort; the rear light is shown from the N tower, 12m high, of a church. Vessels can anchor in a depth of 13m, mud and sand, on this range and about 1 mile offshore. Local knowledge is advised as the bay is reported to be obstructed by numerous fish traps. The roadstead is only used by fishing craft and local coasters, as ocean-going vessels now proceed to Lobito.

Ponta do Sombreiro (12°35'S., 13°18'E.) is the N extremity of a promontory. Morro do Sombreiro, a very conspicuous hill, rises close within this point. It is 124m high and has a hat-like appearance. A light is shown from a column, 7m high, standing on this hill.

Caution.—Between Ponta do Sombreiro and Ponta do Porto (15°47'S., 11°51'E.), 225 miles SSW, great depths are found close to the coast and anchorage is rendered almost impossible, except within a few sheltered bays. Vessels are advised to maintain a good distance from the shore, as the swell sets toward the coast.

Caution is necessary along this stretch of coast in order to avoid overestimating the distance from the land due to the light sandy nature of the low-lying foreshore and the extreme haziness of the atmosphere which generally prevails.

The current along the coast to the NE of Ponta das Salinas sets offshore, but between this point and Baía de Equimina, 23 miles SSW, the current sets toward the land and caution should be exercised.

4.82 The coast between Ponta do Sombreiro and Ponta das Vacas, 5 miles WSW, is cliffy and forms several snug coves where boats and small craft can shelter. A prominent water tower stands 1 mile SW of Ponta das Vacas.

Baía Farta lies between Ponta das Vacas and Ponta de Sao Jose, 1.8 miles NW. This latter point is formed by a rounded, sandy tongue. The head of the bay consists of a sandy beach. The village of Baía Farta stands in the SW corner of the bay, near the mouth of a small stream. It is fronted by several small piers which are used by fishing craft. Vessels with local knowledge can obtain excellent anchorage in a depth of 25m about 0.6 mile S of Ponta de Sao Jose and about 0.3 mile offshore.

The coast between Ponta de Sao Jose and Ponta das Salinas, 22 miles SW, is steep-to and consists of white, sandy beaches. The shore is difficult to distinguish until very close as it projects far from the hills inland.

Baía Tenda Grande, a slight indentation, lies 2 miles NE of Ponta das Salinas. A prominent water tower stands in the settlement, which is situated at the head of this indentation.

4.83 Ponta das Salinas (12°50'S., 12°56'E.) is a low, rounded, and sandy point which extends up to about 6 miles W of the inland hills. A light is shown from a conspicuous square tower, 38m high, standing on this point. A dwelling surmounts a sand dune which rises close E of the light.

Ponta Bongue, located 9 miles SSE of Ponta das Salinas, is fringed with rocks; depths of less than 5m lie up to about 0.4 mile N and NW of it. A prominent stone beacon, 2m high, stands on this point.

Ponta Norte and Ponta Sul, each surmounted by a beacon, are located 200m and 400m, respectively, E of Ponta Bongue.

Enseada do Cuio is entered close E of Ponta Bongue. The village of Cuio, fronted by a small pier, stands at the head of this bay; two range beacons are situated on the SE shore. Anchorage within the bay is considered bad as it is exposed to the SW wind and swell.

The coast between Ponta Bongue and Baía da Equimina, 15 miles SW, is steep-to and high. The land is broken at intervals by ravines which run down to the sea and form small bays. Streams flow through these ravines. Generally, the small bays afford temporary shelter in fine weather, but only for vessels with local knowledge.

Baía da Equimina (13°11'S., 12°47'E.) lies between Ponta dos Papeis and Ponta Equimina, 2.5 miles SW. Ponta dos Papeis is fronted by a conspicuous white cliff, 90m high, which extends 2 miles NE. The remains of a sugar plantation are situated at the center of the bay and several of the partially ruined buildings are prominent. A fish factory, with two conspicuous chimneys, stands in the SW corner of the bay. Small vessels with local knowledge can anchor, in a depth of 25m, about 0.3 mile NE of Ponta Equimina. This anchorage is not recommended as it is exposed to the sea breeze and the bottom shoals rapidly.

4.84 Ponta dos Frades (13°13'S., 12°43'E.) is located 6.2 miles SW of Ponta dos Papeis. A light is shown from a tower with dwellings, 9m high, standing 0.4 mile SSE of this point.

Rochas dos Frades, consisting of three rocks, lies on a rocky shelf which extends up to about 0.2 mile NW of Ponta dos Frades. These rocks are 4m high and steep-to.

Baía dos Elefantes (13°13'S., 12°44'E.) is entered between Ponta dos Frades and Ponta do Leste, 2.5 miles ENE. The bay provides the best anchorage along this part of the coast, as it is sheltered from the prevailing winds and from the rollers, which occasionally set in. It is reported that sharks often frequent this bay.

The current off the bay generally sets NNW, but occasionally it sets E and attains a rate of 1.5 knots.

The buildings of an abandoned whaling station, a few huts, and an observatory are situated in the SW corner of the bay. A conspicuous tableland, 233m high, rises near the SW corner of the bay. The names of many British naval vessels, outlined in stone and whitewashed, are situated near the summit on the E side of the tableland and are visible from a considerable distance to seaward. The land rises to a height of 350m close inland of this tableland.

Although the bay is deep, the depths decrease gradually toward the shore. Good anchorage can be taken in a depth of 29m about 0.7 mile NNE of the old whaling station.

4.85 The coast between Ponta dos Frades and Cabo de Santa Maria, 16 miles SW, is backed by granite mountains. The granite is interspersed with patches of alabaster, mica, and quartz, which reflect the rays of the sun like a vast mirror and are visible from a considerable distance.

An indentation, with steep cliffs rising from its shores, lies between Ponta dos Frades and Ponta Choca, 4 miles SW. Baía do Limagem, entered between Ponta Choca and Ponta Limagem, 2.5 miles SSW, is a sandy bay lying at the mouth of a ravine. This bay affords sheltered anchorage to small vessels with local knowledge.

The coast between Ponta Limagem and Ponta Juliana, 3.8 miles SSW, consists of high cliffs which are broken at intervals by ravines. Sandy beaches front the mouths of most of the ravines.

Baía das Tainhas, lying 5 miles SW of Ponta Juliana, has an entrance 0.7 mile wide. It is surrounded by steep cliffs, except for a ravine located at the S end. Good anchorage, sheltered from the prevailing wind and swell, may be taken by large vessels, in a depth of 30m, about 0.3 mile off the sandy beach fronting the head of this bay.

4.86 Cabo de Santa Maria (13°25'S., 12°32'E.), located 16 miles SW of Ponta dos Frades, is of moderate height and is surmounted by a small pillar. This pillar replaces the original one which was placed there by Diego Cam in 1486. A light is shown from a tower with dwellings, 12m high, standing on the cape.

A high and isolated hill, with a flat top, stands 2.5 miles E of the cape and can be seen above it from the S.

Baía de Santa Maria is entered between Cabo de Santa Maria and Arranca Ferro (Ponta Leste), the NW extremity of a promontory, 0.8 mile ENE. Ilheu Liesse (Ilheu dos Passaros), 58m high, lies near the center of the bay. Depths of less than 4m lie between this small island and the head, but elsewhere the bay is deep. Anchorage can be taken, in a depth of 24m, sand and decayed coral, midway between Ilheu Liesse and the W shore of the bay. This anchorage, although sheltered, is only suitable for small vessels.



Cabo de Santa Maria Light

4.87 The coast between Cabo de Santa Maria and Cabo de Santa Marta, 28 miles SSW, consists mostly of granite cliffs which rise steeply from the sea. These cliffs are intersected in a few places by valleys which terminate in broad sandy beaches.

Ilheus do Pina (13°27'S., 12°31'E.), a group of rocks, lies about 2 miles S of Cabo de Santa Maria. The largest rock, which is black and 35m high, lies about 1 mile offshore.

A small islet lies 0.3 mile SW of a point located 4.3 miles S of Cabo de Santa Maria.

The Rio Catara flows into the head of a small bay, 6.5 miles S of Ilheus do Pina. Landing can be effected by surfboats at the S end of this bay. Anchorage can be obtained by vessels with local knowledge, in a depth of 18m, about 450m off this river mouth, but the change from considerable depths to those suitable for anchoring is very sudden.

Enseada do Bonfim (13°49'S., 12°32'E.) is entered 15 miles S of the mouth of the Rio Catara. This bay affords anchorage, in a depth of 29m, about 300m from the shore.

Baia de Santa Marta (13°51'S., 12°30'E.), a large indentation, is entered between Ponta da Bissonga, located 1.5 miles S of Enseada do Bonfim, and Cabo de Santa Marta, 6 miles WSW. Several small bays lie along the shore of this indentation and may be used for shelter by small vessels with local knowledge.

4.88 Cabo de Santa Marta (13°53'S., 12°25'E.) is of moderate elevation and forms a salient feature on this part of the coast. It marks the termination of the high, cliffy coast. A light is shown at an elevation of 48m from a tower with a dwelling, 14m high, standing on this cape.

The mouth of the Rio Carunjamba lies 4.5 miles S of the cape. Ponta do Inamagando, located 7 miles SSW of the river, is the S entrance point of Baia das Matilhas. The Rio Inamagando flows into the head of this bay.

Ponta das Salinas is located 7.8 mile SSW of Ponta do Inamagando and Baia das Salinas is entered close E of it. Anchorage, sheltered from the predominant winds and swell, may be obtained by vessels with local knowledge, in a depth of 16m within this bay.

Ponta Grossa (14°13'S., 12°20'E.), located 2 miles S of Ponta das Salinas, can be identified by the prominent red and yellow composition of the cliffs. A light is shown from a tower, 14m high, standing on this point.

Ponta dos Mocuandos (14°18'S., 12°22'E.), the SW entrance point of Baia Velho, is located 5 miles SSE of Ponta Grossa. The Rio de Sao Nicolau (Rio Bentiaba) discharges into the bay and a reef, with a least depth of 3m, extends up to about 1.5 miles seaward from the S side of its mouth. Temporary anchorage can be obtained by vessels with local knowledge, in a depth of 9m, within this bay, but it is exposed and offers no shelter.

Monte Velho, 229m high, rises on the S side of Baia Velho, 6 miles from the mouth of the Rio de Sao Nicolau. This hill forms a good landmark as it has a truncated shape and is of a darker color than the coast in the vicinity.

Lageas (14°24'S., 12°21'E.), consisting of two rocks, lies about 1 mile offshore, 6 miles S of Ponta dos Mocuandos. The tallest rock is 2.7m high.

4.89 Ponta Piambo (14°41'S., 12°17'E.) is located 19 miles SSW of Lageas. Except for Enseada do Chapeu, which lies 3 miles S of Lageas, the coast is devoid of landmarks between these rocks and the point. A light is shown from a tower, 18m high, standing on Ponta Piambo.

Ponta de Santa Gertrudes, marked by a beacon, is located 9 miles SSW of Ponta Piambo. Baia do Baba lies close E of this point, but provides no shelter. However, anchorage can be obtained, in a depth of 27m, within this bay.

Baia do Mucuio lies 3.5 miles SSW of Ponta de Santa Gertrudes. Vertical cliffs separate this bay from Baia das Pipas, which is entered close E of Ponta do Gigante and 6.8 miles SSW of Ponta de Santa Gertrudes. Good anchorage can be taken by vessels, with local knowledge, in depths of 18 to 24m within Baia das Pipas.

Enseada do Cherungo, lying 4 miles SSW of Ponta do Gigante, has depths of up to 13m lying 0.5 mile offshore. The Rio Giraul flows into the sea 6.8 miles SSW of Ponta do Gigante.

Ponta do Giraul (15°08'S., 12°07'E.), located 11 miles SSW of Ponta do Gigante, lies on the N side of Baia de Namibe. This point is rounded, rocky, and steep-to. A light is shown from a prominent tower with a dwelling, 24m high, standing on this point. It is reported (2004) that the tower is in a dilapidated condition.



Ponta do Giraul Light

Namibe (Mocamedes) (15°12'S., 12°09'E.)

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4.90 Baia de Namibe (Baia de Mocamedes) lies between Ponta do Giraul and Ponta das Barreiras, 4 miles SSW. Namibe, an important fishing and general cargo harbor, is located in the SE corner of the bay. Porto Saco (Porto Salazar), an ore and tanker terminal, is situated in the NE corner of the bay and is a subsidiary of Namibe.

Winds—Weather.—Sea breezes predominate and are weak during the morning, but fresh in the afternoon. During the night, the wind is usually weak or moderate and from between S and SW. During the dry season, especially from June to August, winds from the E sometimes blow. They are hot, dry, and carry sand which causes uncomfortable weather. The winds are strongest in February and March. Throughout the year, the winds rarely exceed a velocity of 10 knots and never attain a velocity of 30 knots. There is little rain and it is limited to showers. Thunderstorms are rare, but may occur during March and April. Fog is frequent from May to August and occurs principally at dawn and in the morning. A mist may sometimes remain throughout the day.

Tides—Currents.—The tides rise about 1.7m at springs and

1.4m at neaps.

The tidal currents are variable and weak, but sometimes attain a rate of 1 knot. Strong SW swells are frequent and can occur during any month of the year. They sometimes cause strong surging at Namibe.

Depths—Limitations.—The entrance and middle part of Baia de Namibe have great depths.

Baixo Amelia, with depths of less than 5m, extends up to about 1.3 miles N from Ponta das Barreiras. It consists of sand, stones, and rock and is steep-to at the N end. This shoal is very dangerous and the sea breaks heavily over it at times.

Baixo do Diabo, with depths of less than 5m, extends up to about 0.5 mile W from the S side of the entrance to the Rio Berio, at the head of the bay.

At Porto Saco, the quay is 535m long and has depths of 11 to 18m alongside. The outer part, intended for bulk ore vessels, is 325m long with depths alongside of more than 16m and can accommodate vessels of up to 300m in length and 250,000 dwt. The inner part, 200m long, with depths alongside of 11m, can handle vessels of up to 150m in length.

At Namibe, the main quay is 875m long. It has 480m of berthing space for ocean-going cargo vessels, with a depth of 10.5m alongside; 130m of berthing space for coasters, with a depth of 6.1m alongside; and 265m of berthing space for fishing vessels, with a depth of 3m alongside.



Namibe Port

Aspect.—The bay is backed by some ranges of hills which appear very white from seaward when the sun is shining on them. From Ponta do Giraul, the N entrance point, cliffs, 15 to 30m high, extend E and NE for about 1.8 miles.

A conspicuous white water tower stands at the head of Porto Saco, 1.5 miles NE of Ponta do Giraul and several oil tanks, also conspicuous, are situated 0.4 mile NE of it.

The E shore of the bay consists of a sandy beach, near the middle of which is the mouth of the Rio Berio. This river is almost absorbed into the ground before reaching the bay.

Ponta das Barreiras, the S entrance point, is low and sandy. Several prominent fishing installations are situated close E of this point.

Ponta do Noronha is located in the S part of the bay, 3 miles



Old Ponta do Noronha Light (Disused)

SSE of Ponta do Giraul. It is faced with a perpendicular sandstone cliff, 38m high. Several conspicuous fish oil tanks and buildings stand on the top of the cliff. A light is shown from a hourglass shaped tower standing on this point, close to the old square structure, and a prominent radio mast stands 1.5 miles SE of it.

The city of Namibe stands in the SE corner of Baia de Namibe and an airport is situated 1 mile SE of it. An aeronautical radiobeacon is reported to be situated in the vicinity of this airport.

Fortaleza de Sao Fernando, marked by a light, is situated 1.2 miles ESE of Ponta do Noronha. It stands near the shore in the middle of the city and is conspicuous. The Governor's Palace, a large pink building, is situated close SW of the fort and a church, with two domes, stands close SW of it.



Fortaleza de Sao Fernando

Two prominent radio masts, 30m high, stand 0.6 mile NE of the fort.

A lighted range, which may best be seen on the chart, leads in a NE direction and indicates the approach to Porto Saco.

Pilotage.—Pilotage is compulsory but is only available until 1900 in the summer and 1800 in winter. Pilots board at the entrance to the bay. Vessels are not berthed after 2000. Vessels may depart at any time, but arrangements must be made in advance.

Regulations.—Vessels proceeding to Porto Saco which are carrying inflammable cargo must send an ETA message, with product details, at least 48 hours in advance via the agent to the Port Captain at Porto Namibe. Messages may be sent directly to the agent by facsimile or through the coastal radio station at Luanda.

Contact Information.—Namibe pilots and port can be contacted, as follows:

1. Telephone: 244-264-66921
244-264-66737
2. Facsimile: 244-264-66050
3. E-mail: porto_09namibe@hotmail.com

Anchorage.—Baía de Namibe provides good anchorage and is sheltered from all winds except from those between N and NW. Good anchorage, out of the swell, may be obtained, in a depth of 13m, mud and sand, in the SE part of the bay, about 0.5 mile NW of Fortaleza de Sao Fernando.

Tankers and bulk ore vessels normally moor off Porto Saco; the anchorages are assigned by the port authorities.

Caution.—A fishing fleet is often encountered off Baixa Amelia at night.

It is reported (2000) that the navigation lights in the vicinity of the bay cannot be relied upon.

It is reported (2013) that the piers and quays in the port are in poor condition.

Namibe (Mocamedes) to Ponta Albina

4.91 Ponta da Anunciacao (15°14'S., 12°03'E.), located 3 miles SW of Ponta das Barreiras, is low, sandy, and indistinctive. A spit, on which the sea breaks heavily at times, extends up to about 0.3 mile N from this point. To the S of the point, the coast becomes cliffy and is backed by hills.

The **Rio dos Flamengos** (15°33'S., 12°01'E.) enters the sea, 19 miles S of Ponta da Anunciacao, from a gorge lying S of Morro Columbi, which is 117m high. A light is shown from a tower with dwellings, 11m high, standing 1 mile SSE of the river mouth. A stranded wreck lies on the foreshore about 8 miles N of the river mouth.

Cabo Negro (15°40'S., 11°56'E.), located 9.5 miles SSW of the mouth of the Rio dos Flamengos, is a remarkable headland. It is formed by a precipitous mass, about 65m high, which rises at the extremity of a low point and resembles an island. The cape has a round and rugged black face, which is encrusted by different colored earths and sands abounding in fossilized shells. The summit of the cape is surmounted by a pillar which is the remains of a marble cross erected there by Diego Cam in 1486.

The Rio Curoca (Rio Coroca) enters the sea 3 miles SSW of Cabo Negro. A bridge spans this river about 1 mile within its mouth.

4.92 Tombua (Porto Alexandre) (15°48'S., 11°50'E.) is entered between Ponta do Pinda, located 2 miles SSW of the Rio Curoca, and Ponta do Porto, 3 miles SW. The latter point lies at the NE extremity of a low, narrow, and sandy peninsula which forms the N and W sides of the harbor. The town stands along the S shore of the bay, which is low and sandy. The harbor is sheltered and frequented by fishing vessels and coasters with local knowledge.

Ponta do Pinda, the N entrance point, is 38m high. It is prominent and projects from the interior like an immense wall.



Ponta Albina Light from NW

Ponta do Porto, the S entrance point, is low. A light is shown from a structure, 8m high, standing on this point. Both the harbor and the town can usually be seen over the peninsula. A small airport is situated 1 mile E of the town.

Banco do Pinda, with a least depth of 8m, lies about 1.2 miles NNE of Ponta do Porto, in the N approach to the harbor. Baixo da Ponta Brava, with depths of less than 10m, extends up to about 1 mile N from the N side of the peninsula.

The town is fronted by a small jetty. Vessels can moor within the bay in depths of 20 to 30m, sand and mud with good holding ground. The best anchorage lies in a depth of 29m, mud, about 0.2 mile off the town.

Regulations.—Vessels may not berth at night after 2000 hours. Vessels may depart at night but arrangements must be made in advance.

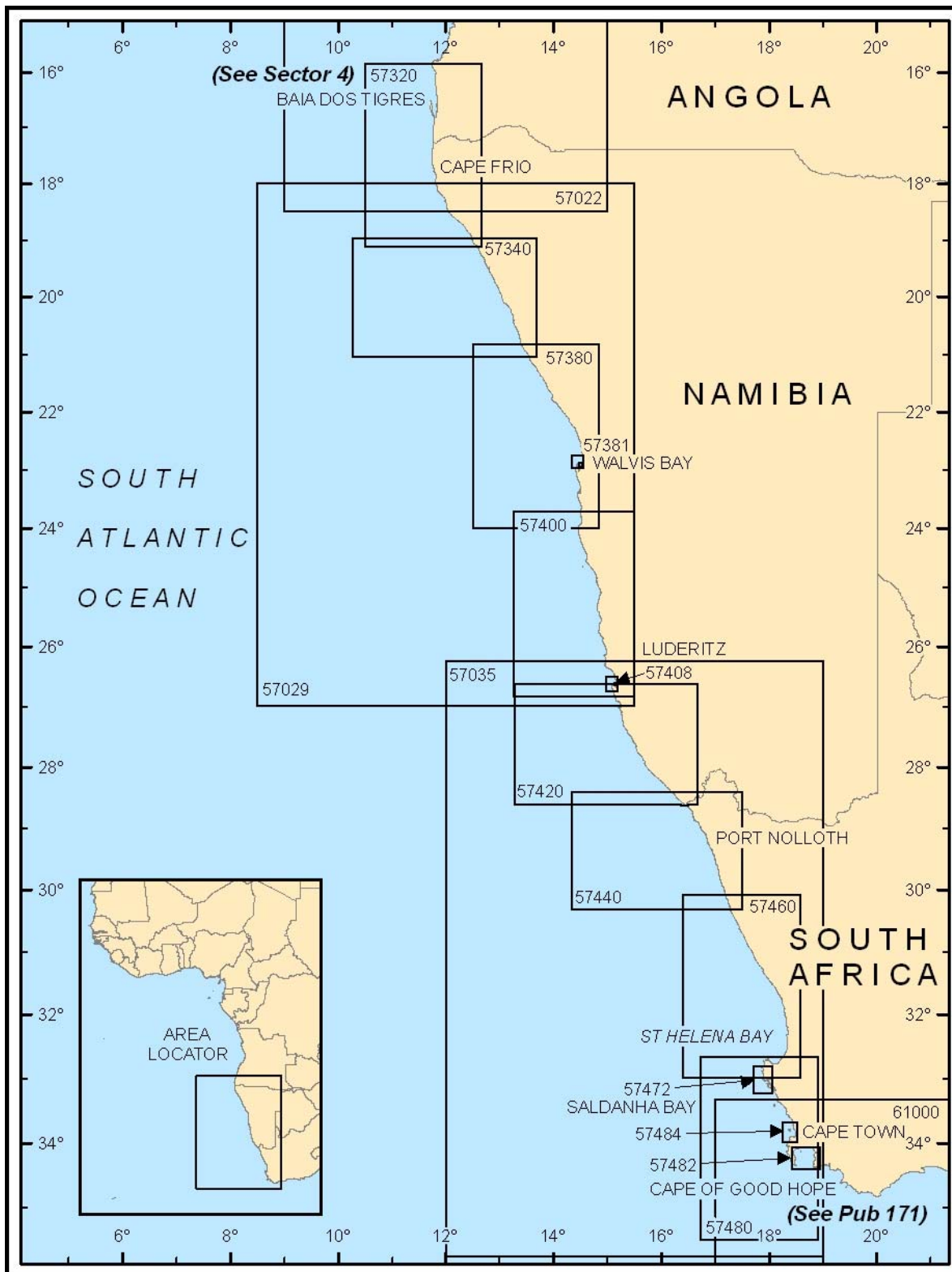
Caution.—It is reported (1998) that all aids to navigation may be missing, unlit, out of position, or otherwise unreliable.

4.93 Banco Grande (15°45'S., 11°48'E.), with depths of less than 12m, extends up to about 3.5 miles N of a point on the shore located 4 miles W of Ponta do Porto.

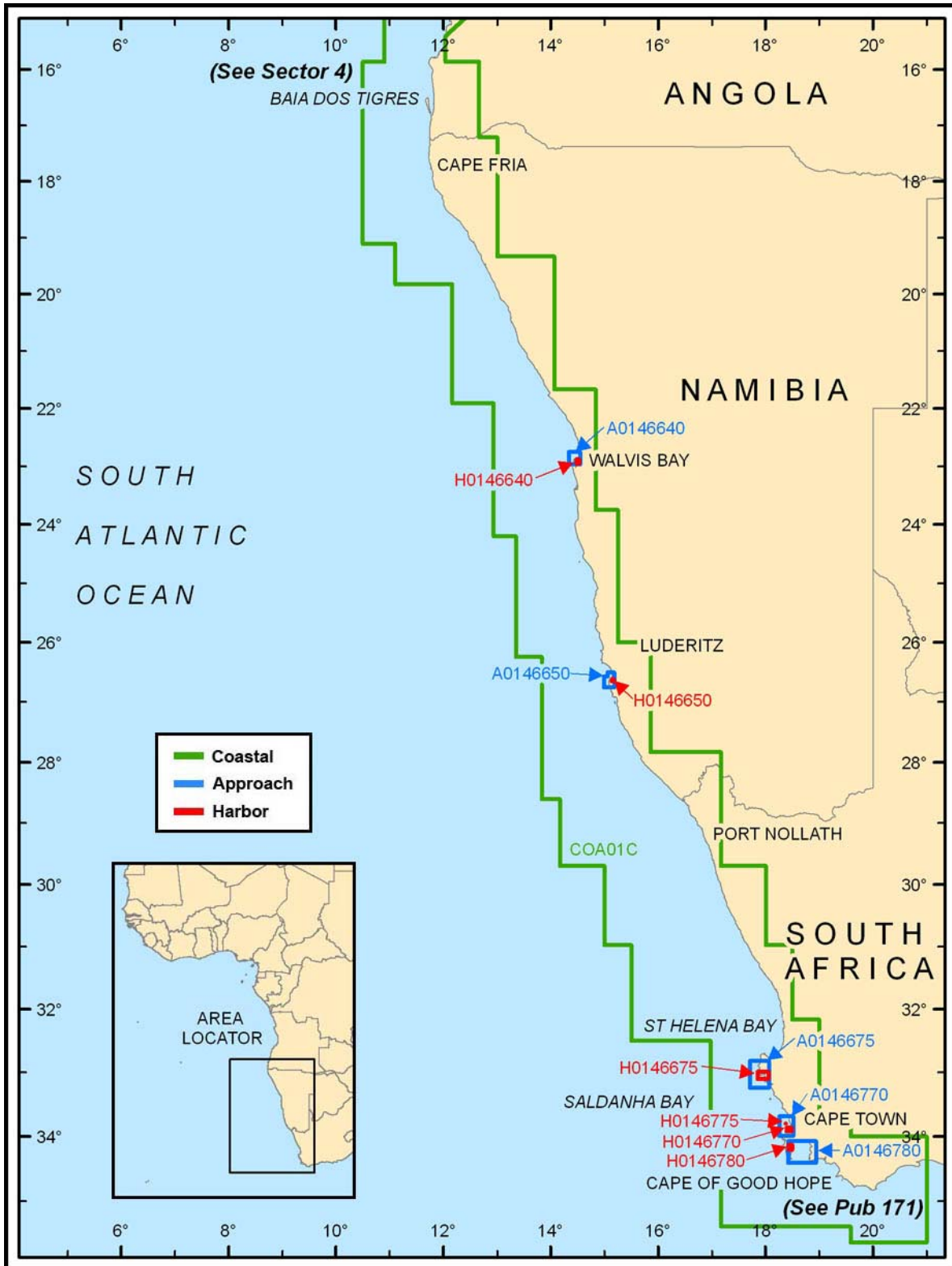
Ponta Albina (15°53'S., 11°44'E.), a low point, is located 9 miles SW of Ponta do Porto. A light is shown from a tower, 38m high, standing on this point and another tower, 7m high, is situated close to it. It is reported (2013) that this second tower has been destroyed.

Caution.—Ponta Albina is reported to be extending to the W. The coast in this vicinity is formed by a low and sandy beach on which there are heavy breakers.

The sea in this area is always in a state of disturbance due to the currents running past this point in a violent and irregular manner, generally in a N or NW direction.



Additional chart coverage may be found in NGA/DLIS Catalog of Maps, Charts, and Related Products (Unlimited Distribution).
SECTOR 5 — CHART INFORMATION



Additional DNC library coverage may be found in NGA DNC 01 (Limited Distribution) disc within the README\GRAPHICS folder.
SECTOR 5 — DNC LIBRARY INFORMATION

SECTOR 5

ANGOLA, NAMIBIA, AND SOUTH AFRICA—PONTA ALBINA TO THE CAPE OF GOOD HOPE

Plan.—This sector describes the SW coast of Africa from Ponta Albina to the Cape of Good Hope, and includes the port of Cape Town. The descriptive sequence is from N to S.

General Remarks

5.1 The coast extending from Cabo Negro (15°40'S., 11°56'E.), previously described in paragraph 4.89, to beyond Ichabo Island (26°17'S., 14°56'E.), N of Luderitz Bay, is a desert region of arid sands. The sandy coastal belt slowly rises to a high plateau about 60 to 100 miles from the coast.

The country S of the Orange River (28°38'S., 16°28'E.) consists of a series of three terraces, divided by mountain ranges varying in elevations from 1,200 to 2,438m, and rises gradually in a series of open sterile plains from the river as far as latitude 32°00'S. It gradually declines from N to S. The passages from one plateau to another are through narrow and difficult gorges.

Caution.—The coast between the Rio Cunene (17°15'S., 11°45'E.) and Walvis Bay (Walvisbaai) (22°57'S., 14°30'E.) is known as the Skeleton Coast, having been the scene of innumerable wrecks, not only from the imperfect nature of the surveys, but because onshore sets by the current are frequently experienced. A further cause is the prevalence of fog, especially during the winter. Vessels are therefore advised not to approach within 10 miles of the coast, and in fog or thick weather to keep seaward of the 200m depth curve as far as Cape Cross (21°46'S., 13°57'E.). If proceeding to Walvis Bay, vessels should remain seaward of the 50m depth curve until Pelican Point Light (22°53'S., 14°26'E.) is observed.

The seamounds lying W of the SW coast of Africa are described in Sector 6.

Baia dos Tigres

5.2 Baia dos Tigres (16°35'S., 11°46'E.), the most spacious bay in Angola, is entered about 38 miles S of Ponta Albina. The bay is bounded on its W side by Ilha da Baia dos Tigres, formerly known as Peninsula dos Tigres, a low and sandy spit, the N point of which is Ponta da Marca (16°31'S., 11°43'E.).

The bay, about 18 miles long in a N-S direction, is about 6 miles wide at its entrance, narrowing to a width of about 2 miles at its head. The S end of the bay is called Saco dos Tigres. In 1963, the sea broke through the peninsula at Saco dos Tigres, separating it from the mainland and transforming it into an island.

Fishing is the primary activity of the island. The small port of Leao (16°36'S., 11°43'E.), on the E side of the island close S of Enseada das Pedras, is used as a home port by local coastal and fishing vessels.

The bay provides good shelter from the prevailing winds (W and SW), in spite of the low height of the peninsula, as the depths and nature of the bottom allow ships to anchor close to the peninsula.

Ponta da Marca (16°31'S., 11°43'E.) forms the N extremity of Ilha dos Tigres. Ponta da Marca Light, equipped with a radar reflector, is shown from a prominent conical tower on columns, 13m high, standing on the point. It is reported (2013) that this light may be extinguished. A small group of buildings is situated in the vicinity of the light.

Winds—Weather.—The prevailing wind is from the SW, with less intensity from June to September. Strong W winds, known as “garroas,” sometimes occur, but are usually of short duration. Strong winds from the E, known as “lestadas,” sometimes occur from May to July. Small swells and seas form with fresh winds, due to the large size of the bay and the low altitude of the peninsula. Rain is practically nil throughout the year. Fog is frequent from May to July, occurring with greater frequency at dawn and in the morning, and sometimes persisting all day.

Depths—Limitations.—Depths of over 50m lie about 0.7 mile from Ilha da Baia dos Tigres's W side, with the 50m depth curve continuing N of the Ponta da Marca Light (16°32'S., 11°43'E.) up the coast. Depths of over 20m lie about 0.2 mile off the NE corner of the of the island, gradually shoaling toward the mainland, where depths of over 10m parallel the coast at a distance of about 1 mile. A partially exposed wreck lies close inland on the NW coast of the island and can be best seen on the chart. Mariners are cautioned against entering the bay through the break between the S end of the island and the peninsula extending N of the mainland due to shoal water and breakers being predominant within the gap.

Aspect.—The land on the E side of the bay is predominately a series of high sand hills which rise abruptly from the coastline and continue far inland with broken and irregular ridges devoid of any vegetation.

The town of Sao Martinho dos Tigres stands on the E side of the peninsula, about 5 miles S of Ponta da Marca. Leao Light is shown from a metal tower, 10m high, standing close E of the town.

A small airport is situated close S of the town. A conspicuous church stands in the town; several prominent fish warehouses can be seen to the N of the town. A number of chimneys and a water tower standing 6 miles and 9.5 miles, respectively, S of Ponta da Marca Light may be seen from seaward.

Pilotage.—Pilots are not available. The port is administrated by the Captain of the Port of Namibe (see paragraph 4.88).

Anchorage.—Anchorage may be obtained in convenient depths, good holding ground of mud, sand, and ground shells, in any part of Baia dos Tigres. When seeking a sheltered anchorage, the direction and strength of the wind are factors to be considered. Therefore, anchorage should be taken on the W side of the bay during W winds and on the E side of the bay during E winds.

Anchorage is recommended in the following positions:

1. Within Enseada das Barracas, in a depth of 29m, about 0.3 mile offshore, with Ponta da Marca Light bearing 320°, distant about 0.9 mile.

2. Within Fundeadouro do Leao, off Sao Martinho dos Tigres, in a depth of 20m, with Leao Light bearing 270°, distant about 0.4 mile. This is the anchorage most commonly used.

3. Within Enseada do Pau, located about 4 miles S of Fundeadouro do Leao, in a depth of 19m, about 0.3 mile offshore.

4. Within Enseada dos Morrinhos, located 7.5 miles S of Sao Martinho dos Tigres, in a depth of 17m, about 0.4 mile offshore.

Directions.—Ihla dos Tigres is difficult to identify from offshore and extreme caution is necessary when approaching the coast in the vicinity of the bay due to the frequent mist which makes it difficult to judge distances. The first things to be seen are the breakers off the coast.

The bay is approached and entered from N between Ponta da Marca and the mainland, 6 mile E. Vessels approaching from the S should stay at least 5 miles W of the island and remain in depths of over 20m before rounding Ponta da Marca to pick up the approach from the N. From a position located NE of Ponta da Marca, the recommended track leads S for 8 miles into the bay, clear of known dangers.

Caution.—A restricted area, within which anchoring and fishing are prohibited, lies in the S part of Baia dos Tigres and may best be seen on the chart.

A local magnetic anomaly has been reported to exist on the E side of Baia dos Tigres.

Baia dos Tigres to Rocky Point

5.3 The coast between the S end of Baia dos Tigres and the mouth of the Rio Cunene, about 25 miles S, consists entirely of sand crowned with dark tinted dunes, which are visible from seaward at a distance of 15 or 16 miles. There are no known off-lying dangers along this coast.

The **Kunene River** (17°15'S., 11°45'E.), known as the Rio Cunene in Namibia, roughly follows the border between Angola to the N and Namibia to the S. The river only reaches the sea during the rainy season. During the dry season, its mouth is barred by a bank of sand on which the sea breaks furiously, especially in its S part. A beacon, with an elevation of 8m, stands near the river mouth.

Foz do Cunene, a village, stands on the N bank of the Kunene River, about 2 miles upriver from the mouth. An airstrip and a meteorological station are situated near this village. A conspicuous water tower is reported to stand about 4.5 miles NNE of the river entrance.

The Skeleton Coast extends S from this river entrance (see paragraph 5.1).

Caution.—The coast between Dune Point (20°02'S., 13°57'E.) and Cape Cross (21°46'S., 3°57'E.) may lie up to 2 miles further SSW than charted.

5.4 The coast between the Kunene River and Cape Fria, 75 miles SSE, is backed by high shifting sand dunes in its N part and by high land for about 18 miles in its S part. The Hartmann Mountains, which attain elevations up to 1,100m, rise about 30 to 40 miles inland and form a prominent landmark in clear weather.

A shoal, with a depth of 5.3m, lies 1.5 miles offshore, about



Skeleton Coast

6 miles SSW of the mouth of the Kunene River; breakers have been reported to exist seaward of this shoal.

Bosluis Bay, an indentation, lies 8 miles S of the mouth of the Kunene River. For a distance of 26 miles S of Bosluis Bay, foul ground consisting of rocky shoals, some of which have depths of less than 5m, lies up to 1.2 miles offshore.

A shoal lies about 34 miles S of the mouth of the Kunene River and about 2.2 miles offshore. It has a charted depth of 9.1m and is marked by breakers, but lesser depths should be anticipated.

5.5 Cape Frio (18°26'S., 12°01'E.) is low, sandy, and fringed by rocks. A number of conspicuous black hills rise inland of it. Depths lying to the NW of the cape are probably less than charted as, during a moderate SSW gale with a high sea, breakers were observed in a position located about 2 miles WNW of the cape. Breakers were also reported (1962) to exist in a position located about 7 miles WSW of the cape.

A stranded wreck serves as a useful coastal mark and lies close offshore in position 18°08'S, 11°51'E about 19.5 miles NW of the cape.

False Cape Frio is a slight projection located about 3 miles SSE of Cape Frio and is radar prominent.

Anchorage may be obtained, in fair weather, in depths of 12 to 13m, sand and mud, midway between Cape Frio and False Cape Frio.

The coast between False Cape Frio and Rocky Point, 41 miles SE, presents an unbroken line of surf. An extensive bank of shallow water extends from a point located 5 miles SSE of False Cape Frio extending 2 miles in the same direction. The shoals on the bank are about 1 mile wide and have least depths of 6m on the inner side and 10m on the outer side. They lie up to 3.2 miles offshore. Breakers occasionally occur along the entire length of this bank.

Rocky Point (19°01'S., 12°29'E.) is a conspicuous rocky spit extending about 0.3 mile seaward. A large rounded boulder, whitened by guano, lies at the end of the spit.

Temporary anchorage can be taken in a depth of 14m about 1 mile NW of Rocky Point by vessels with local knowledge. There is no landing place.

Caution.—It is reported (2012) that oil and gas exploration,

with associated drilling rigs, platforms, wellheads, and storage vessels, is being carried out in the area lying between Rocky Point and Dune Point (20°03'S., 13°03'E.) and up to 80 miles offshore. Vessels are advised to exercise caution in this area.

Rocky Point to Cape Cross

5.6 The coast from Rocky Point to Cape Cross, 185 miles SSE, is flat, rocky, and backed by shifting sand dunes extending as far as the eye can see. These gradually rising dunes, with occasional scrub vegetation, continue as far as the eye can see.

The **Hoarusib River** (19°05'S., 12°34'E.) is located 6 miles SE of Rocky Point and its mouth is reported to be closed during the dry season. The Sentinel is a prominent land mark which is a 155m high sandstone cliff that is located 2 miles NNE of the mouth of the Hoarusib River. Another pair of prominent coastal landmarks is Black Sand Hill (Black Sand Castle), rising 4 miles SE of the river mouth, and Little Castle, rising 2 miles further SSE. Their location marks the last black sand dunes along the coast.

Two bisecting runways, which can best be seen on the chart, are situated within 0.3 mile of the coast in position 12°37.7'S, 19°11.8'E.

A shoal, which only breaks occasionally and has a depth of 7.6m, is reported (1979) to lie about 7 miles SSW of Black Sand Hill and 2.2 miles offshore.

Mowe Point (19°23'S., 12°43'E.), located 16 miles SSE of Black Sand Hill, lies at the S end of a slight indentation. A lattice tower, 26m high, stands on the point and a few buildings are situated about 0.6 mile inland of it. The tower, which is a former light structure, is prominent during good visibility.

Heavy breakers were observed (1971) in a position located about 5 miles NW of Mowe Point and about 2.5 miles offshore.

The mouth of the Hoanib River is generally inconspicuous, but the gap in the sand hills through which it runs can be seen on bearings between 060° and 100°. Breakers have been reported to exist about 3 miles SW of the river mouth. A fertile valley is situated in the vicinity of the gap and is reported to show up as a prominent patch of green.

A large rock, awash, lies close SW of the mouth of the Hoanib River. Single airstrip runways are situated 1 mile NNW and 6 miles SSE, respectively, from the mouth of the Hoanib River.

5.7 Sand Table Hill (19°44'S., 12°55'E.), a low tabular sand dune, is located 24 miles SSE of Mowe Point and 0.5 mile inland. A sharp sand cone and a striped sandy hummock are located 7 miles NNW and about 2 miles SSE, respectively, of this hill. Sand Table Hill is most prominent when viewed from the NW, but it cannot easily be identified from more than 5 miles offshore.

Terrace Bay (19°59'S., 13°02'E.) lies about 17 miles SSE of Sand Table Hill. A visually and radar conspicuous mine dump stands 0.5 mile inland of the head of the bay. Lights from a fishing resort settlement located near the head of the bay may at times be seen from seaward.

Dune Point, a slight promontory, is situated about 2.5 miles SSE of Terrace Bay.

Swallow Rocks is a dangerous reef, with a depth of less than 2m, lying 4 miles SSE of Dune Point. This reef is about 0.5 mile long in a NW-SE direction and lies 0.8 mile offshore. Shoal water within the 10m curve extends for 1 mile in the same direction either side of the reef; soundings reveal that depths of 8m are found up to 1 mile offshore. The sea usually breaks heavily over the whole area. Ships navigating in the vicinity are advised to keep well to seaward as soundings outside the 10m curve give little indication of danger.

5.8 The coast between Swallow Rocks and Palgrave Point is radar conspicuous. The Uniab River, lying about 9 miles SE of Swallow Rocks, can be recognized by the moderately high cliffs on either side of its mouth.

Palgrave Point (20°28'S., 13°17'E.), located 15 miles SSE of the Uniab River, is a slight projection, with a line of breakers extending about 0.7 mile NW of it. The point is difficult to identify visually.

Anchorage can be taken by vessels, with local knowledge, in a depth of 18m, sand and mud, immediately N of Palgrave Point. This anchorage is protected from the rollers to a certain extent and, with a S wind, is considered safe. However, vessels should be ready to put to sea in a SW gale. There is no landing place.

It is reported (1980) that conspicuous stranded wrecks lie about 2 miles N and 9 miles SSE of Palgrave Point.

Caution.—A dangerous shoal, with a least depth of 8m, lies about 3 miles S of Palgrave Point and about 1 mile offshore. The sea usually, but not always, breaks heavily over this shoal.

5.9 Great Table Mountain (20°14'S., 13°31'E.), rocky and prominent, rises to a height of 738m about 20 miles NE of Palgrave Point. Sugar Loaf Hill, 350m high, stands about 11 miles ENE of Palgrave Point and is also prominent.

Toscanini, an abandoned mining settlement, stands 26 miles SSE of Palgrave Point and is radar prominent.

The mouth of the Huab River, located about 4 miles SSE of Toscanini, is usually dry and the foreshore in the vicinity is marked by dunes which are sickle-shaped and convex to the prevailing S winds.

Hogden Hafen (Ambrose Bay) is a small indentation lying about 10 miles SSE of the Huab River. Ogden Rocks extend about 1.5 miles W of the point marking the S side of the bay. They are marked by breakers and should be given a wide berth.

Anchorage may be taken in the bay by vessels with local knowledge. Vessels can anchor in a depth of 6m about 0.5 mile offshore, with a prominent cone-shaped hillock bearing 056°. This anchorage is exposed and should be used only in good weather.

The mouth of the Ugab River, which is usually closed, lies 8 miles SE of Hogden Hafen and Durissa Bay is located about 5 miles SE of it. An extensive salt pan is situated close to the shoreline in this vicinity. Durissa Bay provides no safe anchorage or landing and heavy surf is experienced along this entire section of the coast.

Bocock's Bay, the site of a small fishing and recreational resort, lies about 18 miles SE of the mouth of the Ugab River and 16 miles NW of Cape Cross. A group of white huts stands at the head of the bay.

5.10 Cape Cross (21°46'S., 13°57'E.), located 48 miles SSE of Ogden Rocks, is a barren spit which extends about 3 miles SW from the general direction of the coast. Low black cliffs are situated at the seaward end of the spit, which is fronted by a reef. A black tower, 21m high and surmounted by a black diamond, stands on the cape.

Cape Cross Bay is entered close N of Cape Cross and has a village standing on its shore. A sealing factory, with two chimneys, is situated about 1.5 miles NE of the cape and is conspicuous.

Anchorage can be taken in Cape Cross Bay, over a sandy bottom, about 1 mile offshore. Landing is generally difficult and can be carried out only during calm weather.

Inland from Cape Cross, flat, sandy, and rocky plains continue for several miles, rising to barren hills and mountains. A hill, 714m high, rises about 21 miles NE of the cape and is the highest and most conspicuous peak of the mountain range that runs parallel with the coast. Brandberg, standing about 30 miles further NE, rises to an elevation of 2,621m about 45 miles from the coast.

Cape Cross to Walvis Bay

5.11 The coast between Cape Cross and Swakopmund, 63 miles SSE, is generally clear, with depths of less than 20m extending up to 3 miles offshore.

Due to the low nature of the coast, the irregularity of the soundings, and the possible existence of uncharted rocks or shoals within 6 miles of the coast, the greatest caution must be exercised when approaching the shore during misty or foggy weather, or at night.

A beacon stands on Lunenberg (Lagunenber), a coastal range of hills rising about 8 miles ESE of Cape Cross, at an elevation of 185m. The hill on which this beacon stands is reported to be radar conspicuous.

Sierra Point, low and sandy, is located about 9 miles SSE of Cape Cross and is not easily identified. A detached shoal patch, with a depth of 13m, lies about 3.5 miles SW of this point and is reported to break occasionally. A stranded wreck lies near Sierra Point.

Farilhao Point (22°10'S., 14°17'E.), located 30 miles SE of Cape Cross, is low, sandy, and projects about 1 mile seaward from the general line of the coast. The mouth of the Omaruru River lies 4 miles NNW of this point. A water tower, which is radar conspicuous, stands 2.5 miles N of the point in the vicinity of Hentiesbaai, a large settlement.

Great Spitzkop, 1,758m high, and Little Spitzkop, rise about 54 miles and 47 miles, respectively, ENE of Farilhao Point. These peaks can be easily identified during clear weather. Woltzka'sbaken, a village consisting of small scattered houses, is located 17 miles SSE of Farilhao Point; a beacon, 5m high, stands in it.

5.12 Swakopmund (22°41'S., 14°31'E.), a comparatively large resort town, is located 34 miles SSE of Farilhao Point. It is fronted by an open roadstead but is not a port.

An airport is situated about 3 miles ENE of the town. The Swakop River, which discharges close S of the town, is dry except for one or two months during the summer. Its entrance, which is blocked by a sand bar, is indicated by thick, green fo-

liage and a road bridge. A prominent metal jetty, used for sight-seeing, projects seaward from the town. Swakopmund Light, the areas most prominent mark, is shown from a prominent tower, 28m high, standing in the town. Two radio masts, 30m and 70m high, are situated close to this light.



Swakopmund Jetty

Swakop Reef, with depths of less than 6m, extends about 0.5 mile seaward from the S part of the town.

Anchorage may be taken in a depth of 12m, sand and mud, about 0.8 mile WSW of Swakopmund Light. This anchorage is not recommended in S winds and vessels are advised to keep in depths of over 15m.



Swakopmund Light

Caution Reef (22°45'S., 14°31'E.) extends about 0.3 mile seaward from a point on the coast located 4.5 miles S of Swakopmund. A beacon stands on the extremity of the point. A railroad station is situated on the coast 5 miles S of this beacon.

Walvis Bay (22°57'S., 14°30'E.)

World Port Index No. 46640

5.13 Walvis Bay (Walvisbaai), the primary port of Namibia, is situated 13 miles SSW of Swakopmund on the central W coast of Namibia. The bay is entered between Pelican Point (22°53'S., 14°27'E.), the N extremity of the Walvis Peninsula,

and Bird Rock, 5 miles E. The port, which is the center of a large fishing industry, is situated in the SE part of the bay. Exports include fishmeal and fish products, copper, lead, vanadium ores, granite, and guano. A railroad extends from the port to the interior and serves Windhoek, the capital of Namibia, as well as other towns. It links with the railroad service of the Republic of South Africa.

Sovereignty of Walvis Bay was transferred to the Namibian government from South Africa in 1994.

Walvis Bay Home Page

<http://www.namport.com/content/show.php?me=4>

Winds—Weather.—The swell off the coast in the vicinity of Walvis Bay is normally moderate and from the SW, becoming heavy from that direction after the passage of a deep depression at the Cape of Good Hope. A swell from the NW is rare and seldom enough not to interfere with vessels at anchor. With the strong E winds of winter, there may be considerable sea running out in the bay; the strong afternoon sea breeze may also cause a lively sea, especially after several consecutive days in summer.

The prevailing winds are from the SW and sea fogs are frequent off this coast at all seasons, but are more so, near the shore, in autumn and winter (April to September). Fog may appear at any time of the day, with a SW wind, even of force 5, and in winter with a NW wind. The fog may persist over the sea for several days. Normally, fog covers only the bay and the buoyed approach channel during the night and early morning, receding seaward before noon, so that it is possible to enter the port on most afternoons, even in foggy spells. An exception to this is the fog, brought by NW winds, which may approach and cover the bay at any time of the day, remaining until the following morning. During winter, land fogs frequently form after a clear dawn and drift over the bay, but these are usually short in duration and usually disperse by noon. The incidence of fog in the harbor area and buoyed channel has decreased appreciably in recent years.

Tides—Currents.—The tides at Walvis Bay rise about 1.6m at springs and 1.2m at neaps.

During periods of strong SSW winds, a current runs in the opposite direction alongside the main wharf and has been felt strongly within a distance of 300m of the wharf. At times, this current is so strong that vessels berthing or unberthing require tugs to counteract it. Observations have shown that the stronger the wind from this direction, the stronger will be the current experienced. There is no perceptible current with winds from any other direction, or during periods of calm.

During N winds, a surge, seldom more than 0.6m in height, is sometimes experienced along the main wharf. Berth 1, Berth 2, and Berth 3 are generally tolerable under these conditions, whereas Berth 4 and Berth 8 are by far the worst. The tanker berth is also subject to surge (see Depths—Limitations).

On the flood, a tidal current of 0.5 to 1 knot sets SW across the dredged approach channel and past both the tanker berth and Hofmeyer Wharf. The ebb current sets NE out of the lagoon and when this is flooded, the current may attain a rate of 4 knots at springs.

Depths—Limitations.—The main entrance channel lead-

ing S through the bay is maintained at a dredged depth of 14m over a width of 134m. Vessels using this dredged channel must have an underkeel clearance of at least 1.2m.

Vessels are required to have a minimum underkeel clearance of 0.6m at all times while alongside any of the port's wharfs.

Hofmeyer Wharf fronts the main part of the town. With its extension, known as New Wharf, it is 1,400m long. Berth 1, Berth 2, and Berth 3 have a total length of 479m and a depth of 14m alongside. These berths primarily serve container vessels.

New Wharf (Berths 4 to 8) has a total length of 926m and depths of 10.6m alongside. Together, Berths 1 through 3 and 4 through 8 make up the container terminal. Vessels up to 243m in length and 12.8m draft can be accommodated.

A T-shaped jetty, with dolphins, is located on the E side of the inner end of the dredged entrance channel and forms the tanker berth. The berth is 235m long and is connected to the shore by a catwalk. The maximum channel depth is 10m; tankers up to 192m in length can be accommodated.

Numerous fish factories stand along a sea wall, which extends NE for about 1.5 miles from the tanker berth. These factories are fronted by several jetties and a fishing vessel basin. A secondary entrance channel, used primarily by fishing vessels, goes to the fish factories and is marked by lighted buoys; The channel, with a dredged depth of 6.5m, lies about 0.4 mile E of the main channel and leads SSE for 1 mile to the basin. Range lights, in line bearing 183°, lead through the main channel. The front light is exhibited from a warehouse on Hofmeyer Wharf; the rear light from a metal framework tower situated 0.4 mile S of the front light.

It is reported (2014) that extensive works in progress are commencing in the port, mostly for expansion of the port's container terminal.

Aspect.—The shore between the Swakop River and Walvis Bay consists of coastal sand dunes, 3 to 25m high and covered with sparse vegetation, behind which are shifting sand dunes, 90 to 115m high.

The Walvis Peninsula, consisting entirely of sand, forms the W side of the bay. It has a general height of 0.6 to 1.2m, with a few scattered dunes which are constantly changed in shape, height, and position by the strong SW winds. During exceptionally high spring tides, extensive areas on the E side of the peninsula are awash.

Pelican Point Light (22°53'S., 14°26'E.), equipped with a racon, is shown from a black and white banded conspicuous round tower, 34m high, standing 1 mile SSW of Pelican Point, the N extremity of the Walvis Peninsula. Reflectors situated around the light tower provide a prominent radar display in the form of a star. A trellis work beacon, 13m high, is situated about 0.5 mile SSW of the light.

Bird Rock, a low and flat islet, is located 5 miles E of Pelican Point and, from seaward, resembles a pier. Five pylons, 15m high, stand in a line and support a cableway, which extends between this islet and the mainland shore. A wooden platform, from which guano is collected, stands on the islet.

The head of the bay consists of a shallow lagoon and a mud flat, which is also awash at exceptionally high tides.

Spit Lighted Buoy is moored about 1.2 miles N of Pelican Point. Fairway Lighted Buoy is moored about 3.5 miles ENE of Pelican Point and marks the outer end of the main entrance channel. The main channel leads S for 5 miles to the harbor fa-



Pelican Point Light

cilities at the head of the bay. It is marked by buoys and indicated by a lighted range, which may best be seen on the chart.

The sheds and cranes situated in the vicinity of the main wharf are prominent. Radar towers stand 0.3 mile S and 0.2 mile SE of the tanker berth.

The conspicuous tower of the Roman Catholic Church stands about 0.6 mile SE of the tanker berth. It is 38m high and surmounted by a cross, 5m high, which is illuminated at night.

Two radio masts, the taller of which has an elevation of 70m, stand about 0.2 mile NE of the church tower. A conspicuous water tower is situated about 0.7 mile SE of the church tower.

The buildings situated in the town of Swakopmund are conspicuous, especially when the sun is shining on the roofs, making them visible in misty weather long before the land is sighted.

Pilotage.—Pilotage is compulsory. Request for pilots can be made by contacting the port captain prior to arrival. Walvis Bay Port Control maintains a 24-hour VHF radio watch on channel 16 and works on channels 12 and 14.

Pilots board about 0.5 miles NW of the Fairway Lighted Buoy.

Regulations.—Inbound vessels should report to Port Control on VHF channel 16 stating their ETA for the NNW approach at position 22°43.0'S, 14°20.0'E and for the SSW approach at position 23°05.0'S, 14°20.0'E. Vessels arriving after hours should send ETA abeam Pelican Point Light (22°53'S, 14°30'E) by VHF.

The vessel's ETA should be sent 72 hours before arrival with updates sent 24 hours and 12 hours prior to arrival.

Departing vessels must leave the wharf not later than 2145 hours.

Contact Information.—Walvis Bay Port Control can be contacted, as follows:

1. Telephone: 264-64-2082263
264-64-2082264
264-64-2082265
2. Facsimile: 264-64-2082325
3. E-mail: portc@namport.com.na

Anchorage.—Anchoring within 0.7 mile of the Fairway Lighted Buoy is prohibited.

Anchorage may take place in the outer anchorage areas with-in port limits between 0600 and 2200 or at any time in an emergency. Three designated anchorage areas, the limits of which may best be seen on the chart, have been established. Anchorage Area No. 1 lies with center 1.0 mile E of Fairway Lighted Buoy; Anchorage Area No. 2 lies with center 1.8 miles ENE of Pelican Point Light. Anchorage Area No. 3 lies with center 2.0 miles NNE of Fairway lighted buoy. The holding is reported to be generally good on a mud bottom.

Pelican Point is reported to be extending NE and vessels should not pass between this point and Spit Lighted Buoy.

It is reported (1997) that depths in the bay lying outside of the dredged channels and areas may be up to 2.5m less than charted.

The concentration of sulphuretted hydrogen in the vicinity of Pelican Point is at times so strong that brasswork on ships are affected by it.

Spoil ground (dumping) areas, the limits of which may best be seen on the chart, lie centered 3.4 miles NNE and 2.6 miles SE of Pelican Point Light.

A marine farm area, within which navigation is prohibited, lies centered 2 miles SSE of Pelican Point Light and may best be seen on the chart. It fronts the E side of Walvis Peninsula and extends up to about 1 mile seaward.

It is reported (2012) that the buoys marking the entrance channel tend to acquire a whitish appearance due to sea bird activity.

Volcanic disturbances have occurred off Walvis Bay. On 1 June 1900, an islet of mud and clay, 46m long and 9m wide, was formed by volcanic action off the NE extremity of Pelican Point. This islet, 4.6m high, was located close off the shore, where depths of 14.6m had previously existed. Steam was observed rising from the N side of the islet, and a very strong odor of sulphuretted hydrogen prevailed. On 7 June, the entire islet disappeared and soundings indicated that the original depth of 14.6m was restored.

In January 1949, numerous bubbles were observed coming to the surface in Walvis Bay, followed by clouds of mud. These disintegrated and a smell of sulphuretted hydrogen was noted. On 6 March 1951, three small islands appeared above the surface of the sea W of Pelican Point. The first island, about 90m long, appeared shortly before sunset and arose from a bubbling sea. It remained for about 1 hour and then subsided beneath the surface. The other two islands appeared farther to seaward and about the same time. They remained until daylight faded, and by morning had disappeared.

Due to the low lying nature of the coast, approaching ships must exercise vigilance when approaching Walvis Bay in bad weather or at night. The entrance to the bay is difficult to identify from seaward and caution is advised, especially during thick weather.

It is reported that the first strong radar returns usually appearing on the screen are those of the cranes situated on Hofmeyer Wharf. These returns should not be confused with the star pattern of the reflectors at Pelican Point Light.

Approaching from the S, the buildings in the town will usually be seen first over the Walvis Peninsula. Approaching from the N or NW, vessels are recommended to first sight Swakopmund (see paragraph 5.12). If the weather is clear the approaching ship will not experience any trouble in entering the

bay.

Walvis Bay to Luderitz Bay

5.14 The coast between Walvis Bay (22°57'S., 14°30'E.) and the mouth of the Orange River (26°38'S., 15°09'E.), about 375 miles SSE, presents a most uninviting appearance. It consists of a long range of sand hills, except between Spencer Bay (25°44'S., 14°50'E.) and Hottentot Bay (26°08'S., 14°57'E.), where there is a range of barren, desolate hills, 150 to 180m high, even more forbidding in aspect than the rest of the coast. Most of this coast is designated a restricted area, being in the diamond working area.

A coastal bank, with depths of less than 15m, fronts the Walvis Peninsula, about 3 miles SSW of Pelican Point. It extends about 0.8 mile seaward and may best be seen on the chart. Vessels are advised to remain in depths of over 30m when transiting this area.

Sandwich Harbor (23°23'S., 14°27'E.), located 30 miles S of Pelican Point, is entered through Sandwich Bay. It is no longer a harbor, but rather a lagoon, which is intermittently closed to the sea. This harbor is a proclaimed bird sanctuary, being the haunt of pelicans and flamingos. Discolored water, very light in color and extending 2 to 3 miles seaward, has been observed in the vicinity of Sandwich Bay and for a few miles S of it. The line of demarcation between it and the blue water seaward is usually clear and distinct. Depths lying about 0.2 mile inside this line were found to be about 25m, sand.

The coast extending between a point on the shore located 10 miles S of Sandwich Bay and Conception Bay, 32 miles S, is backed by shifting sand dunes, 100 to 150m high. Offshore, depths of less than 10m lie in places up to about 1 mile seaward of the coast. This stretch was formerly known as Die Lange Wand (The Long Wall).

Local knowledge is required. **Anchorage** in good weather is available approximately 1540m WSW of D'Ilheu Point. **Land- ing** is possible at the point.



Die Lange Wand (The Long Wall)

Conception Bay (23°55'S., 14°29'E.) is a slight indentation affording no shelter. It is used only by small vessels with provisions for a diamond-mining settlement situated 9 miles inland.

Anchorage may be taken, in depths of 15 to 20m, fine gray sand, outside the surf. The anchorage affords no shelter.

A prominent stranded wreck (Eduard Bohlen) lies 4.5 miles SSW of Conception Bay and some distance inland. This wreck, which forms a conspicuous radar target, for many years had the appearance of a ship steaming through the desert.

Caution.—Between Walvis Bay and Conception Bay, the coastal waters lying S of latitude 23°10'S are inadequately surveyed and vessels without local knowledge should use extreme caution when navigating in depths of less than 100m.

Diamond Area No. 2, a coastal strip about 175 miles wide, extends from a point on the shore located 31 miles S of Sandwich Bay to latitude 26°S. Landing or entry without permission is prohibited in this area.

5.15 North Rocks (24°29'S., 14°37'E.) lie about 34 miles SSE of Conception Bay and close off a sandy point. Black Kop (Swartkop), a hill, rises 5 miles N of the rocks. It is 25m high and dark.

Meob Bay (Mutzel Bay), a small indentation, lies close S of North Rocks. A small settlement and a meteorological station are situated close S of this bay.

Black Reef (South Rocks) lies 2.5 miles SSW of North Rocks. A hill, 30m high, and another hill, 25m high, rise close ESE and 2 miles ENE, respectively, of Black Reef.

Detached shoals, with depths of 18.3m and 9.7m, lie about 3 miles W and 3.5 miles SSW, respectively, of Black Reef.

Hollandsbird Island (Hollams Bird Island) (24°38'S., 14°32'E.) lies 6 miles offshore, about 7 miles SSW of Black Reef. This small island is 12m high and surrounded by a reef. Depths of less than 20m extend up to about 4 miles N and 6 miles SSW of the island. Breakers were reported (1939) to exist in a position lying about 6 miles SSW of the island. A pair of heavy-lift shear legs, which appear conspicuous from seaward, stand on the N side of the island and are used in the recovery of guano. The surrounding reef is frequented by right whales during July and August and is the resort of seals and cormorants.

Temporary anchorage can be obtained, except in strong N winds, in a depth of 18m, between 0.5 mile and 1 mile N of the island.

A detached shoal, with a depth of 25.6m, lies (position approximate) about 5 miles W of Hollandsbird Island.

5.16 An indentation, with a low sandy beach marked by patches of black rocks, is formed between a point located close S of Black Reef and some conspicuous white sand patches on the coast, about 25 miles SSE. This part of the coast is lower than the coast S of it and is difficult to distinguish due to the heavy surf and spray which envelop it. The above-mentioned white sand patches are very conspicuous in the afternoon when the sun shines on them. The entire countryside in the vicinity is formed of sand, with a generally yellowish appearance, but the patches are quite white and fan-shaped.

A flat-topped black rock (24°57'S., 14°49'E.) lies close off the coast about 2 miles S of the white sand patches and is conspicuous.

Sylvia Hill (25°09'S., 14°51'E.), 210m high, rises 12 miles S of the flat-topped black rock and is conspicuous from SW. It is sharp, doubled-peaked, and higher than the surrounding coun-

tryside.

Easter Point (25°18'S., 14°48'E.) is located 9.5 miles SSW of Sylvia Hill. East Hill, a rocky summit, rises about 2.5 miles ESE of this point.

Oyster Cliffs, located 3 miles S of Easter Point, are high and rugged sand cliffs which extend to black cliffs, about 3 miles farther S. They have a sheen reminiscent of mother-of-pearl. Breakers extend some distance offshore to the N of these cliffs and vessels should not approach this part of the coast within 2.5 miles.

A range of mountains (Uri Hauchab) rises to an elevation of 723m about 21 miles ESE of Easter Point.

Knoll Point (25°28'S., 14°50'E.), rocky but inconspicuous, is located 11 miles S of Easter Point. The coast extending S of this point forms an open bay, about 8 miles wide. The bay has a sandy shore, with a few sand cliffs, and is backed by a range of shifting dunes, 80m high. A stranded wreck lies in the S part of the bay close offshore. High cliffs, with a rugged coastal range of hills rising behind them, stand at the S end of the bay and extend about 5 miles S to North Point (25°41'S., 14°51'E.).

North Head, with an elevation of 281m, rises about 0.5 mile E of North Point.

5.17 Spencer Bay (25°43'S., 14°50'E.) is entered between North Point and Dolphin Head, 3 miles S. These two points are the most remarkable features on this part of the coast. During bad weather, the sea breaks heavily on the beach in the bay for a considerable distance and forms several lagoons in the hollows behind it. Whales visit this bay in July and August.

Dolphin Head is the N extremity of South Head (Sudhuk). It rises steeply from the sea to an elevation of 187m and has the appearance of an island when seen from a few miles to the N. A stranded wreck lies in the bay close E of Dolphin Head.

Mercury Island (Mercury Island), 38m high, lies on the W side of Spencer Bay, about 0.7 mile N of Dolphin Head. Mercury Island is bleak and guano-covered. A settlement on the island consists of a few wooden houses built on concrete pillars.



Mercury Island (From N)

The rocky N part of the island is almost separated from the main part by a chasm through which the surf surges and which is crossed by a planked bridge. Waves at times beat against the shores of the island with indescribable fury.

A bank, with depths of less than 9m, extends 0.5 mile seaward from the mainland E of Mercury Island, leaving a channel,

about 275m wide with a depth of 10.5m, lying between it and a shoal fronting the island. Depths of over 7.5m lie about 0.2 mile off the side of the island E and S of Mercury Island.

The sea has been observed to break heavily about 0.5 mile NE of Mercury Island, but only in bad weather with a very heavy swell, although there is a charted depth of 15m in this position.

Spencer Bay is sheltered from SSW winds by Dolphin Head, though these winds may prevail during violent gales. The bay can be entered N or S of Mercury Island but local knowledge is advised. The best anchorage lies in a depth of 11m about 0.3 mile E of the N extremity of the island, care being taken to avoid the nearby shoals. It is inadvisable for vessels to anchor on the S side of the bay due to the heavy W swell.

Caution.—Due to the possible existence of uncharted shoals and rocks, vessels should exercise extreme caution when navigating within 6 miles of the coast between Easter Point and Dolphin Head.

5.18 The coast extending S for 2 miles from Dolphin Head consists of rugged cliffs. These cliffs terminate in a point which appears in the form of a rocky pyramid when viewed from S and flat-topped when viewed from W.

Saddle Hill (25°54'S., 14°55'E.), standing about 11 miles SSE of Dolphin Head, is sharp-peaked and rises immediately over the coast. It can easily be seen in clear weather from Ichaboe Island, about 23 miles farther S. Saddle Hill has two peaks, North Peak and South Peak, but they appear as one from the N. This hill forms the highest elevation in the vicinity.

The coast extending between Saddle Hill and the entrance to Hottentot Bay, about 14 miles S, consists of a sandy beach, rising a short distance inland to a level range of sand hills, 150 to 200m high. This stretch is interrupted by Gibraltar, a rocky bluff, located 8 miles SSE of Saddle Hill and by a conspicuous rock (Black Rock) lying 4 miles farther SSE.

Hottentot Bay (26°08'S., 14°57'E.) is entered NE of Hottentot Point, which is the W extremity of the Hottentot Peninsula. This point, marked by a beacon, is joined to the mainland by a low, sandy neck. The peninsula, partly rocky and cliffy, appears as a succession of sand hills of about equal height. From W, it shows up well and is visible at a distance of 10 to 12 miles. From S, it appears as two low, bare, and isolated rocks, the northernmost of which is slightly higher.

Depths of less than 5.5m lie within 0.5 mile of the shore in the SW part of Hottentot Bay, but secure anchorage can be obtained in a depth of 7m, good holding ground of sand and mud, about 1.1 miles ENE of the beacon (26°09'S., 14°56'E.) on the point.

Caution.—The shores of Hottentot Bay lie within a prohibited area because of the diamond deposits located there.

Diamond Area No. 1, a coastal strip about 140 miles wide, extends S from latitude 26°S to the Orange River (28°38'S., 16°27'E.). Landing or entry without permission is prohibited in this area.

Marine Mining Vessels (MMV), which process gravel for diamonds, may be encountered in large numbers inshore between Hottentot Bay and the Orange River (28°38'S., 16°27'E.). These diamond-mining barges are usually moored to four anchors, which may or may not be marked by unlit buoys. Vessels are advised to stay at least 1,500m away from MMVs.

The anchorage area indicated on the chart has an approximate depth of about 7m but may not be suitable for most commercial deep-draft vessels.

A dangerous wreck is reported to lie close N of Hottentot Point and can best be seen on the chart.

Mooring buoys, designated B1, B2, and B3, are reported to be situated 1.5 miles, 2 miles, and 2.7 miles, respectively, NE of Hottentot Point.

5.19 The coast between Hottentot Point and Danger Point, about 8 miles S, is generally rocky, with occasional sandy beaches. Breakers extend about 0.3 mile offshore in an unbroken line. Some of the points are marked by rocks and are prolonged by submerged reefs which extend a considerable distance offshore in places.

Caution.—Combined with the prevalence of fog, coastal navigation along this stretch of coast can be precarious and ships transiting should exercise extreme caution when approaching the coast.

Gallovidia Reefs (26°10'S., 14°56'E.), with several parts awash and others above water, extends about 1.5 miles S from a point located 1.2 miles SSE of Hottentot Point. A rocky islet lies at the S end of this reef. The reef lies nearly in the direct track leading from Hottentot Bay to Douglas Bay. Therefore, vessels should keep in depths of not less than 30m as the sea has been observed to break heavily in depths of over 14m.

A detached shoal, with a least depth of 10m and on which the sea breaks in a heavy swell, lies about 1.5 miles SSW of the rocky islet located at the S end of Gallovidia Reef.

Danger Point (26°16'S., 14°57'E.) is characterized by steep and broken cliffs and fringed by rocks extending 0.6 mile SSW from this point to Wreck Point, which is reported to be radar prominent, and then 0.8 mile SSE to another cliffy projection. The sea breaks heavily all along this stretch of coast. Jakal Beacon stands near the coast, 0.4 mile S of Wreck Point.

Ichaboe Island (26°17'S., 14°56'E.), lying 0.7 mile SW of Wreck Point, is flat and mainly composed of granite. Its summit, located at the SW end, is 12m high and marked by a pole beacon, which is difficult to distinguish from a distance. A settlement, with a jetty and a flagstaff, is situated at the NE side of the island. The island is the home of a colony of cormorants. Guano collecting takes place during April and May when all the birds have departed.

Foul ground and reefs, upon which the sea usually breaks, front the N, W, and S sides of the island. A rocky outcrop, known as Little Ichaboe, lies 0.3 mile off the W side of the island.

Anchorage can be obtained in a depth of 10m about 0.2 mile E of the settlement or in a depth of 13m about 0.3 mile ENE of the S extremity of the island. These anchorages are considered to be only fairly good because the holding ground is nothing more than sandy patches amongst rocks. In the first location, vessels are well-sheltered from the high swell which sets in, but NE of the island the rollers are dangerously heavy. Rollers come in without giving any previous warning and it is not unusual for the approaches on either side of the island to break completely across, leaving comparatively smooth water at the anchorage.

5.20 Douglas Bay (26°18'S., 14°57'E.) is entered between

Wreck Point and Douglas Point, 1.5 miles S. Rocky Point, located 0.4 mile NE of Douglas Point, divides the S part of the bay into two smaller bays. Kartoffel Bucht, the S bay, provides no shelter but Post Office Bay, the N bay, is protected. Breakers extend up to 0.3 mile N from Douglas Point and front Rocky Point. An isolated shoal, with a least depth of 12.8m, lies about 0.7 mile WSW of Douglas Point.

Vessels approaching Douglas Bay can pass either N or S of Ichaboe Island, giving it a berth of at least 0.4 mile. The S passage is preferable as the N passage is narrower and the sea breaks in adverse weather for several miles N of the island. Local knowledge is advised.

Marshall Rocks, composed of dangerous and extensive reefs marked by heavy breakers, front the coast 3 miles SSE of Douglas Point and extend up to 1.5 miles offshore. Breakers extend in a SE direction for about 2.5 miles from the SE end of Marshall Rocks and a bank, with depths of 13 to 17m, extends in the same direction for another 2 miles. Staple Rocks lie with the tallest rock, 9m high, about 1 mile E of the SE end of Marshall Rocks.

Kegelberg (26°25'S., 15°06'E.), a conspicuous conical hill, rises 10.5 miles SE of Douglas Point. It is 40m high and consists of white quartz. This hill stands 0.5 mile N of the N entrance point of Boat Bay, at the S end of a low chain of hills. Nearly all of the intervening coast is fringed by breakers.

Boat Bay Rocks, marked by breakers, extend up to about 1 mile W of the N entrance point of Boat Bay. The S entrance point of this bay is located 2.5 miles SSE of the rocks. It consists of a rocky headland, 67m high. Some huts, in ruins, stand close E of the headland. Boat Bay is clear of dangers and anchorage can be taken in depths of 7 to 11m within its S part, but vessels should proceed to sea when W or N winds threaten.

Dumfudgeon Rocks, two low islets, lie 2.2 miles S of Boat Bay and about 0.6 mile offshore. They are inhabited by seals. Dagger Rocks, lying 2.5 miles SSE of Dumfudgeon Rocks, extend up to about 0.2 mile offshore. A shoal patch, with a least depth of 18m, lies about 1.5 miles W of Dagger Rocks.

North East Point (26°35'S., 15°09'E.), bold and rocky, is located 3 miles S of Dagger Rocks. It forms the N entrance point of Luderitz Bay. North Reef extends about 0.4 mile SW from the point and an islet, 2.7m high, lies on its outer part. Flamingo Island lies 0.4 mile ESE of the point and is connected to the mainland by a sandy neck, which dries at LW.

Luderitz Bay (26°39'S., 15°09'E.)

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5.21 Luderitz Bay is situated between Walvis Bay and the mouth of the Orange River. The Port of Luderitz lies in the SE part of Luderitz Bay. The main exports are canned rock lobster tails and other fish products, as well as seal oils and skins. The port also serves the offshore diamond and petroleum industries.

The port is approached through Luderitz Bay and entered NE of Angra Point situated between North East Point (26°35'S 35°09'E) and Diaz Point, 4.5 miles SW. Seal Island, Penguin Island and Shark lie off the E side of the bay. The town of Luderitz, which is a tourist resort, stands in the SE corner of

the bay, E of Shark Island. The main port facilities front the town.

Winds—Weather.—Strong SSW to SW winds are almost continuous for 10 months of the year. In general it has been reported that the summer months bring S winds in excess of 40 knots. During winter months, variable winds usually less than 20 knots prevail. It is usually calm in the early morning.

Morning fog often occurs outside the harbor area and is most frequent between January and April. At times, desert sand is blown about in large quantities, filling the air with minute particles which take a long time to subside.

Luderitz Home Page

<http://www.namport.com/content/show.php?me=4>

Tides—Currents.—The tides rise about 1.4m at springs and 1m at neaps. Maximum variation has been reported as 1.75m

The currents are negligible in Menai Creek, but a tidal current sometimes occurs during the flood, running down the E side of Shark Island. This current may cause difficulty to vessels berthing. The outer part of the bay is exposed to the swell, which, being deflected by the contour of the land, enters the bay from NW.

Depths—Limitations.—Seal Island, 52m high, lies 0.8 mile S of North East Point. It is round-topped, dark, and fringed by reefs. A stranded wreck lies at the S end of this island.

Penguin Island, 35m high and composed of large white boulders, lies 0.7 mile S of the S end of Seal Island and is fringed by a reefs. Tiger Reef, awash, lies about midway between the N end of the island and the mainland to the E. This detached reef is marked by a lighted buoy.

Shark Island lies 0.7 mile S of the S end of Penguin Island and its S extremity is connected to the mainland by a causeway.

Robert Harbor lies at the E side of the bay and is entered between the S end of Penguin Island and the N end of Shark Island. Menai Creek, which is shallow, extends S from Robert Harbor along the E side of Shark Island to the town of Luderitz.

Shearwater Bay lies between Diaz Point, which is fronted by foul ground, and Angra Point, 2 miles ENE. Angra Rock lies on a shallow reef, which extends about 0.5 mile N from Angra Point, and is marked by a lighted buoy. The sea breaks between this rock and the point.



Luderitz

Since Namport took over the administration of Luderitz from South Africa, considerable investment has begun to improve the port and its facilities. This has included dredging the

approach channel to the harbor as well as the 198m wide turning basin. The length of the entrance channel to the jetty is 708m with a width of 60.9m. There are depths of more than 10m in the outer part of the bay. The approach track leads SE into Roberts Harbor. It passes between the reef fringing the S side of Penguin Island and the reef fringing the N side of Shark Island. A fairway channel, 60m wide, then leads SSW through Menia Creek to the port facilities. It is dredged to a depth of 8.15m.

The new quay is 500m long and has depths of 4.7 to 8.75m alongside. It can accommodate vessels up to 12,500 dwt, 150m in length, and 8.15m draft.

Main Jetty has depths of 6m alongside its W side for a distance of about 180m from the head and alongside its E side for a distance of about 140m. It can accommodate vessels up to 105m in length. Timber Jetty, located close E of Main Jetty, is 168m long. It has a depth of 3.5m alongside and is used by fishing boats. Several jetties, used only by fishing boats, are situated along the NE shore of Roberts Harbor.

Aspect.—**Dias Point Light** (26°38'S., 15°06'E.) is shown at an elevation of 52m from a prominent white round tower with a red band, 28m high, standing 0.2 mile S of Diaz Point, the N extremity of a rocky peninsula. A beacon, consisting of a marble cross, stands on a rocky outcrop about 0.2 mile WNW of the light, but it is difficult to distinguish. The outcrop is separated from the point by a ravine, which is crossed by a wooden causeway.



Dias Point Light

Shark Island Light, located 3.2 miles E of Diaz Point Light, is shown at an elevation of 35m from a framework tower, 3m high, standing near the center of the island. A church, with a conspicuous spire, and a very prominent water tower stand 0.9 mile and 2.4 miles, respectively, S of this light.

Nautilus Hill, 130m high, rises on the mainland, 1.2 miles NE of Shark Island Light, and appears to be the tallest land in the vicinity. A radio mast is situated near the shore 0.2 mile NW of this hill.

A disused whaling station, with several large prominent buildings and tall chimneys, is situated within a cove in the SE

part of Shearwater Bay.

The approach track leading SE between Penguin Island and Shark Island is indicated by a lighted range which may best be seen on the chart. The reefs fringing the S side of Penguin Island and the N side of Shark Island are marked by lighted buoys. The dredged fairway leading SSW through Menai Creek is marked by lighted buoys.

Pilotage.—Pilotage is compulsory for vessels of more than 40m in length while within the port limits. Pilots can be contacted on VHF channel 12 or 16 and usually board about 1 mile N of Angra Point. Pilotage is available between 0400 and 1600. During poor weather, pilots board about 0.7 mile NE of Angra Point. Vessels should send an ETA and request for pilotage 72 hours and 1 hour in advance.

Regulations.—Berthing generally takes place between 0600 and 2200, and at any other time in an emergency or by request if tide-restricted.

A Port Information Service is maintained at Luderitz Bay. Vessels are requested to establish contact by VHF with the Harbormaster (Luderitz Port Control) not less than 1 hour before arrival. Vessels arriving after hours should report their ETA on VHF channel 16 to the signal station at Dias Point Light.

Vessels moored at the outer anchorage should keep a continuous listening watch on VHF channel 16.

Contact Information.—Luderitz Port Control can be contacted, as follows:

1. VHF: VHF channels 12 and 16
2. Telephone: 264-63 2002007
264-63 2002008

Anchorage.—In the past, vessels worked cargo at the anchorage but, due to the construction of the new quay, this practice now occurs infrequently.

Shearwater Bay provides sheltered anchorage, in depths of 7 to 14m, from all but N and NW winds, but vessels must be prepared to get underway at short notice due to sudden squalls.

Anchorage according to draft can be taken in the outer part of Luderitz Harbor, which extends S between Angra Point and Shark Island. The holding ground is good but a heavy NW swell may set in at any time.

Robert Harbor provides fairly good and sheltered anchorage but the holding ground is poor in places and vessels have been known to drag. Vessels may anchor in a depth of 7m, about 0.3 mile ESE of the SE end of Penguin Island or, in a depth of 8m, clay, about 0.3 mile NW of the front range light. A considerable NW swell may be experienced at times at the latter anchorage.

North Harbor, which is entered N of Seal Island, provides anchorage in a depth of 7m.

Directions.—Luderitz Bay may be entered during daylight without difficulty. Dias Point should be rounded at a distance of at least 0.4 mile. Vessels must pass N of the lighted buoy moored about 0.7 mile N of Angra Point.

At night, when approaching from N, course should be set to pass at least 1.5 miles off of North East Point, then altering course to bring Shark Island Light ahead when within the white sector of the light. Course can then be set for entering Robert Harbor or Luderitz Harbor, as appropriate.

At night, when approaching from S, a distance off the coast of at least 3 miles should be maintained until NE of Dias Point

Light. Vessels should keep clear of an area of foul ground W of Halifax Island and be aware of crayfish trap fishing in the vicinity. The course is then altered E to pass N of Angra Rock Lighted Buoy (26°37'S., 15°08'E.), keeping in the fixed white sector of Dias Point Light. The fixed red sector covers the reef and the SE shore of Shearwater Bay. After passing the lighted buoy, the white sector of Shark Island Light is entered and course can be shaped for entering Robert Harbor or Luderitz Harbor.

Caution.—A large foul ground area, containing anchored floating ropes and unlighted buoys, lies centered 4 miles WSW of Dias Point Light and may best be seen on the chart.

A marine farm (mussel cultures) lies off the E coast of Seal Island and may best be seen on the chart. Vessels should keep well clear of the area due to the presence of unlit floating platforms and booms.

Luderitz Bay to the Orange River

5.22 The coast extending between Dias Point (26°38'S., 15°06'E.) and Chameis Baai, 81 miles SSE, is indented with many small bays which are enclosed by rocky headlands. The interior is desert country, consisting of sandy valleys with sparse scrub vegetation lying between ranges of sandstone and quartzite hills.

Halifax Island (26°39'S., 15°05'E.), lying 1.2 miles SW of Dias Point, is 23m high. It is separated from the mainland to the SE by a shallow and narrow channel. A number of huts are situated on the island and a flagstaff stands on its NE extremity. Halifax Reef, parts of which are above water, extends about 0.5 mile NNW from the N side of the island. Halifax Island appears as a range of black hummocks from S and has been reportedly mistaken for Dias Point.

Caution.—Vessels should keep clear of a foul ground area WNW of Halifax Island and be aware of crayfish trap fishing in the vicinity. Crayfishing vessels may be encountered within 3 miles of the coast to the S of Luderitz Bay. Such vessels may be anchored or drifting with unlit bottom gear, marker buoys, and recovery lines.

Guano Bay, lying close SW of Dias Point, is sheltered from S and SW winds by Halifax Island and Halifax Reef.

Anchorage can be taken in a depth of 9m about 0.3 mile NE of the NE end of Halifax Island, but depths decrease rapidly within 0.3 mile of the shore of the bay.

Grosse Bucht (26°45'S., 15°06'E.), also known as Big Bay, lies approximately 6 miles S of Halifax Island and has a sandy coastline alternating with rocks. It affords no shelter, except to small vessels in a N wind, as the bottom is reported to be foul.

Albatross Peak, a double-headed peak, rises 2.5 miles E of Grosse Bay. It is 176m high, reddish in color, and prominent from S.

Wolf Bay, providing no protection, lies 4 miles SSE of Grosse Bay. North Long Island, low-lying and almost divided into two parts, lies 0.5 mile offshore, close S of the entrance to Wolf Bay. South Long Island, lying 0.5 mile S of North Long Island, is situated close off a small point on the coast. Both of these islands are occupied by seals.

Zwei Spitz (Zwei Point) (26°52'S., 15°09'E.), located 2 miles SE of South Long Island, consists of a prominent table-

topped hill. Abenteuer Bay, which is reported to be deep, lies close S of this point. A submerged reef, which breaks, lies about 0.4 mile offshore, 1.3 miles S of the point. The cliffs in this vicinity are composed of cream-colored rock, in contrast to the prevailing gray granite.

Elizabeth Point (26°55'S., 15°11'E.), low and rocky, is situated 4.5 miles SSE of Zwei Point. This point is fronted by a dangerous reef and heavy breakers on its S side. The ruins of an old mining town, which is situated N of the point, are conspicuous when viewed from the W.

Elizabeth Bay is entered S of the reefs fronting Elizabeth Point. It is backed by a low plain with shifting sand hills, behind which the country is hilly.

Zweikuppen (Saddle Mount) (26°56'S., 15°20'E.) rises to an elevation of 358m about 8 miles E of Elizabeth Point and is prominent. Dreizackberg, 468m high, stands 6 miles SE of Zweikuppen. Two peaks, known as The Paps, rise to elevations of 1,520m and 1,615m behind these hills, and are conspicuous in clear weather.

5.23 Possession Island (27°01'S., 15°12'E.) lies 5 miles S of Elizabeth Point and rises to an elevation of 27m in its S part. The coasts of the island are rocky. The island can be easily identified when approached from either N or S. When seen from close S, the island appears as a group of islets because it has several summits joined by low land. A small settlement, with a pier and a flagstaff, is situated on the E side of the island, 0.5 mile from its N extremity.

Two islets lie close off the N end of Possession Island and North Reef, marked by breakers, extends about 1 mile NNW from the island. Kreuz Shoals consists of two detached groups. One group, with a least depth of 3.1m, and another group, with a least depth of 5.1m, lie about 0.7 mile and 1.4 miles, respectively, NE of the N end of the island. Possession Rock, awash, lies 0.7 mile SSE of the N end of the island and about 0.3 mile offshore.

South Reef, marked by breakers and incompletely surveyed, extends about 1.5 miles S from the S end of Possession Island. Several wrecks lie on this reef and it should be given a wide berth.

Sheltered anchorage, in smooth water, can be taken by small vessels within Possession Road at the E side of the island. Vessels should anchor, in a depth of 8m, about 0.5 mile NNE of the flagstaff situated at the settlement. However, it is reported that the sea bed is covered in kelp in places and does not provide good holding ground.

Possession Road may be approached by passing either N or S of Possession Island. When approaching from the N, vessels should give the islets lying off the N end of the island a berth of at least 1 mile and keep well over toward the mainland shore. The best approach to the anchorage is from the S, giving the S end of Possession Island a berth of at least 2 miles until the N extremity of the island is open E of the SE end of the island.

5.24 Prinzen Bucht (Prince of Wales Bay) (27°05'S., 15°15'E.), a small indentation in the coast, lies 5 miles SSE of Possession Island. Foul ground and shallow rocks extend about 0.5 mile NNW from the SW entrance point of this bay. Anchorage in depths of 8 to 12m can be obtained by small craft about 0.3 mile NE of the N edge of the foul ground.

Albatross Rocks (27°07'S., 15°14'E.) lies about 0.8 mile off the coast, 5.8 miles SSE of the S end of Possession Island. It consists of a ridge of volcanic islets and above-water rocks, about 0.7 mile long. The southernmost and largest islet appears prominent against the lighter-colored mainland when viewed from seaward. Foul ground extends up to about 0.4 mile N and 1.5 miles S of these rocks. The foul ground extending S from the rocks is marked by breakers.

Caution.—Albatross Channel, lying between Albatross Rocks and the mainland, appears to be clear and has a depth of 6.7m lying in its N entrance. However, vessels using this channel are advised to exercise great caution.

Jammer Bucht, a small bay, lies 4 miles S of Prinzen Bucht and has a predominantly rocky shore except for a sandy beach at its N end.

Pomona Island (27°12'S., 15°16'E.), 15m high, lies close off the coast, 4.5 miles SSE of Albatross Rocks. A submerged rock lies between the island and the mainland. A flagstaff, a beacon, and some buildings stand on the E side of the island but are not prominent from seaward. When seen from the W, the island appears as two low hummocks. Small vessel anchorage may be obtained off the N end of Pomona Island in depths of about 10 m, good holding ground.

The mainland extending between Prinzen Bucht and Pomona Island is backed by a coastal range of hills, 47 to 125m high. From abreast of Pomona Island to Bakers Bay, 31 miles SSE, the coast has a mostly desolate appearance, without the least sign of vegetation. It is fronted about 0.5 mile offshore by numerous islets and reefs. There are no known dangers lying more than 1 mile offshore, but vessels are advised to remain at least 2 miles off the coast.

Tafelberg (27°16'S., 15°23'E.), a prominent mountain, rises to an elevation of 214m about 8 miles SE of Pomona Island.

Black Point (27°19'S., 15°18'E.) is located 8 miles SSE of Possession Island. A dangerous wreck is reported to lie about 1.8 miles W of this point.

Black Rock, 10m high, lies about 5 miles SE of Black Point and close S of the N cape of Van Reenan Bay. This latter bay affords no shelter.

5.25 Bogenfels (Arch Rock) (27°28'S., 15°24'E.), located 5 miles SE of Black Rock, is a large rock, 58m high, which projects from the coast in the shape of an archway. It is one of the most remarkable features on the coast of Namibia. From W or N, it is not at all distinct, but from the SSW this arch shows up well against the light-colored coast.

Driemaster Bay is entered about 6 miles SSE of Bogenfels. The shore of this bay is foul and breakers extend up to about 0.3 mile seaward of it. Small vessels can anchor in a depth of 11m in the S part of the bay.

False Plum Pudding is a rocky projection lying 3 miles SSE of Driemaster Bay. A shallow reef, with extensive foul ground, extends up to about 1 mile offshore close N of this projection.

Plum Pudding Island, 13m high, is located 0.3 mile offshore, 2 miles SSE of False Plum Pudding. Black Sophie Rock, 3m high, lies 0.4 mile S of this island. Foul ground and breakers surround both these dangers and extend to the coast.

Bakers Bay (27°40'S., 15°31'E.) is entered between Black Sophie Rock and Sinclair Island, 15m high, lying 1 mile SSE. The latter island is almost joined on its SE to Lion's Head, a

headland forming the S entrance point of the bay. Mining buildings and a jetty, all in ruins, are situated in the S part of the bay. Depths within the bay decrease from 15 to 7m over sand, the latter depth being found outside the breakers, about 0.3 mile offshore. Anchorage, sheltered from S winds, can be taken by small vessels, in a depth of 12m, sand, in the middle of the bay.

Sparrow Hawk Islet, 33m high, lies in the middle of a small bay located between Lion's Head and Needle Point, 0.5 mile S.

Durnburg Bay is entered between Vohsenberg, 30m high, located about 0.5 mile S of Needle Point and Kapp Durnburg, 1.5 miles S. This bay appears to be full of breakers and there are several rocks and islets in it.

Copper Mount rises to an elevation of 50m about 1 mile E of Kapp Durnburg and is conspicuous from seaward.

Dunkle Wand Point, also known as Dunkle Wand Spitze, is located 2.5 miles SSE of Kapp Durnburg and is fringed by breakers. A small islet lies within the bight located on the N side of this point and has the appearance of a dark wall. A precipice formed of green rock is situated about 2.2 miles SE of the point.

North Rock (Nordfels) is one of a group of rocks lying 0.2 mile offshore, 4 miles SE of Dunkle Wand Point. South Rock (Sudfels), another group of rocks, lies close offshore, 2.5 miles farther SE. Detached shoal patches, with depths of 5.5m and 18.3m, lie, about 1.5 miles W and 2 miles SW, respectively, of South Rock.

5.26 Chameis Bucht (27°55'S., 15°40'E.) lies 6 miles SE of South Rock and is entered between Chameis Head and Panther Head, 4 miles SSE. Chameis Reefs, consisting of North Reef and South Reef, lie in the approach to the bay. North Reef, which breaks and has a least depth of 8m, lies 1.7 miles SW of Chameis Head. South Reef, which sometimes breaks, has a least depth of 14m lying about 2 miles SSE of North Reef. Panther Reef, which dries 0.5m and is steep-to, lies 0.7 mile N of Panther Huk. Stranded wrecks lie close N of Chameis Head and at the SE end of the bay.

Schlangen Mount rises to an elevation of 81m about 1 mile E of Panther Head and is prominent from seaward.

The coast between Chameis Bucht and the mouth of the Orange River, about 63 miles SE, is formed by an almost unbroken line of undulating sand with low scrub, in contrast to the coast farther N. With few exceptions, the coastal hills are low and inconspicuous. Intense diamond mining is under way in this area, with mine dumps, mine headgear, and pump houses situated along the coast providing prominent marks for the mariner.

Boegoeberge (27°54'S., 15°56'E.), 578m high, rises about 14 miles E of Panther Head and is conspicuous. Its summit is surmounted by a radio mast.

Nord-licher-Tafelberg, 67m high; Grosse Tafelberg, 79m high; and Tafelberg-Suid, 84m high, stand close to the coast, between 4 and 8 miles SE of Panther Head.

Kerbe Huk (28°14'S., 16°00'E.), 54m high, is located 25 miles SE of Panther Head. This headland is fronted by a stranded wreck. A lighted LANBY (28°343'S., 16°07'E.) is moored about 9 miles offshore, 21 miles S of this headland.

A prominent tower, with an elevation of 16m, stands 5 miles SE of Kerbe Huk; a submarine pipeline extends about 0.8 mile

SSW from the shore in its vicinity.

Schakalberg (28°09'S., 16°35'E.), rising to an elevation of 624m, stands about 30 miles inland from Kerbe Huk and is prominent from seaward.

Caution.—A detached shoal, with a least depth of 57m, was reported (1956) to lie about 14 miles SW of Panther Huk (27°56'S., 15°41'E.).

Diamond Area No. 1, a coastal strip about 140 miles wide, extends from the parallel of 26°S to the Orange River (28°38'S., 16°27'E.). Landing or entry without permission is prohibited within this area.

Marine Mining Vessels (MMVs), which process gravel for diamonds, may be encountered in large numbers inshore between Hottentot Bay and the Orange River (28°38'S., 16°27'E.). These diamond mining barges are usually moored to four anchors, which may or may not be marked by unlit buoys. Vessels are advised to stay at least 1,500m away from MMVs.



Marine Mining Vessels (MMVs)

5.27 Oranjemund (28°33'S., 16°26'E.) is situated 28 miles SE of Kerbe Huk. The town is well laid out, with excellent amenities despite the surrounding desert. The inhabitants of the town are nearly all connected with the diamond-mining industry. A small airfield is situated close SE of the town.

Oranjemund Oil Terminal is no longer in use. The buoys and submarine pipeline have been removed. A foul area, not dangerous to surface navigation remains.

The Orange River to Port Nolloth

5.28 The Orange River (28°38'S., 16°28'E.) enters the sea about 6 miles SE of the town of Oranjemund. It is one of the largest rivers in Africa, crossing nearly the whole of the S part of the continent and flowing W for about 1,000 miles. The mouth of the river is closed during dry periods by a sand bank, nearly 0.7 mile long, which is breached at varying points when the river is in flood. The banks on both sides of the river are fertile. The Earnest Oppenheimer Bridge spans the river 5 miles above the entrance.

Off the mouth of the river, silt has covered the rock bottom and formed an even gradient out to depths of 100m. Discolored water of a light green hue occurs frequently off the mouth and extends up to 50 miles seaward.

Numerous prospecting trenches dug at right angles to the

coast are situated between the Orange River and Cape Columbine (32°50'S., 17°51'E.). There are also many fairly-high mine dumps and well-lit mine structures. In some places, the coastline has been pushed out to sea for a considerable distance by dikes; the enclosed area is then pumped out and the sea bed is cleared to the bedrock to recover alluvial diamonds.

The border between Namibia and the Republic of South Africa is situated in the vicinity of the Orange River.

Caution.—Crayfishing vessels may be encountered within 3 miles of the coast between the Orange River and Cape Columbine (32°50'S., 17°51'E.). Such vessels may be anchored or drifting with unlit bottom gear, marker buoys, and recovery lines.

Marine Mining Vessels (MMVs), which process gravel for diamonds, may be encountered in large numbers inshore between Hottentot Bay and the Orange River (28°38'S., 16°27'E.). These diamond mining barges are usually moored to four anchors, which may or may not be marked by unlit buoys. Vessels are advised to stay at least 1,500m away from MMVs.

At times a rapid decrease in the density of the air above the cold sea forms mirages in areas along the coast between the Orange River and Cape Columbine (32°50'S., 17°51'E.). These mirages can be distorted and may occasionally produce inverted images.

The coast between the Orange River and Port Nolloth, 42 miles SSE, is fringed by numerous reefs and dangerous shoals which extend up to 3 miles seaward in places. Vessels navigating in this area are advised to remain in depths of 50m or more.

5.29 Alexander Bay (28°40'S., 16°31'E.) lies 3.5 miles SE of the mouth of the Orange River. Alexander Bay Peak rises to a summit of dark rock 1 mile E of the head of the bay. It is 122m high and prominent. This bay is used by small local vessels engaged in coastal diamond dredging.

Tripp Shoal, rocky with a least depth of 5.5m, lies about 1 mile WSW of the N entrance point of Alexander Bay and usually breaks.

Anchorage off Alexander Bay is not safe because the coast is exposed to the prevailing S wind. There is occasionally a S set off the bay, but it is easily detected by the presence of discolored water from the Orange River.

Kaap Voltas (28°43'S., 16°33'E.), a low and rocky promontory, is located 3.5 miles SE of Alexander Bay. The intervening coast is low, sandy, and desolate.

Peacock Bank, with a least depth of 16.7m, lies about 3.5 miles WSW of Kaap Voltas.

Peacock Roadstead lies within a bight, 2.5 miles wide, located S of Kaap Voltas. The shores of the bight are backed by hills, which are sparsely-covered with low scrub, and by mountains farther inland. The shore in the S part of the bight is formed by a sloping, rocky cliff which affords a certain amount of shelter from the prevailing S wind and swell. A long sandy beach is situated N of the cliff. Depths in the roadstead are regular, ranging from 7m close under the cliff to 26m. Vessels may anchor, in a depth of 20m, dark gray sand, about 0.5 mile off the cliff.

The bight can easily be recognized by The Boegoeberg Twins. Boegoeberg-Noord, 131m high, and Boegoeberg-Suid, 161m high, are hills which stand about 1 mile and 2 miles, respectively, SE of the S entrance point of the bight. These hills

are conspicuous and rise abruptly from the level ground close within the S entrance point. The northernmost hill is surmounted by a mining survey beacon; the southernmost hill is surmounted by several radio masts.

It is reported (1956) that with the S wind blowing normally, at about force 4 to 5 a few miles from the coast, inside Peacock Roadstead the wind would often reach force 6 to 7, apparently due to local katabatic conditions. It has also been stated that rollers sometimes break as far out as the line joining Alexander Bay and Harrison Cove, an indentation lying in the SE part of the bight. However, a survey (1997) did not observe this phenomenon.

5.30 Homewood Cove (28°46'S., 16°34'E.) lies close S of the S entrance point of Peacock Roadstead. It is nearly circular and about 0.2 mile wide, with receding sides rising to heights of 18 to 24m. It is used by small craft with local knowledge. Collins Reef, with a least depth of 5.4m and on which the sea breaks, lies about 0.8 mile SSW of the entrance to this cove.

Wreck Point (28°52'S., 16°36'E.), backed by sand dunes, is located 7 miles SSE of Homewood Cove. A stranded wreck lies on the beach about 3 miles SE of this point.

Soco Reefs, which break heavily, extend 1.5 miles offshore, about 2 miles SE of Wreck Point.

Holgratrivier, generally dry, empties into the sea 9 miles SE of Wreck Point and its entrance is fronted by a sand bar. Shallow rocks extend about 0.5 mile SW from the N entrance point of the river mouth. The river valley is fairly conspicuous when viewed from the SW.

A rock, with a least depth of 8.5m and which breaks in a heavy swell, lies about 2 miles offshore, midway between Holgratrivier and Jackals Pit, a small cove, located 7 miles SE. Jackals Pit is enclosed by cliffs, 18 to 21m high.

Cliff Point (29°07'S., 16°49'E.) is located 9.5 miles SE of the mouth of Holgratrivier and at the SE end of Jackals Pit. A detached rocky shoal, with a least depth of 8.5m, lies 2 miles offshore, about 4.5 miles NW of Cliff Point. Another detached rocky shoal, with a least depth of 3.4m, lies 1.8 miles offshore, about 2.5 miles SW of Cliff Point. Both of these shoals break in a heavy swell.

5.31 Port Nolloth (29°15'S., 16°52'E.), located 8.5 miles SSE of Cliff Point, lies between North Point and South Point, 1.6 miles SSE. The port, formerly known as Robbe Bay, is shallow and suitable only for shallow draft vessels. It is used mainly by local vessels carrying out coastal diamond dredging and fishing boats. The town of Port Nolloth stands on the low-lying land to the E of the harbor and is fairly prominent.

Winds—Weather.—The prevailing winds are from the SE.

Tides—Currents.—The tides rise about 1.6m at springs and 1.1m at neaps.

The current outside the reefs usually sets N at a velocity of 0.5 to 1 knot. Fresh and sustained N winds check the current, and will reverse the current if persisting for several days. The reversed current normally attains a velocity of no more than 0.5 knot, but a velocity of 3 knots has been reported. The current in the port attains a velocity of 0.5 knot to 3 knots, depending on the strength of the SW wind. It enters through the reefs close NW of South Reef and, after passing through the inner anchorage, runs out across The Bar and the S part of the North Reef in

a NW direction, losing some of its strength as it crosses them. It is reported that the strength of the current depends on the size of the swell and that during a heavy swell, the current may run strongly N through the harbor, meeting a weaker S current from the N part of the harbor. Both currents then unite and flow seaward over The Bar.

Depths—Limitations.—Owen Island lies close S of South Point. It is 3m high and connected to the mainland on the N side by a rocky and sandy neck, which dries at LW. The harbor is formed by a reef, which dries in places, extending about 0.8 mile NNW from Owen Island. North Point is 10m high. This point and South Point are both marked by heavy breakers and fringed by reefs. Several obstructions lie in the approach and may best be seen on the chart.

North Blinder, a shoal with a least depth of 3.3m and which breaks heavily, lies 0.6 mile SSE of North Point. South Blinder, a shoal which breaks and has a least depth of 2.1m, lies 0.9 mile SSE of North Point. The approach track passes between North Blinder and South Blinder but, although 300m wide, it is obstructed by The Bar, a rocky shoal, with a least depth of 3m. Inside the bar, an entrance channel, dredged to a depth of 3.3m (1990), leads S to the berths.

An L-shaped pier, 66m long, has depths up to 3.9m alongside. Vessels up to 1,100 dwt, 61m in length, and 3.6m draft can be accommodated. It is reported (1999) that there is less water than charted alongside this pier.

There are two private piers, each about 100m long, with depths of less than 2m alongside. It is reported (1995) that these piers are seldom used.

Aspect.—North Point, 10m high, is easily recognized by the prominent buildings of the fisheries factory standing near its extremity.

The approach track over the bar leads in an ENE direction from seaward. It is indicated by a lighted range which may best be seen on the chart. Bar Light, the front range light, is shown from a structure, 1m high, standing 1 mile SSE of North Point.

Carl Von Schlick Lighted Beacon, 11m high, stands close ENE of Bar Light and forms the rear range light. It is equipped with a racon.

“F” Beacon, a triangle apex up on a black structure, stands 0.3 mile ENE of Bar Light and in alignment with the range. A group of reddish sand hills, 180m high, rises about 5 miles E of the port and forms a background for the approach range. The Augrabis Mountains rise to an elevation of 493m about 14 miles inland from the port.

Fairway Lighted Buoy is moored about 0.8 mile SSE of North Point and close inside the bar. The channel leading to the berths is marked by buoys.

A Roman Catholic Church, with a prominent square tower, stands close SSE of Carl Von Schlick Lighted Beacon. An oil tank and a crane, both conspicuous, are situated near the L-shaped pier.

Pilotage.—Pilotage is not available; however, the Port Officer will give directions for entering the harbor and berthing on VHF channel 12 or 13. Entry and departure from the port are carried out only by daylight. Vessels should send an ETA at least 72 hours in advance. Local knowledge is advised. Vessels arriving from non-South African ports must first obtain permission to enter from Cape Town or other South African ports.

Signals.—Bar Light (front range light) shows a fixed white light when the bar is passable and a fixed red light when the bar is closed.

Contact Information.—Port Nolloth can be contacted, as follows:

1. Telephone: 27-851-8655
2. Facsimile: 27-851-8655

Anchorage.—Vessels can anchor outside the reefs in a depth of 42m, sand, about 1 mile outside the bar but they frequently roll heavily. Landing in ship's boats should not be attempted.

Caution.—When crossing the bar, the alignment of the range must be closely followed because the sea breaks heavily on both sides of the track. When the swell is heavy, breakers may frequently extend across the passage, preventing vessels from entering or leaving for as long as three consecutive days.

Port Nolloth to Hondeklipbaai

5.32 John Owen Bay (29°16'S., 16°53'E.), lying close E of Owen Island, is a small indentation open to the SW. It may be used by small craft during N winds. Breakers extend across the entrance to the bay with a moderate swell from the S. During strong S winds it is untenable, the whole bay being a mass of broken water with a heavy swell. Local knowledge is required.

MacDougalls Bay is a slight indentation, 1 mile wide, lying 1 mile S of Port Nolloth. Reefs, with several rocks and islets, extend from the entrance points and encircle the entrance. They provide good shelter. The bay is used by small craft with local knowledge; a resort is situated on its S side.

Goap Point (29°18'S., 16°53'E.) is located 1.5 miles SSE of MacDougalls Bay. Oubeep Bay lies about 1.6 miles SSE of this point. It is rock bound and provides no shelter. A conspicuous sand hill, 25m high, rises close S of the bay.

Penguin Rocks (29°36'S., 17°01'E.), 2m high, lie 0.5 mile offshore, about 19 miles SSE of Goap Point. A foul and rocky reef, which breaks with a heavy swell, extends up to about 1 mile W and 2 miles S of these rocks.

The Buffels River, with a long sandy beach, enters the sea about 4.7 miles SSE of Penguin Rocks. The coast between is fronted by foul ground which extends up to about 1 mile offshore.

Wolfberg, 203m high, rises 4 miles NE of Penguin Rocks. This prominent hill has a large cairn of stones surmounting its summit. Arnot se Kop (Buffelskop), 214m high, rises 3.5 miles E of Penguin Rocks. This hill, which is surmounted by a small trigonometrical beacon, is also prominent. The conspicuous headgear of a diamond mine, with its associated buildings, stands 3.5 miles SSE of Penguin Rocks.

A stranded wreck lies off the mouth of the Buffels River. The bed of this river is usually dry for a considerable distance inland. The mining town of Kleinsee, standing 1 mile inland, is situated on the S bank of the river and is prominent from SW and W. The headquarters of De Beer's Consolidated Mines is situated at Grootmis, which stands on the N bank of the river, farther inland.

The coast between the Buffels River and Hondeklipbaai, 40 miles SSE, is bordered by dangerous submerged rocks, some awash, which extend up to 1.5 miles offshore.

Diamond Hole, a small bay fronted by reefs, lies about 2

miles SSE of the Buffels River and close S of a low promontory. Rooiklippijies, a prominent stretch of reddish rocky ledges, is located 1 mile S of this bay.

Gorab se Kop rises 1.5 miles inland and 5.5 miles SSE of the mouth of the Buffels River. This prominent hill is 188m high; its summit is surmounted by a beacon. It is the tallest point of a flat range of hills.

5.33 Melkbospunt (29°49'S., 17°05'E.), located 8 miles SSE of the mouth of the Buffels River, is low-lying and fringed with rock. Numerous white mining dumps stand close inland of this point. Swartklip lies 6.5 miles SSE of Melkbospunt and close off an inconspicuous rocky point. This rock is dark-colored and 2.5m high.

Naganas Point (Naas Naaspunt) (29°56'S., 17°07'E.), located 7.5 miles SSE of Melkbospunt, can be recognized by a conspicuous rock lying near its extremity. Stranded wrecks are reported to lie about 1 mile, 6.7 miles, and 9.5 miles SSE of the point.

Swartkop, 286m high and prominent, stands about 6 miles ESE of Naganas Point and is surmounted by a beacon. It is the tallest of the coastal hills in this vicinity.

Skulpfonteinpunt (30°06'S., 17°11'E.) is located 18 miles SSE of Melkbospunt and fringed by dangerous rocks.

Somnaasbaai, lying 4 miles SSE of Skulpfonteinpunt, has a sandy beach where landing may be effected on a calm day. Wolfkop, a prominent mine dump, rises 1.2 miles inland, 3.5 miles SSE of the bay; it is 72m high and surmounted by a small beacon. The mining settlement of Koingnaas stands 3 miles SSE of the bay and is conspicuous because of its white buildings which have bright green roofs.

Swartlintjiesrivier (30°16'S., 17°16'E.) lies 3.2 miles S of Koingnaas. The mouth of the river, which is entirely barred by sand, is fronted by rocks extending up about 0.5 mile seaward.

Caution.—The coastal area between Melkbospunt and Skulpfonteinpunt has not been closely examined and vessels are cautioned to stay at least 4 miles offshore. During fog or low visibility and at night, this distance should be increased to 10 miles.

Hondeklipbaai

5.34 Hondeklipbaai (30°19'S., 17°16'E.), the site of a former copper mine, is located 6.5 miles SSE of Koingnaas. The bay receives its name from an isolated block of granite, 5m high, called Hondeklip or Dogstone. This prominent stone is situated 0.2 mile inland and 0.4 mile S of the head of the bay. It stands at an elevation of 21m and is surmounted by a beacon. A conspicuous radio mast is situated 0.7 mile WSW of the stone.

The bay, which is suitable only for small vessels, is about 0.3 mile wide, but its entrance is narrowed to a width of 100m by rocks and foul ground extending from both entrance points. It is sheltered from all but W winds, which seldom occur. A sandy beach is located in the S part of the head of the bay.

A jetty, with a large building at its extremity, extends NW from the S end of the beach. Private moorings for diamond-dredging vessels and fishing boats are situated within the bay.

Hondeklip Bay Light (30°18'S., 17°16'E.) is shown from a framework tower, 8m high, standing 0.2 mile N of the bay. A directional light is shown from a column on a square building,

3m high, standing at the head of the bay. The entrance track leads in an E direction between the offshore dangers within the white sector of this light. It is reported (2002) that the edges of the white sector are blurred and vessels should endeavor to keep the light at its brightest.

Spitfire Reef, with a least depth of 5.5m and on which heavy rollers occasionally break, lies about 0.5 mile WSW of the S entrance point of the bay. Spitfire Rock, on which the sea breaks, lies about 0.8 mile E of this reef. These dangers should be given a wide berth.

The current off the coast in the vicinity of Hondeklipbaai usually runs N, but after a prolonged N wind, it sets in the opposite direction.

Vessels may anchor outside the bay in depths of 10 to 15m, rock bottom with good holding ground, to the W of the directional light sector.

Hondeklipbaai to the Olifants River

5.35 Plaatklippunt (30°20'S., 17°17'E.), located 1 mile S of Hondeklipbaai, is surmounted by a stone cairn. A stranded wreck lies on a rocky point about 0.8 mile SSE of this point. The coast between Plaatklippunt and Rooiwalbaai, 8 miles SSE, is bordered by rocks and breakers, which extend up to about 0.5 mile offshore. It provides very few features that can be distinguished at any distance. The background hills appear as long ridges without any definite summits.

Rooiwalbaai (30°27'S., 17°21'E.), located 9.5 miles SSE of Hondeklip Bay Light, has a vertical cliff composed of red sandstone, 11m high, at its head. The almost level summit of the cliff is surmounted by a sloping bank of white sand of about the same height. The red cliff with its white crest is easily identified when seen from WSW. The bay affords no shelter.

Spoeg River, the mouth of which is often closed, empties into a sandy bay, about 1 mile wide, about 1.2 miles S of Rooiwalbaai. A group of rocks, which breaks, lies 0.5 mile off the S entrance point of the bay.

Spugmond (Kanoepkop), 176m high, rises 2.7 miles ENE of the mouth of the Spoeg River and is surmounted by a small beacon. It is the most prominent of the coastal hills in the vicinity. This hill may be easily recognized by some bare brown patches appearing on its N side.

The coast between the mouth of Spoeg River and Olifants River, 86 miles ESE, provides few features that can be distinguished at a distance. A range of mountains, rising to elevations exceeding 1,500m, stands about 40 miles inland and parallel to the shore.

Caution.—Great care should be exercised while navigating along this stretch of coast due to incomplete surveys.

5.36 Strandfonteinpunt (30°34'S., 17°25'E.) is located 6 miles SSE of the mouth of the Spoeg River. A submerged reef, on which the sea breaks heavily, extends about 0.7 mile WSW from this point.

Roodewal (Toringkop), 193m high, rises prominently about 2.5 miles ENE of Strandfonteinpunt and a conspicuous ruined signal tower stands on its summit.

The Twins, two rocks which usually break, lie about 0.7 mile offshore, 15 miles SSE of Strandfonteinpunt. These rocks should be given a wide berth.

Groenriviermond Light (30°50'S., 17°35'E.) is shown from a prominent tower, 17m high, standing 20 miles SSE of Strandfonteinpunt.

The Groen River lies about 1.2 miles N of Groenriviermond Light. Its mouth is usually closed by sand banks. A building standing 1 mile NNE of the river entrance is reported to be conspicuous from seaward.

Island Point, located 3 miles SSE of Groenriviermond Light, consists of a flat rock lying close off a low sandy point. A conspicuous stranded wreck lies near the center of the flat rock. It consists of engine parts, 5m high, which are covered by guano. A conspicuous boulder stands on a point located about 1 mile N of Island Point.

The Brak River lies 13 miles SSE of Island Point and rocks, which break, extend about 1 mile SW from its mouth. Ruitersvlei, a swampy area which floods at HWS, is located at the closed mouth of the river.

Toringberg (31°02'S., 18°00'E.), 552m high, rises about 15 miles ENE of the entrance to the Brak River and is conspicuous. When viewed from the vicinity of the river entrance, it has steep N and S sides.

The Sout River, which is closed, lies 10.5 miles SSE of the Brak River. A large rock, 4m high, lies close offshore, close N of the river mouth. An extensive salt mine is situated 15 miles inland of the river mouth. Large mounds of salt may at times be seen over the dunes in this vicinity.

Krakeelklip, 351m high, stands 16 miles ESE of the mouth of the Sout River. This hill forms the best landmark in the vicinity.

5.37 Jakkalshok (31°21'S., 17°54'E.), located 7 miles SSE of the mouth of the Sout River, may be recognized by the derelict mining machinery situated near the coast. Breakers have been observed extending seaward for some distance off this point.

Between Jakkalshok and Cliff Point, 18.5 miles SSE, several conspicuous buildings stand within 2 miles of the coast.

Cliff Point (31°36'S., 18°07'E.) is a remarkable double point of rugged formation, on which there are numerous mine workings and dumps.

Graafwaterkop (Geelwal Se kop), a rounded hill, stands 1.7 miles N of Cliff Point and is conspicuous. It is 130m high and surmounted by a trigonometrical beacon.

Elephant Rock (Robeiland), 15m high and radar conspicuous, lies about 0.4 mile offshore, 3 miles SSE of Cliff Point. This rock is connected to the coast by a sandy bar, over which the sea breaks at LW, and its W extremity is fronted by a reef.

The **Olifants River** (31°42'S., 18°11'E.), formerly known as Elephants River, lies 7 miles SSE of Cliff Point. Its mouth is obstructed by a bar, with a depth of 0.6m, on which the sea usually breaks. The village of Papendorp stands 1 mile E of the entrance, on the shore of a lagoon. A conspicuous school building is situated 1.5 miles NE of the river mouth. The town of Vredendel is situated 25 miles inland of the river mouth and the entire area is exceptionally fertile.

5.38 The coast between the mouth of the Olifants River and Cape Deseada, 37 miles SSE, presents a contrast to that extending to the N of the river. It has long, sandy stretches interspersed with rocky headlands. In general, the farther S one

proceeds, the coast becomes greener and more cultivated. The coastal hills and inland ranges also provide more distinctive landmarks.

Strandfontein (31°45'S., 18°14'E.), located 4 miles SSE of the mouth of the Olifants River, is a resort. This village stands at the S end of a sandy beach and its white buildings are conspicuous from WNW. A prominent white hotel is situated on high ground behind the village. Radio masts stand, at elevations of 226m and 107m, about 8 miles NE and 1.2 miles S, respectively, of the village.

Doringbaai Light (31°49'S., 18°14'E.) is shown from a conspicuous round tower, 24m high, standing 3.5 miles S of Strandfontein. It is situated on Vaalpunt, the S entrance point of Doring Bay. This bay is used only by a fleet of small fishing boats with local knowledge. Entry requires local knowledge.



Doringbaai Light

Cape Donkin (31°56'S., 18°16'E.), located 7.5 miles S of Doringbaai Light, forms the S entrance point of Donkins Bay. This bay is used by a fleet of small fishing boats. Anchorage may be taken off the bay, in depths of 10 to 20m, sand, but this roadstead is exposed.

5.39 Lambert's Bay (32°05'S., 18°18'E.) (World Port Index No. 46740), located 9 miles S of Cape Donkin, is a fishing center and a resort. The town stands in the SE part of the bay, which is 0.5 mile wide. The harbor is used by small coasters and fishing boats.

The bay is backed by scrub-covered sand dunes, 6 to 20m high. Bird Islet (Penguin Island), 12m high, lies close off the SW entrance point. The bay is open to the NW, but is partially sheltered from SW winds by Bird Islet. The SW swell, though slight outside, frequently enters the bay.

East Breakwater extends 0.2 mile NE from Bird Islet. A channel, dredged to a depth of 3m (1975), leads from the vicinity of the head of this breakwater to the Inner Harbor, West Breakwater and South Breakwater, which connect Bird Islet to the mainland, form the W side of the Inner Harbor. Random Mole extends 0.1 mile N from the mainland, on the E side of the dredged channel. Several reefs and rocks lie in the approaches up to about 0.4 mile NW, W, and S of Bird Islet. The harbor should be approached from NW and entered from NE between East Breakwater and Random Mole. Local knowledge is advised.

East Breakwater provides one coaster berth, 60m long, with a depth of 5m alongside. The Inner Harbor, with three quays, provides berths with depths up to 3m for fishing boats.

A light is shown from the head of East Breakwater. A directional light is shown from a structure standing 0.3 mile S of East Breakwater Light. It indicates the channel leading S to the Inner Harbor.

Conspicuous chimneys stand close SW and 0.2 mile SW, respectively, of the directional light. A church, with a conspicuous spire, is situated 0.2 mile ESE of the directional light.

Vessels, with drafts up to 4m, can anchor in a depth of 10m about 0.2 mile NNW of the head of East Breakwater. This anchorage is well-sheltered from the prevailing SW swell, but vessels should be prepared to sail instantly because the sea can become troublesome with little or no warning, filling the whole bay with breakers. Vessels at anchor should proceed to sea immediately when the wind becomes N of W.

Caution.—It is reported (1999) that less water than charted exists in the dredged approach channel and alongside the berths due to silting.

Lambert's Bay to Saldanha Bay

5.40 Langvlei (Wadrifoutpan) (32°13'S., 18°21'E.), a shallow lagoon and bird sanctuary, extends inland for about 3 miles from the coast, 7 miles S of Lambert's Bay. A prominent radio mast, 94m high, stands at the SW end of the lagoon.

Cape Deseada (32°19'S., 18°19'E.), also known as Baboon Point, is located 14 miles S of Lambert's Bay. This cape appears bold and cliffy from a distance of about 9 miles, as it rises steeply from the sea to a flat-topped hills, 192m high. The cape ends in a low sandy point which is not easily seen from seaward. A prominent radio mast stands, at an elevation of 160m, close within the cape.

An isolated rocky shoal, with a least depth of 14.3m, lies about 2 miles NNW of the cape and breaks occasionally in heavy weather.

Elandsbaai lies close N of Cape Deseada and is used by small craft and fishing boats. A resort village stands at the head of the bay. Verlorevlei, a lagoon, extends inland from the head of the bay for 8 miles but its mouth is usually closed by a sandy bar.

Caution.—Due to the possible existence of uncharted rocks and shoals, vessels should exercise extreme caution when navigating within 6 miles of the coast between Lambert's Bay and Cape Deseada.

5.41 Saint Helena Bay (32°30'S., 18°10'E.) lies between Cape Deseada and Stompneuspunt, 29 miles SW. In the N part of the bay the shore is fairly steep-to, with a depth of 15m lying within 1 mile of the beach. However, in the SE part of the bay, depths of less than 15m lie up to about 5 miles offshore. The bottom consists mostly of sand and mud, but a great part of the SW side of the bay is fringed with rocks, some of which lie about 0.5 mile offshore.

North Blinder (Martin Rock) (32°38'S., 17°58'E.), a rocky ledge with a least depth of 5.8m, lies 4.5 miles N of Stompneuspunt. It rises from depths of 40m and breaks with a heavy swell.

Doctor Reef (32°46'S., 18°06'E.) fronts the S shore of the bay and is centered about 2 miles W of the entrance to the Great Berg River. It extends up to about 1 mile seaward and has patches that break at low tide and during rough weather.

A detached shoal patch, with a depth of 4.6m lies in the S part of the bay, about 4 miles N of the entrance to the Great Berg River.

Vessels can anchor, with good holding ground, in convenient depths in Saint Helena Bay. However, in winter, the bay is exposed to strong N winds, heavy seas, and a large swell.

About 5 or 6 miles SSE of Cape Deseada, the countryside rises to abrupt crags and broken ridges of lofty hills, which extend 30 miles in the same direction and terminate in Piketberg, a range of mountains.

Kleintafelberg (32°33'S., 18°28'E.), 369m high, stands 16 miles SSE of Cape Deseada and appears to be much closer to the coast than it actually is. This conspicuous hill is dark with a plateau, but its summit is rather uneven. It rises steeply from low land on either side.

Kapteinskloof (32°43'S., 18°35'E.), 1,055m high, is a very conspicuous and well-defined summit of the Piketberg Range. This peak and range, from 10 miles offshore, appear as if situated close to the coast and must not be mistaken for the higher range farther inland.

A conspicuous water tower stands at an elevation of 32m near the village of Dwarskersbos, 23 miles SSW of Cape Deseada. A prominent radio mast, 98m high, is situated 1.2 miles inland, about 5 miles NE of this water tower.

Caution.—An area of foul ground, 3 miles long, extends up to about 1.2 miles off the coast, close SW of the village of Dwarskersbos.

5.42 Great Berg River (Groot Bergrivier) (32°46'S., 18°09'E.) lies at the head of Saint Helena Bay, 9 miles ESE of Stompneuspunt. The river entrance consists of a cutting through the sand, which is protected by a breakwater on each side. The towns of Laaiplek and Velddrif stand on the E bank of the river and provide facilities for fishing boats. An extensive marina is located close above Laaiplek.

The channel leading to the wharves at the towns of Laaiplek and Velddrif has been dredged to a depth of 3m, although lesser depths have been reported (1999). The tide rises about 1.7m at springs and 1.2m at neaps. Local knowledge is advised.

Varkvlei Farm, a cluster of white buildings, is situated about 3 miles WSW of the entrance to Great Berg River and is conspicuous from seaward. A prominent water tower stands in Laaiplek.

Lights are shown from structures standing at the heads and inner ends of the breakwaters. A racon is situated at the Inner East Breakwater Light. A conspicuous radio mast stands close E of the river entrance.

Sandy Point Harbor (32°45'S., 18°01'E.), located about 3 miles SE of Stompneuspunt, lies within Sandy Bay on the SW side of Saint Helena Bay. The harbor is protected by a coastal reef on its S side and by a breakwater, 480m long, extending E from Sandy Point on the N side. It is used mostly by fishing vessels and coasters.

A coaster berth, 74m long, is located on the inshore part of the breakwater and has a depth of 6.1m alongside. A pier, with a depth of 4.5m alongside its head, extends 200m E from the shore in the S part of the harbor. There are also numerous permanent moorings for fishing vessels within the bay.

Several chimneys stand in the vicinity of the harbor and two conspicuous oil tanks are situated 0.4 mile W of Sandy Point.

Stompneuspunt (32°42'S., 17°59'E.), fronted by a reef on its NE side, is the NE extremity of a sandy peninsula, which projects 1.5 miles from the coast and forms the W side of Sanit Helena Bay. A light is shown from a square structure, 8m high, standing on the point.

A dangerous wreck (trawler) lies about 0.6 mile ESE of the light. Drying reefs front the coast between Sandy Point Harbor and the S end of Stompneusbaai, which is entered 1.2 miles SE of Stompneuspunt. This part of the coast is well built over.

Simpson's Rock, which dries 0.5m, lies near the middle of Stompneusbaai. A fish factory, with a conspicuous square tower, stands at the head of this bay. A lighted range indicates the entrance channel leading into Stompneusbaai, which is used by fishing boats with local knowledge.

5.43 Cape Saint Martin (32°43'S., 17°55'E.), a low and sandy point, is located 3 miles WSW of Stompneuspunt. It is fronted by several dangerous rocks, which lie up to 0.5 mile offshore. A light is shown from a framework mast, 10m high, standing on this point. A current meter is moored about 12 miles W of the light.

Brittania Reef (32°42'S., 17°52'E.), a steep-to reef with a least depth of 3.3m, lies 3 miles WNW of Cape Saint Martin and the sea breaks on it with a moderate swell. A dangerous wreck lies about 2 miles SE of this reef.

Groot Paternosterpunt is located 2 miles SW of Cape Saint Martin. A stranded wreck fronts the N side of this point and has the appearance of a ship at anchor.

Seal Islands (32°44'S., 17°52'E.), the highest being 12m high, are a group of four islets located 1.3 miles W of Groot Paternosterpunt. A reef lies between these islets and the latter point. A light, equipped with a racon, is shown from a mast with a crow's nest, 10m high, standing on the outermost islet.

Paternosterbaai (32°46'S., 17°53'E.) lies between Groot Paternosterpunt and Cape Columbine, 5.5 mile SW. The village of Paternoster, with several conspicuous white houses, stands on the S shore of the bay and is an important fishing station. A prominent chimney is situated at the fish factory. The shore of the bay consists of a long sandy beach backed by sand dunes and is fronted by several dangerous rocks.

Jim Crow Rock, which dries 0.6m, lies about 2.2 miles N of Cape Columbine and at the NW end of a rocky ledge on which the sea breaks in heavy weather. Vessels entering the bay are advised to pass N of this rock. Tambourine Rock, 1.6m high and prominent, lies about 0.4 mile offshore, 3 miles S of Groot Paternoster.

Vessels, with local knowledge, can anchor in a depth of 9m about 0.5 mile NE of the factory chimney. This anchorage is well-sheltered but should not be used with NW winds or swell.

Kasteelberg rise 3 miles E of the village of Paternoster. This hill is 184m high and conspicuous.

Caution.—Crayfishing vessels may be encountered within 3 miles of the coast between the Cape Columbine and the Orange River (28°38'S., 16°28'E.). Such vessels may be anchored or drifting with unlit bottom gear, marker buoys, and recovery lines.

Marine Mining Vessels (MMVs), which process gravel for diamonds, may be encountered in large numbers inshore between Cape Columbine and the Orange River (28°38'S.,

16°27'E.). These diamond mining barges are usually moored to four anchors, which may or may not be marked by unlit buoys. Vessels are advised to stay at least 1,500m away from MMVs.

At times a rapid decrease in the density of the air above the cold sea forms mirages in areas along the coast between Cape Columbine (32°50'S., 17°51'E.) and the Orange River. These mirages can be distorted and may occasionally produce inverted images.

5.44 Cape Columbine (32°50'S., 17°51'E.), located 5.2 miles SSW of Seal Island Light, is surmounted by Castle Rock, a conspicuous boulder. The cape, which is radar prominent, is fronted by rocky reefs, which dry and extend up to about 0.8 mile NW of it. A dangerous detached rock, with a least depth of 1.8m, lies about 1.5 miles SW of the cape.

A light is shown at an elevation of 79m from a conspicuous square tower, 15m high, standing 0.5 mile E of the cape. Noordwesbaai, an exposed bay, lies 2 miles S of the light and a conspicuous sand patch is located at its head.

Regulations.—As per IMO regulations, laden tankers must maintain a minimum distance of at least 20 miles from Cape Columbine when proceeding N and a minimum distance of at least 25 miles when proceeding S. Laden tankers sailing on voyages only between ports in South Africa are exempted from this regulation but are expected to maintain a minimum distance of 10 miles from all salient points, subject to weather and sea conditions. For further information, see Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

Caution.—The coast between Cape Columbine and North Head, 14 mile S, is rugged and indented. It is fronted by numerous off-lying rocks, many of which rise almost perpendicularly from depths of over 40m, making it one of the most dangerous stretches along the coast of South Africa. Extreme care must therefore be exercised when navigating in this area. At night, or in thick weather, vessels should not attempt to navigate in depths of less than 100m, which will be found about 4 miles off the coast. Depths less than those charted have been reported to lie in places up to 30 miles offshore in this area.

It is reported (1976) that a local magnetic anomaly, with deviations of up to 5°E, exists between 70 miles and 130 miles NW of Cape Columbine.

Submarines frequently exercise in an area lying W of Cape Columbine, S of 32°S and E of 16°E.

5.45 Duminypunt (32°55'S., 17°51'E.), low and sandy, is located 5 miles S of Cape Columbine and fronted by several dangers, which may best be seen on the chart. A reef, with rocks awash, extends about 1.5 miles WSW from this point. Soldiers Reef, awash, lies about 1.4 miles N of the point. Voeliland, the W and larger of two islets, lies 0.3 mile offshore and 1.6 miles NNE of the point.

A conspicuous water tower, with an elevation of 205m, stands on the summit of a hill, 6.5 miles E of Duminypunt.

Hospitalpunt (32°57'S., 17°53'E.), located 3 miles SSE of Duminypunt, is a low point. Hospital Rock, 7m high, lies at the outer end of a reef which extends about 0.4 mile W from this point. Jacobs Reef, on which stands an islet 3m high, extends about 1 mile W from Hospitalpunt. Dangerous reefs, some awash, lie within 0.7 mile N and 0.5 mile S of Jacobs Reef.



Cape Columbine Light

Wesbaai lies between Duminypunt and Hospitalpunt. A detached reef, awash, lies on a shoal in the S part of this bay, about 1.2 miles NW of Hospitalpunt. A conspicuous white sand patch, known as Die Witsand, is located near the head of the bay, 1.5 mile SE of Duminypunt.

Temporary anchorage, in fair weather, can be taken in depths of 15 to 18m about 0.8 mile S of Duminypunt.

Jacobsbaai is entered 0.6 mile S of Hospitalpunt. This small bay is well-sheltered and used by local fishing boats.

The Sisters, a group of above-water rocks, extend up to about 0.5 mile offshore, 2 miles SSW of Hospitalpunt.

Danger Bay lies between Morrisons Point, located 3 miles S of Hospitalpunt, and Long Point, 1.2 miles SSE. The entrance to this bay is reduced to a width of about 0.6 mile by rocky reefs, which extend from both entrance points. The bay, which is exposed to W winds and swell, should be entered with extreme caution.

Tooth Rock (33°00'S., 17°52'E.), 1m high, lies about 0.9 mile WNW of Morrisons Point. A detached shoal patch, with a depth of 6.5m, lies 0.2 mile SW of this rock.

Bay Rock, awash, lies 0.6 mile SW of Morrisons Point and breaks occasionally. Cap Rock, which dries, lies 1 mile W of Long Point. An isolated rocky patch, with a least depth of 2.4m, lies about 0.5 mile WNW of Long Point.

North Head (33°03'S., 17°55'E.), a low point, is located 1.8 miles SE of Long Point. North Head Light is shown from a framework tower, 21m high, standing on this point.

Schooner Rock, 7.5m high, lies about 0.3 mile SSW of North Head Light. It is the outermost and tallest of a group of above-water rocks which front the S side of the point.

Baviaansberg, 72m high, rise 0.5 mile N of North Head. This conspicuous hill is surmounted by a radar reflector.

Caution.—A Traffic Separation Scheme (TSS), which may best be seen on the chart, lies centered in the outer approach to Saldanha Bay, 9 miles W of North Head (see paragraph 5.46).

Tooth Rock (33°00'S., 17°52'E.) is the target point for a military missile and gunnery exercise range. For further details, see

Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

Saldanha Bay (33°02'S., 17°58'E.)

World Port Index No. 46750

5.46 Saldanha Bay (Saldanhaabaai) is entered between North Head (33°03'S., 17°55'E.) and South Head, 3.7 miles SSE. It is easy to access and is probably one of the safest and finest natural harbors in southern Africa. The port is mostly used for exporting ore and is capable of accommodating deep-draft vessels. It is also an extensive fishing and yachting center.

The town of Saldanha, standing in the NW part of the bay, is a resort. The bay is also the site of the South African Military Academy and a South African Naval Training Base.

Winds—Weather.—The climate is temperate. The average high temperature year round is 20°C (68°F) while the average low temperature is in the region of 11°C (52°F). Sea water temperatures average 16°C (61°F).

The prevailing winds are from SSW in the summer and the NNE in the winter (see Caution).

Fog occurs generally in the March to August period.

Tides—Currents.—The tides rise about 1.7m at springs and 1.3m at neaps.

The tidal currents appear to set fairly in and out of the entrance at a rate of 0.2 to 0.5 knot. At a short distance outside the bay, the current sets in a N direction at a rate of 0.5 to 1 knot.

Depths—Limitations.—The main commercial berthing facilities are situated along a causeway which extends about 2 miles SSW from the NE part of Saldanha Bay. They are protected by a crescent-shaped breakwater, about 1 mile long, which extends from the E side of the bay (see Aspect).

Tankers and ore carriers up to 333m in length can be accommodated alongside. Vessels are limited to an arrival draft of 20.5m and a loaded departure draft of 21.5m (2013).

The Entrance Channel, which may best be seen on the chart, leads in a NE direction from the TSS (see Regulations) and the pilot boarding area to a position located between Malgas Island and Wasserfall Bank. This channel then continues in an ENE direction to a position located SSW of Marcus Island Light. Vessels should then proceed in a NE direction for about 1 mile to the outer entrance of the Navigation Channel.

The Navigation Channel, which is entered 0.4 mile SE of Marcus Island Light, leads NNE for about 0.8 mile to a turning circle located close SSW of the ore loading jetty.

The Entrance Channel, Navigation Channel, and turning circle have swept depths of 23.2m.

The Oil Jetty Berth, located at the S end of the ore-loading jetty, is 365m long and can accommodate vessels with drafts of up to 21.2m.

The Ore Jetty Berths are located at each side of the ore-loading jetty, at the S end of the causeway. They are both 500m long and can accommodate vessels with drafts of up to 21.2m.

Multi-Purpose Terminal, 870m long, is situated at the W side of the causeway. It provides three berths, with a depth of 14m alongside. The terminal is approached through a buoyed channel which extends NNE for about 0.7 mile from the vicinity of the root of the ore-loading jetty. This channel is dredged to a

depth of 14.9m over a width of 150m. Vessels up to 200m in length and 13.4m draft can be accommodated alongside. The terminal can also handle ro-ro vessels.

Multi-Purpose Quay is situated on the W side of the root of the causeway. It is 110m long and has a depth of 7.7m alongside. This quay is protected by a short breakwater and is approached through a buoyed channel which is dredged to a depth of 7.7m over a width of 130m. It is mostly used for repair and lay-up. Vessels up to 80m in length and 6.5m draft can be handled at the quay.

Mossgas Quay, with a depth of 7.9m alongside, is located on the N shore of the bay, about 0.6 mile W of the root of the causeway. A channel, with a dredged depth of 6.9m, leads to this quay.

Government Jetty, a wood and concrete structure, projects NE from the shore about 0.7 mile WNW of Hoedjiespunt. It is 343m long and has a depth of 6.5m alongside. A surge, particularly along the S side, often makes it impracticable for vessels to berth at this jetty. The facility is mostly used by fishing vessels.

Sea Harvest Factory Quay, 540m long, extends ESE from the root of Government Jetty and has depths of 2 to 6m alongside. The facility is mostly used by fishing vessels.

Langebaan Lagoon, the SE arm of Saldanha Bay, lies S of Skaap Island (33°04'S., 18°00'E.) and extends SE for 8 miles. This lagoon is encumbered by sand banks near the entrance and has drying sand banks and salt beds near its head. It is only used by small craft with local knowledge.

Aspect.—Malgas Island, 7m high, lies about 0.7 mile ESE of North Head Light (see paragraph 5.45) and is surrounded by shoals and rocks. Needle Rock, 5m high and surrounded by above-water rocks and reefs, lies 0.2 mile NNE of this island.

Malgaskop, 111m high, lies 1.2 miles ENE of North Head Light and is conspicuous. A large building stands near the summit of this hill and is situated on its upper E side.

Hoedjiespunt (33°02'S., 17°58'E.) is located 2.8 miles ENE of North Head Light. This point forms the extremity of a narrow rocky peninsula which extends about 1 mile ESE from the W shore of the bay. Hoedjieskop, 72m high, rises 0.6 mile N of the root of the peninsula. This prominent hill is surmounted by a beacon and a remarkable rock pillar.

The Port Control Center building, which is conspicuous, and a flagstaff stand on the summit of a hill, 37m high, which rises close W of Hoedjiespunt.

Marcus Island, 9m high, lies 1 mile SSE of Hoedjiespunt and is connected to it by a crescent-shaped breakwater which protects the main port facilities. A light, equipped with a racon, is shown from a framework tower standing on the SW end of this island. Hospital Rock, 5m high, lies close SE of the light.

The main berthing facilities are situated along a causeway which extends about 2 miles SSW from a reclaimed area located in the NE part of Saldanha Bay. The ore-loading control tower, 35m high, stands near the root of the causeway and is conspicuous. A prominent chimney is situated 0.5 mile N of this control tower. The ore-loading jetty, located at the outer end of the causeway, is brilliantly lighted at night.

Seven Blinders, a small group of rocky patches with depths of less than 2m, lies 1.3 miles NNE of Hoedjiespunt and is marked by a lighted buoy.

South Head (33°06'S., 17°57'E.), the S entrance point of

Saldanha Bay, is low and rocky. A steep cliffy summit, 113m high, rises close behind this point and is prominent. A light is shown from a concrete tower, 23m high, standing on the point.

Jutten Island, fringed by rocks, lies 1.2 miles N of South Head and is 34m high. Its cone-like summit rises toward the S end of the island, which is covered with guano and gleams white in the sunshine. A minor passage, about 0.4 mile wide, leads ENE and N into the bay between the S side of this island and the mainland.

Wasserfall Bank, with a least depth of 14m, lies centered about 1 mile NW of Jutten Island. A shoal patch, with a depth of 10.5m, lies about midway between this bank and the island.

Lloyd Bank, with a least depth of 11.5m, lies centered about 0.5 mile W of the N end of Jutten Island. During strong winds and heavy SW swells, the sea breaks over Wasserfall Bank, Lloyd Bank, and the entire area lying between these banks and Jutten Island.

Elandspunt, located about 2.5 miles NNE of South Head Light, forms the NW end of the Donkergat Peninsula. It is rocky and comparatively steep-to. A light is shown from a framework tower standing on this point.

Salamanderpunt is located 1 mile ESE of Elandspunt Light. The prominent buildings of a disused whaling station are situated on this point. Three radio masts, 31m high, stand about 0.7 mile SSE of the point.

Vlaberg, 193m high and conspicuous, rises about 2.5 miles SSE of South Head, on the W side of Langebaan Lagoon. Constable Hill, 189m high, rises 1.5 miles SE of Vlaberg and is also conspicuous. The prominent factory building of an aluminum phosphate works is situated on the N face of this hill.

Lynch Point is located on the E shore of Saldanha Bay, about 2.5 miles NE of Salamanderpunt. This point consists of a rocky promontory surmounted by a sand hill, 40m high, with a trigonometric beacon on its summit. An extensive yacht marina lies close SE of this point.

Lynch Blinder, a detached rocky shoal over which the sea nearly always breaks, lies about 1 mile W of Lynch Point and is marked by a lighted buoy.

For information concerning additional landmarks in the approach to Saldanha Bay, see paragraph 5.45.

The Entrance Channel leading into the bay is indicated by lighted ranges, which may best be seen on the chart. The front light structure of the first reach stands 0.3 mile NE of Marcus Island Light; the rear light structure stands on the head of the ore-loading jetty. The front light structure of the second reach stands 0.4 mile SE of Lynch Point; the rear light structure, equipped with a racon, stands 0.4 mile ENE of it.

The Navigation Channel, entered 0.4 mile SE of Marcus Island Light, is marked by lighted buoys.

North Lighted Buoy, moored 0.6 mile NNE of Hoedjiespunt; North East Lighted Buoy, moored 1 mile E of the head of the ore-loading jetty; and East Lighted Buoy, moored 1.9 miles NE of Elandspunt Light, indicate positions (13m depth curve) to seaward of which ore carriers and tankers should stay when in light condition.

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channels 10, 12, and 16 and board about 5 miles SW of North Head Light. Pilots can be embarked by helicopter by prior arrangement.

Inbound vessels must send their ETA 4 days, 48 hours, 24 hours, 12 hours, and 4 hours in advance. The 24-hour message should include the following:

1. Cargo required.
2. Arrival draft (fore and aft).
3. Deballasting time.
4. Other vessel details, as requested by the Port Captain.

Any changes to the ETA after the 24-hour message should be reported as soon as possible.

Vessels should then contact Port Control on VHF channel 16 as soon as possible and request berthing instructions 6 hours prior to the ETA.

Bulk ore carriers with drafts over 14m and loaded tankers are usually berthed only during daylight.

Regulations.—A Traffic Separation Scheme (TSS) lies in the outer approaches to Saldanha Bay and may best be seen on the chart. This scheme is not IMO-adopted but the South African authorities advise that Rule 10 of the International Regulations for Preventing Collisions at Sea (72 COLREGS) applies. An Inshore Traffic Zone lies between the inner limit of the TSS lanes and the coast.

A separation zone, 0.5 mile wide, is situated with its S end located about 8 miles WSW of North Head Light. It extends NW for about 9 miles. The traffic lane for vessels proceeding NW, which is 1.5 miles wide, lies on the E side of this zone; the traffic lane for vessels proceeding SE, which is 1.5 miles wide, lies on the W side of this zone.

Another separation zone, 0.5 mile wide, is situated with its N end located about 9 miles WSW of South Head Light. It extends SSE for about 10.5 miles. The traffic lane for vessels proceeding NNW, which is 1.5 miles wide, lies on the E side of this zone; the traffic lane for vessels proceeding SSE, which is 1.5 miles wide, lies on the W side of the zone.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) system operates in the approaches to Saldanha Bay. This VTS system is mandatory for the following vessels:

1. Vessels of 15m in length and over.
2. Towing vessels, where the tow is 15m or more in length or the overall length of the tow is 30m or more.
3. All passenger-carrying vessels.

4. All vessels carrying polluting or dangerous cargo.

The VTS Center (Saldanha Bay Port Control) is situated in the Port Office at Hoedjiespunt (33°01.7'S., 17°57.8'E.) and can be contacted on VHF channel 12. This VTS system provides radar control up to 20 miles offshore.

Vessels must contact Saldanha Bay Port Control on VHF channel 12, as follows:

1. Fifteen minutes before arrival at the TSS (VTS area).—Vessels must state their name, call sign, position, ETA at the Reporting Point, destination with ETA, and whether any dangerous or pollutant cargo is being carried.
2. Arriving at a designated Reporting Point.—See **Saldanha Bay Vessel Traffic Service—Reporting Points (RP)**.
3. Arriving at a berth.—Vessels must state their name and position.
4. Fifteen minutes before departing from a berth.—Vessels must state their name, call sign, position, destination with ETA, whether any dangerous or pollutant cargo is being carried, and ETD from berth.
5. Immediately prior to departing from a berth.—Vessels must state their name, call sign, position, and ETA at the next Reporting Point.

Vessels must also immediately report any incident, accident, or condition impairing safety to the Saldanha Bay Port Control.

The VTS Port Control Center may also request additional information such as gt, length, particulars of cargo on board, and last or next ports of call.

The VTS Port Control Center will provide information relating to the locations of other vessels and the density of traffic converging on the same positions.

Signals.—Traffic control signals are displayed from the Port Control Building on Hoedjiespunt. A green light indicates that vessels are allowed to enter the port and a red light indicates that entry is prohibited.

Contact Information.—Saldanha Bay Port can be contacted, as follows:

1. Telephone: 27-22-703-5310
2. Facsimile: 27-22-703-4116

Saldanha Bay Vessel Traffic Service—Reporting Points (RP)					
Inbound vessels		Outbound vessels		Inshore Traffic Zone	
RP	Position	RP	Position	RP	Position
Approaching from the S		Departing to the S		Inbound vessels from the N	
1B	33°21.0'S, 17°53.9'E	5	33°03.3'S, 17°58.3'E	1D	32°53.7'S, 17°45.9'E
2B	33°10.6'S, 17°49.3'E	4	33°04.1'S, 17°55.5'E	2D	33°02.2'S, 17°50.1'E
3	33°06.7'S, 17°50.1'E	3	33°06.7'S, 17°50.1'E	4	33°04.1'S, 17°55.5'E
4	33°04.1'S, 17°55.5'E	2B	33°11.3'S, 17°47.1'E	5	33°03.3'S, 17°58.3'E
5	33°03.3'S, 17°58.3'E	1B	33°21.7'S, 17°51.6'E		
Approaching from the N		Departing to the N		Outbound vessels to the N	
1A	32°59.1'S, 17°38.2'E	5	33°03.3'S, 17°58.3'E	5	33°03.3'S, 17°58.3'E
2A	33°05.9'S, 17°45.0'E	4	33°04.1'S, 17°55.5'E	4	33°04.1'S, 17°55.5'E
3	33°06.7'S, 17°50.1'E	3	33°06.7'S, 17°50.1'E	1D	32°53.7'S, 17°45.9'E

Saldanha Bay Vessel Traffic Service—Reporting Points (RP)					
Inbound vessels		Outbound vessels		Inshore Traffic Zone	
RP	Position	RP	Position	RP	Position
4	33°04.1'S, 17°55.5'E	2A	33°04.6'S, 17°46.8'E		
5	33°03.3'S, 17°58.3'E	1A	32°57.8'S, 17°40.1'E		
Approaching from the W		Departing to the W		Inbound vessels from the S	
1C(N)	33°06.8'S, 17°34.8'E	5	33°03.3'S, 17°58.3'E	1E	33°20.8'S, 18°01.8'E
1C(M)	33°13.4'S, 17°36.3'E	4	33°04.1'S, 17°55.5'E	2E	33°09.1'S, 17°54.3'E
1C(S)	33°19.5'S, 17°43.0'E	3	33°06.7'S, 17°50.1'E	4	33°04.1'S, 17°55.5'E
2C	33°09.0'S, 17°45.3'E	2C	33°09.0'S, 17°45.3'E	5	33°03.3'S, 17°58.3'E
3	33°06.7'S, 17°50.1'E			Outbound vessels to the S	
4	33°04.1'S, 17°55.5'E			5	33°03.3'S, 17°58.3'E
5	33°03.3'S, 17°58.3'E			4	33°04.1'S, 17°55.5'E
				1E	33°20.8'S, 18°01.8'E

Anchorage.—The outer approaches to Saldanha Bay are unsuitable for anchoring and vessels are advised to remain underway. With permission from the VTS Port Control Center, vessels may anchor in Saint Helena Bay (see paragraph 5.41). This bay provides good holding ground but is exposed to strong N winds, heavy seas, and a large swell.

Vessels should contact the VTS Port Control Center for information concerning anchorage berths located within the bay and off the berths.

Directions.—A Traffic Separation Scheme (TSS) is situated in the outer approach to Saldanha Bay and may best be seen on the chart (see Regulations).

Caution.—Due to the numerous offshore dangers lying along the coast in this vicinity, vessels approaching Saldanha Bay at night, or in thick weather, should remain in depths of over 100m until their position has been accurately determined.

An isolated rocky patch, with a depth of 23.5m, lies about 1 mile SSW of North Head Light.

Submarines exercise frequently in the outer approaches to Saldanha Bay and a good lookout should be kept when passing through these waters.

Extensive cray fishing is carried out in the approaches to Saldanha Bay. Numerous unlit buoys mark the nets and their mooring lines.

The harbor is occasionally subjected to severe swell conditions associated with weather depressions passing the Cape of Good Hope from W to E. Conditions within the harbor are influenced by both the height and the direction of the swell outside. Surging can be expected even in the innermost parts of the harbor and occasionally vessels are forced to depart. A wave monitoring buoy, which is moored alongside the entrance channel, relays pertinent data to the Port Control Center.

A restricted area, within which fishing is prohibited, extends from the vicinity of the root of the causeway to about 3 miles seaward of the bay entrance and may best be seen on the chart.

Saldanha Bay to Cape Town

5.47 The coast extending between Saldanha Bay and Cape Town, 55 miles SE, consists of sandy beaches lying between rocky headlands. Few of the bays so formed provide good shelter, with the exception of Table Bay. However, this stretch of coastline is not so rugged as that extending to the N of Saldanha Bay. Several off-lying rocks and shoals front the shore and together with a heavy surf generally make landing difficult.

Tides—Currents.—A current sets S about 4 to 5 miles offshore between Saldanha Bay and Table Bay during the winter months of June, July, and August. This current occasionally has a tendency to set vessels toward the coast, especially during or after strong onshore winds. At a short distance seaward of this coastal current, the offshore current is almost constant throughout the year. Its general direction is between N and NW, or parallel with the coast. This current attains a rate of 0.5 to 1 knot, although between Table Bay and Dasseneiland this offshore current sometimes exceeds a rate of 2 knots.

Caution.—Traffic Separation Schemes (TSS), which may best be seen on the chart, are situated in the outer approaches to Saldanha Bay and Table Bay (see paragraphs 5.46 and 5.52). This schemes are not IMO-adopted but the South African authorities advise that Rule 10 of the International Regulations for Preventing Collisions at Sea (72 COLREGS) applies.

Crayfishing vessels may be encountered within 3 miles of the coast between Saldanha Bay and Cape Town. Such vessels may be anchored or drifting with unlit bottom gear, marker buoys, and recovery lines.

5.48 Stony Head (33°08'S., 17°58'E.), 83m high and conspicuous, is located 2 miles SSE of South Head. A rocky reef, over which the sea breaks heavily, extends 0.5 mile seaward from this headland. Plankiesbaai lies between these two headlands but offers no shelter.

Vondelingeiland, 7m high, lies 0.5 mile offshore, about 1 mile SSE of Stony Head. This small island is fringed by reefs and rocks. A detached shoal patch, with a least depth of 10.9m,

lies about 0.5 mile WNW of the W end of the island and breaks in bad weather.

Black Rock, 0.6m high, lies 1.7 miles ESE of Vondelingeiland and is the outermost rock of a reef which extends 0.2 mile seaward from the shore. The conspicuous stranded wreck (1978) of a bulk carrier stands on this reef.

It is reported (2004) that a dangerous wreck lies about 1.2 miles SW of Black Rock.

The coast from abreast Vondelingeiland to Yzerfonteinpunt, 14 miles SSE, consists of a sandy beach, backed by sand dunes which rise to an elevation of 60m in places. These dunes, which are conspicuous, extend inland to a distance of over 1 mile. They are formed by drifting sand and are reported to be extending E over the land.

Yzerfonteinpunt (33°21'S., 18°09'E.) extends W for 1 mile and has three distinct rocky ledges or points. A breakwater, 100m long, projects seaward from the northernmost of these ledges and provides shelter for fishing vessels. The conspicuous building of a disused radar station stands on this point. A resort village is situated along the S shore of a small bay which is entered close N of the point.

Meeurots (Meeuw Rock), 10m high, lies about 0.3 mile N of Yzerfonteinpunt. This rock is whitened with guano and prominent.

Yzerfontein Hill, flat and conical, rises about 1 mile E of Yzerfonteinpunt and is prominent. It is 84m high and surmounted by a radio mast.

Swartberg, 286m high and surmounted by a beacon, stands about 9 miles NNE of Yzerfonteinpunt and may be easily recognized. Ratelberg, 216m high and conspicuous, stands 7 miles NE of Yzerfonteinpunt and is surmounted by a radio mast. Slangkop, 257m high, stands about 6 miles ENE of Yzerfonteinpunt and is prominent.

5.49 Dasseneiland (33°25'S., 18°05'E.), lying 5 miles SW of Yzerfonteinpunt, rises to an elevation of 19m and is radar conspicuous. This island consists of a granite outcrop overlaid with sand which, during winter, supports luxuriant vegetation. Dangerous reefs, which may best be seen on the chart, front the N, W, and S sides of the island and extend up to about 1.5 miles seaward.

A light is shown from a prominent round tower, 28m high, standing near the S end of the island.



Dasseneiland Light

House Bay lies between Boompunt (Boon Point), the NW extremity of the island, and the NE extremity, 0.7 mile E.

Breakers and foul ground front both these points. A stranded wreck lies off the NE extremity. A flagstaff and a jetty are situated at the head of the bay. Depths of less than 5m extend up to about 0.2 mile N from the head of the jetty. Small vessels, with local knowledge, can anchor within the bay in a depth 18m to the NNW of the flagstaff. However, this anchorage is not safe during NW winds.

South West Breakers (33°29'S., 18°04'E.), two detached rocky shoal patches with least depths of 10m and 10.9m, lie about 3 miles SSW and S, respectively, of Dasseneiland Light. Both rocks are steep-to and the sea breaks heavily over them during bad weather. From the W rock, an area, with an irregular bottom and depths of less than 30m, extends in a NE direction for about 1 mile. A confused and dangerous sea exists in this area during bad weather and it should be given a wide berth.

Protea Rock, with a depth of 10.9m, lies 5 miles SSW of Dasseneiland Light and 2 miles S of South West Breakers. A detached shoal, with a depth of 18.9m, lies about 1.7 miles S of this rock.

Caution.—Vessels should use extreme caution when navigating in the vicinity of Dasseneiland, especially at night, as the reefs are steep-to and the positions of rocks are not always marked by breakers. With good visibility, no difficulty should be experienced when passing between Dasseneiland and Yzerfonteinpunt. However, during fog, poor visibility, or heavy weather, vessels should pass W of the island.

5.50 The coast between Yzerfonteinpunt and the head of Table Bay is low and sandy, with occasional outcrops, backed by a series of distinctive hill summits. The silhouette of Devil's Peak, Table Mountain, Lion's Head, and Signal Hill (see paragraph 5.52) in the distance provides a remarkable composite backdrop to the harbor of Cape Town.

Rondeberg Breakers, a detached shoal patch, lies about 2 miles offshore, 8 miles SE of Yzerfonteinpunt. It has a depth of 8.2m and is usually marked by breakers.

Rondeberg rises about 1.7 miles inland, 9 miles SE of Yzerfonteinpunt. This hill is 189m high and prominent.

The mouth of the Modder River lies about 11 miles SE of Yzerfonteinpunt and can be recognized by an extensive sandy patch extending N of it. Black Rocks, two small islets, lie close offshore and close SSW of the river mouth.

Bokpunt (33°34'S., 18°19'E.), a low rocky projection, is located 5 miles S of the mouth of the Modder River. A shallow rock, which usually breaks, lies about 0.5 mile W of this point.

A range of mountains, standing roughly parallel to the coast and between 6 and 10 miles from it, extends about 20 miles SE from abreast Yzerfonteinpunt to Kanonkop (Katzenberg), a well-defined isolated hill. This latter hill is 418m high, conical, and stands 12 miles E of Bokpunt.

Kapokberg, 459m high; Contreberg, 479m high; and Dassenberg, 567m high, are prominent peaks on this mountain range rising about 10 miles NNE, 10.5 miles NE, and 11 miles ENE, respectively, of Bokpunt.

Matroospunt is located 4 miles SE of Bokpunt. This point is fringed by rocks and backed by a prominent ridge, 43m high.

Koeberg Nuclear Power Station (33°41'S., 18°26'E.), radar conspicuous and prominent, is situated about 5 miles SSE of Matroospunt. It is fronted by two breakwaters which enclose a

cooling water basin. Flashing yellow lights are shown from the seaward ends of both breakwaters.



Koeberg Nuclear Power Station

Melkbospunt (33°44'S., 18°26'E.) is located 8 miles SSE of Matroospunt. The coast between low, sandy, and backed by prominent sand dunes in its central part. Robbesteen lies 0.4 mile offshore in the N part of this stretch of coast. This small seal rookery is composed of several rocky ledges up to 2.5m high. Patches of submerged rocks extend 0.6 mile NNW and about 1 mile SSE from Robbesteen.

The conspicuous buildings of Melkbosstrand, a seaside resort village, stand close NE of Melkbosout and a prominent radio tower, 61m high, is situated in their vicinity.

Koeberg (Olifantskop), 376m high, rises 6.2 miles ENE of Melkbospunt and its summit is conspicuous. Blouberg, a dark hill, stands 2 miles SSE of Melkbospunt. It is rounded, 231m high, and prominent.

Bloubergstrand, a seaside resort and residential area, is located 4 miles SSE of Melkbospunt. A large and conspicuous high-rise apartment building stands in this resort. Voelsteen is the outermost of three above-water rock clusters which front the N end of the resort. Heavy surf exists in this area, except in the calmest of weather.

Caution.—A prohibited area fronts the coast in the vicinity of the Koeberg Nuclear Power Station. It extends about 1 mile seaward and may best be seen on the chart. A patch of foul ground, which consists of the remains of a demolished wave observation tower, lies within this area, about 0.5 mile W of the breakwaters.

Several submarine cables, some disused, extends seaward from the coast in the vicinity of Melkbospunt and may best be seen on the chart. Anchoring within 1 mile of these cables is prohibited.

An explosives dumping area, with a radius of 5 miles, lies centered about 140 miles W of Bokpunt.

5.51 Robben Island (33°48'S., 18°22'E.), located 4 miles W of Bloubergstrand resort, is low, flat, and fringed by reefs. It is fairly densely wooded in parts along the E shore. The more barren W part is covered in vegetation during the winter and with wild flowers in the spring. The island, formerly used as a prison, is now a museum and national monument. Landing is only permitted with prior permission.

Robben Island Light is shown at an elevation of 46m from a conspicuous round tower, 18m high, standing on the summit of Minto Hill, near the S end of the island.

Murray's Bay Harbor, located on the NE side of the island, is enclosed by breakwaters. It is shallow and used only by ferries and small craft, with local knowledge. A church, with a prominent

tower, is situated 0.3 mile NE of Robben Island Light and a conspicuous flagstaff stands between it and Murray's Bay Harbor.

Whale Rock (33°50'S., 18°23'E.) lies about 1.3 miles SSE of Robben Island Light. This detached rocky patch has a depth of less than 2m and the sea breaks over it in all but the calmest weather. A dangerous wreck lies about 0.3 mile SE of Whale Rock and is marked by a lighted buoy.

Caution.—A prohibited area, with a width of about 1 mile, surrounds Robben Island and may best be seen on the chart.

A disused submarine cable, which may best be seen on the chart, extends in an E direction between Robben Island and the mainland.



Robben Island Light

Table Bay

5.52 Table Bay (33°52'S., 18°26'E.) is entered on the N side between Robben Island and Bloubergstrand resort and from the W side between Robben Island and Green Point (33°54'S., 18°24'E.), the N extremity of the Cape Peninsula. A gently curving sandy coast backed by low sand dunes forms the E side of the bay between Bloubergstrand and the industrial area of Paardeneiland, 7 miles S. The residential suburbs of Table View and Milnerton, with many high-rise buildings, are situated along this stretch. Cape Town Docks and the city of Cape Town extend along the SW shore of the bay.

Milnerton Light (33°53'S., 18°29'E.) is shown at an elevation of 28m from a round tower, 24m high, standing 5 miles SSE of Bloubergstrand. Two radio masts, 30m high, stand about 1 mile ENE of the light and are prominent. A conspicuous stranded wreck fronts the shore, about 0.7 mile N of the light.

The Diep River enters Table Bay 0.6 mile SSW of Milnerton Light and flows through Milnerton Lagoon. The shore of the bay in this vicinity is fronted in places by foul ground on which the sea breaks heavily after NW and N gales.

Green Point (33°54'S., 18°24'E.), located 4.5 miles WSW of Milnerton Light, is fronted by foul ground. Green Point Light, also known locally as Mouille Point Light, is shown at an elevation of 20m from a tower, 16m high, standing on the point. The square light structure is painted in red and white diagonal bands in order to make it stand out against the predominantly vertical and horizontal lines of the adjacent buildings. However, in spite of this, the light structure is often difficult to



Table Bay



Table Mountain



Milnerton Light

distinguish.

The Cape Peninsula, a conspicuous promontory, extends 28 miles S from Green Point Light to the Cape of Good Hope.

Mouille Point (33°54'S., 18°25'E.) is located 0.7 mile ENE of Green Point. The coast between is fronted by foul ground, on which lies a stranded wreck. The South African Merchant Navy Academy is situated in the vicinity of this point.



Green Point Light

Table Mountain (33°58'S., 18°25'E.) stands 3.5 miles S of Green Point Light and is extremely conspicuous. Its silhouette, as seen from the N, is probably the best known panoramic view in South Africa. This mountain, along with Lions Head and Signal Hill, provides an unmistakable background to the build-

ings of Cape Town. The N face of the mountain, which is almost perpendicular, extends for a distance of 1.5 miles. It is interrupted by Platteklip Gorge, a steep stony ravine, which separates the W part of the mountain from the E part. The mountain, which is radar conspicuous, is often illuminated at night.

Maclear's Beacon (33°58'S., 18°26'E.), standing at an elevation of 1,088m, is situated on the E part of Table Mountain and on its highest point. An aerial cableway stretches S from a station located at an elevation of 500m to the conspicuous Upper Cable Station, which stands at an elevation of 1,045m on the NW edge of the mountain.

Lions Head (33°56'S., 18°23E.), located 1.5 miles NNW of the Upper Cable Station, has a conspicuous steep conical summit, 670m high. A ridge extends in a NNE direction for 1.2 miles from this hill to Signal Hill.

Signal Hill (33°55'S., 18°24E.), also known as the Lions Rump, rises about 1 mile S of Green Light. It is 350m high and conspicuous.



Maclear's Beacon

Devils Peak (33°57'S., 18°27E.), 999m high, rises about 2 miles E of the cableway and is conspicuous. It is connected to the main range of mountains by a saddle, 700 to 800m high.

The Twelve Apostles (33°59'S., 18°23E.), a high serrated mountain ridge, extends about 4 miles SW from the Upper Cable Station and forms the NW face of the Table Mountain complex. It presents a precipitous and prominent face to seaward. Grootkop rises about 5.5 miles SSW of Green Point Light. It is



Upper Cable Station (Table Mountain)

852m high and forms the summit of this ridge.

The Tygerberg (Tierberg) range of hills stands 5 miles inland and parallel to the E shore of Table Bay. Conspicuous radio masts stand on the summit, 414m high, and on the southernmost hill, 398m high. A radio microwave tower, 61m high, is situated near the conspicuous summit of Kanonberg, 455m high, which rises 2 miles NE of the summit of the Tygerberg range.

Caution.—A Traffic Separation Scheme (TSS) is situated in the approaches to Table Bay and may best be seen on the chart. For further information, see paragraph 5.53 (Regulations).

The structures of both Milnerton Light and Green Point Light are often difficult to distinguish by day, on certain bearings, due to the high buildings standing behind them.

An outflow pipeline, which may best be seen on the chart, extends 0.8 mile NNW from Green Point.

A disused submarine cable, which may best be seen on the chart, extends seaward from a point on the shore located about 0.6 mile N of Milnerton Light.

Numerous recreational craft may be encountered within Table Bay, especially at weekends. At night, such craft are often difficult to distinguish against the background shore lights.

A disused ammunition dumping area, with a radius of 4 miles, lies centered about 7 miles WNW of Green Point Light and may best be seen on the chart. Hulks and explosives lie within this area.

Vessels should use extreme caution when approaching the bay during hazy weather or poor visibility. In addition, during hazy weather, the E coast of the bay is very deceptive due to the close resemblance which the sandy shore bears to the sea.

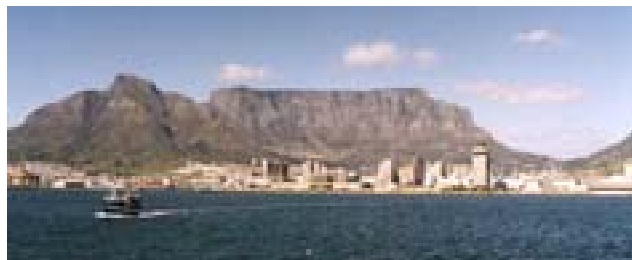
A Replenishment Area lies in the approaches to Table Bay, about 8 miles W of Green Point Light. For further information, see paragraph 5.53 (Regulations).

Cape Town (33°55'S., 18°25 'E.)

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5.53 Cape Town (Kaaopstad), one of the largest cities in South Africa and the parliamentary capital, is situated around the S part of Table Bay and fronted by the port. It is dominated by Table Mountain.

Winds—Weather.—From the middle of April to the middle of September, the prevailing winds are from NW or N. For the remainder of the year, especially during December, January,



Cape Town

and February, the prevailing winds are from SE. High winds, exceeding 60 knots and lasting for several hours, have occurred in the vicinity of the port during the summer.

The worst weather and heaviest swell are normally experienced after the wind has backed to W and SW and increased to gale force. The swell usually continues for some time after the gale has blown itself out. The heaviest swell comes from the WSW or SW giving rise to the notorious "Cape Rollers" which, coming in on the beam, make it uncomfortable for ships entering or leaving the port on either SE or NW courses.

Fog and poor visibility can be expected in the vicinity of Table Mountain, especially from April to July. The fogs are often confined to the low ground. At such times, Green Point Light may become obscured while the elevated land of Signal Hill and the Lions Head remains clear.

Tides—Currents.—The tides rise about 1.7m at springs and 1.2m at neaps.

There is no apparent tidal current in Table Bay. However, a summer current that sets N past Robben Island has been known to attain a rate of 3 knots but is usually 0.5 knot or less. During the winter months when NW and W winds occur, a current sets into the bay from NW and impinges on the shore in the vicinity of Paardeneiland. Here it divides, one current setting N along the coast as far as Bloubergstrand and the other setting W and NW past the entrance to the docks. This current then turns SW along the shore to Green Point, attaining rates up to 2 knots.



Cape Town Harbor

Depths—Limitations.—The port dock complex, which is protected by breakwaters, extends about 2.7 miles E from the vicinity of Mouille Point and may best be seen on the chart. The entrance channel extends in a S direction from the inner end of the TSS to the dock complex. It is maintained at a least dredged depth of 15.9m. Cape Town's harbormaster has pro-

mulgated new draft restrictions after a recent dredging program was completed in mid-2011.

Ben Schoeman Dock is entered from the S end of the approach channel; Duncan Dock, SW of Ben Schoeman Dock, is entered from the same channel. As a result of the recent dredging the inner channel contour line has been adjusted closer to North/South Spur, thereby increasing the depth of water at the entrance of Ben Schoeman Dock. The whole area of the inner channel is 15.8m.

Ben Schoeman Dock, the outermost basin, is about 1,800m long and 500m wide. It has an entrance, 200m wide with a depth of 14m. This dock provides 12 berths, 173 to 305m long, with depths of 10 to 15.5m alongside.

Duncan Dock, located SW of Ben Schoeman Dock, is about 1,800m long and 600m wide. It has an entrance, 180m wide, with a depth of 15.4m. This dock provides 24 berths, 185 to 318m long, with depths of 6.1 to 14m alongside. The maximum draft permitted in Duncan Dock is 13.2m.

Tanker Basin is located in the E corner of Duncan Dock. It provides two berths, 203m and 250m long, with depths of 13.1m alongside.

Victoria Basin and Alfred Basin are located in the W part of the harbor. The NW sides of these basins have been developed into a waterfront leisure area. The basins have depths of 4 to 11m and are used mostly by fishing boats and small craft.

The port has facilities for general cargo, container, reefer, cruise, ro-ro, bulk, tanker, and fishing vessels. Vessels up to 370m in length, 87m beam, and 12.8m draft can be accommodated in the port. Tankers up to 250m in length and 13.1m draft can be handled, with a tidal rise of 1m or more. The maximum permissible draft at for vessels bound for the container terminal has been amended to 14.2m. Refurbishment of the berths (601-602) is completed, with a total length of 720m and an alongside depth of 15.5m. The remainder of the berths are undergoing refurbishment and will be completed as soon as possible.

Sturrock Dry Dock is located at the SE side of Duncan Dock. It is 369.6m long and has a depth over the entrance sill of 13.7m at HWS. The entrance has a width of 45.1m at its top and 38.4m at its bottom.

A Replenishment Area lies in the approach to the port, about 8 miles W of Green Point Light. It is used by vessels not intending to enter the port. For further details, see Regulations.

Aspect.—The silhouettes of Table Mountain, Devil's Peak, Lions Head, and Signal Hill (see paragraph 5.52) provide an extremely conspicuous background to the port.

The large complex of Groote Schuur Hospital, with its conspicuous gabled tower, stands 1.5 miles SSE of the SE end of Ben Schoeman Dock. Three conspicuous circular apartment buildings are situated 1.5 miles W of this hospital complex. They appear starkly outlined against the vegetation of the lower slopes of Devil's Peak. Because of the prevalence of industrial haze during days of calm or light winds, these buildings can often be seen clearly above the smog when the buildings of the lower-lying parts of the city are obscured.

The conspicuous Port Control building, 63m high, stands at the NE end of the mole which separates Victoria Basin from Duncan Dock. A prominent grain elevator is situated about 0.4 mile SW of this building.

The entrance channel leading in a S direction from the TSS to the harbor is marked by lighted buoys. The dock entrances

are indicated by lighted ranges which may best be seen on the chart.

A fairway lighted buoy, equipped with a racon, is moored at the inner end of the TSS, about 2.5 miles NE of Green Point Light.

For further information concerning aids and landmarks in the approaches to the port, see paragraph 5.52 (Table Bay).

Pilotage.—Pilotage is compulsory. Pilots can be contacted on VHF channels 16, 12, 9, 11, 13, 14 and 29 and board about 1.5 miles SW of the Fairway Lighted Buoy.

Vessels should send a request for pilotage and an ETA 72 hours in advance. They should also confirm their ETA on VHF channel 16 with the Port Control 1 hour prior to arrival. Vessels should then report their ETA to the Port Control when 10 miles seaward of the N breakwater light.

Oil tankers and other vessels carrying dangerous cargo are berthed only during daylight hours.

Regulations.—A Traffic Separation Scheme (TSS) lies in the outer approach to Cape Town (Table Bay) and may best be seen on the chart. This scheme is not IMO-adopted but the South African authorities advise that Rule 10 of the International Regulations for Preventing Collisions at Sea (72 COLREGS) applies. Inshore Traffic Zones lie between the inner limits of the TSS lanes and the coast.

A separation zone, 0.5 mile wide, is situated with its S end located about 3.5 miles SW of Robben Island Light. It extends NW for about 13.5 miles. The traffic lane for vessels proceeding NW, which is 1.5 miles wide, lies on the E side of this zone; the traffic lane for vessels proceeding SE, which is 1.5 miles wide, lies on the W side.

A second separation zone, 0.5 mile wide, is situated with its N end located about 4.5 miles W of Green Point Light. It extends SW for about 8 miles. The traffic lane for vessels proceeding NE, which is 1.5 miles wide, lies on the E side of this zone; the traffic lane for vessels proceeding SW, which is 1.5 miles wide, lies on the W side.

A third separation zone, 0.2 mile wide, is situated with its W end located about 3 miles NW of Green Point Light. It extends E for about 3.5 miles to the vicinity of the fairway lighted buoy. The traffic lane for vessels proceeding W, which is 1 mile wide, lies on the N side of this zone; the traffic lane for vessels proceeding E, which is 1 mile wide, lies on the S side.

A Replenishment Area lies about 8 miles W of Green Point Light. All vessels replenishing stores at sea in this area must remain W of the outer limits of the TSS traffic lanes.

A helicopter service is available for tankers and other vessels not intending to enter the harbor. This service may be used for emergency medical cases, mail, and small items of stores. However, usually only vessels which are able to comply with the special requirements for the operation of helicopters are permitted to use this service.

A launch service is available to serve vessels outside the port limits. This service is restricted to vessels, with drafts of less than 12.2m, which do not intend to stop for a period exceeding 1 hour. Vessels requiring to stop for a period of more than 1 hour must anchor within the port limits.

Arrangements for replenishment should be made through the vessel's agent. Vessels must report to the VTS Center by VHF when 15 miles from the area.

The IMO has established regulations for laden tankers navi-

gating off the coast of South Africa. Such vessels must maintain minimum distances from pertinent points situated along the coast. Exemptions apply to vessels using the Replenishment Area in the approaches to Cape Town (Table Bay). For further information, see Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

Vessel Traffic Service.—A Vessel Traffic Service (VTS) system operates in the approaches to Cape Town (Table Bay) and provides radar coverage up to 20 miles offshore.

The VTS system is mandatory for the following vessels:

1. Vessels of 15m in length and over.
2. Towing vessels, where the tow is 15m or more in length or the overall length of the tow is 30m or more.
3. All passenger carrying vessels.
4. All vessels carrying polluting or dangerous cargo.

Vessels must contact the VTS center (Cape Town Port Control) on VHF channel 14, as follows:

1. Fifteen minutes before arrival at the TSS (VTS area).—Vessels must state their name, call sign, position, ETA at the Reporting Point, destination with ETA, and whether any dangerous or pollutant cargo is being carried.
2. Arriving at the designated Reported Points (see below).—Vessels must state their name, position, and ETA at the next Reporting Point.
3. Arriving at a berth.—Vessels must state their name and position.
4. Fifteen minutes before departing from a berth.—Vessels must state their name, call sign, position, destination with ETA, whether any dangerous or pollutant cargo is being carried, and ETD from berth.
5. Immediately prior to departing from a berth.—Vessels must state their name, call sign, position, and ETA at the next Reporting Point.

Vessels must also immediately report any incident, accident, or condition impairing safety to Cape Town Port Control.

Additional information concerning draft, gt, length, the particulars of cargo on board, and last and next ports of call may be requested by the VTS Control Center.

The VTS Control Center will provide information relating to the locations of other vessels and the density of traffic converging on the same position.

The VTS system is linked to the Saldanha Bay VTS Center, the Maritime Rescue Coordination Center, the Port Control Office, the Pilot Offices, and the local Coast Radio Station.

The designated Reporting Points (RP), for both arriving and departing vessels, are best seen on the chart.

Signals.—Traffic signals are shown from the top of the Port Control Building. They consist of three strips of colored lights and are visible by day and at night. A red strip controls Ben Schoeman Dock, a green strip controls Duncan Dock, and an amber strip controls Victoria Basin.

When a vessel is granted permission to enter any dock, the signal consists of a series of flashes along the appropriate strip. When a vessel is given permission to leave, the signal consists of a fixed light in the appropriate color. These signals may be shown one at a time or in combinations.

When these signals are being shown, vessels are prohibited from entering the entrance channel leading between the docks and the fairway lighted buoy without prior permission.

A time signal, controlled from the Cape Town Observatory, is fired daily at 1000 GMT (noon) from a gun battery situated on Signal Hill.

Contact Information.—Cape Town Port Control can be contacted, as follows:

1. VHF: VHF channels 9, 11, 12, 13, 14, and 16
2. Telephone: 27-21-449 2805
3. Facsimile: 27-21-449 2039

Anchorage.—Four designated anchorage areas, situated within Table Bay and may best seen on the chart, are, as follows:

1. No. 1 Anchorage lies centered 1.5 miles W of Green Point Light and has depths of 24 to 45m. It is a general anchorage which should be used only during the summer.
2. No. 2 Anchorage lies centered 2 miles NW of Milnerton Light. It is a general anchorage with depths of 12.4 to 22m. Vessels using this anchorage must avoid the disused submarine cable which extends seaward from a point on the shore located about 0.6 mile N of the light.
3. No. 3 Anchorage lies centered 1.6 miles WSW of Milnerton Light. It has depths of 9 to 15m and may only be used by small vessels.
4. No. 4 Anchorage lies centered 3.2 miles ESE of Robben Island Light. It has depths of 12.8 to 22m and may only be used by vessels carrying hazardous cargo.

The holding ground within the anchorages is unreliable in bad weather and vessels at anchor must keep their engines ready for use at short notice.

Directions.—A Traffic Separation Scheme (TSS) is situated in the approaches to Cape Town (Table Bay) and may best be seen on the chart (see Regulations).

Caution.—Vessels underway in the approaches should avoid impeding the passage of other vessels which are embarking or disembarking pilots or entering or leaving the dock complex.

Vessels underway in the approaches should use caution as, at night, it may be difficult to distinguish the navigation lights of other vessels against the background scatter of shore lights.

A restricted area, within which anchoring is prohibited, extends from the vicinity of the fairway lighted buoy to the dock entrance and may best be seen on the chart.

After NW gales, which occur more frequently during the winter, a considerable scend may be experienced alongside the berths in the dock complex.

For additional cautions concerning the approach to Cape Town, see paragraph 5.52 (Table Bay).

Table Bay to the Cape of Good Hope

5.54 The Cape Peninsula extends from Green Point to the Cape of Good Hope, about 28 miles S. It is separated from the high ground to the NE by a neck, 11 miles wide, of low-lying sandy ground. This neck, known as Cape Flats, extends between the head of Table Bay and Valsbaai (False Bay).

A series of mountain ranges extends S for about 16 miles from Table Mountain. This series is broken by a low-lying valley extending ESE from Chapmans Bay (34°07'S., 18°21'E.) to Vishoekbaai, on the E side of the peninsula. This valley is visible only on certain bearings.

From W, the Cape Peninsula appears high and rugged from

Table Mountain to within 4 miles of the Cape of Good Hope, where the mountain chain terminates in Paulsberg. This latter hill, 366m high, rises close to the W shore of Valsbaai (False Bay). From here to Cape Point Light the land is elevated, except for two peaks at its S end, which appear as a saddle-shaped island when seen from a considerable distance. The W shore of the peninsula is fringed with foul ground and rocks.

Caution.—Crayfishing vessels may be encountered within 4 miles of the coast between Table Bay and the Cape of Good Hope. Such vessels may be anchored or drifting with unlit bottom gear, marker buoys, and recovery lines. Numerous trawlers may also be encountered in the vicinity of the Cape Peninsula.

Submarines frequently exercise off the SW coast of South Africa, N of 36°S and between 16°E and 20°E. Submarines also frequently exercise in the approaches to Valsbaai (False Bay).

Several military exercise areas lie in the vicinity of the Cape Peninsula and Valsbaai (False Bay). For further information, see Pub. 160, *Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean*.

5.55 Sea Point (33°55'S., 18°23'E.), located 1.7 miles SW of Green Point, is a low, rocky promontory. The shore between is fringed by thick kelp. A round pavilion, with a cupola, stands 0.4 mile ENE of the point and is conspicuous. It appears in contrast to the background of high apartment buildings.

A detached rocky shoal patch, with a depth of 16.1m, lies about 1 mile WNW of Sea Point. Saunders Rocks extend seaward for about 0.2 mile S of Sea Point and have a depth of 3.5m lying at their extremity.



Sea Point

North Lion's Paw, a rock which dries 1.5m, lies 0.5 mile offshore, about 0.8 mile SW of Sea Point. It is steep-to except on the N side.

South Lion's Paw, a rock which dries 1m, lies 0.5 mile S of North Lion's Paw. Rocky foul ground, on which there is an islet, 10m high, extends between this rock and the shore. A dangerous shallow rock lies about 0.3 mile W of South Lion's Paw. The positions of both North Lion's Paw and South Lion's Paw are normally indicated by swirls or breaking water, even at HW.

Camps Bay (33°57'S., 18°23'E.) lies 1.6 miles SSW of Sea Point. Whale Rock, 3m high, is a large outcrop lying close off the S entrance point of this bay.

Bakovenbaai, lying close S of Camps Bay, marks what is virtually the S limit of the intensely built-up area stretching SSW from Green Point. Farther SSW the coast rises comparatively steeply toward The Twelve Apostles (see paragraph 5.52). This vicinity is prone to forest fires in summer.

Oude Schip (34°02'S., 18°19'E.), located about 5.5 miles SW of Camp Bay, consists of a cluster of large boulders, which are almost surrounded by water. The coast between is indented and fronted by foul ground and rocks. This cluster of boulders is surmounted by a beacon, which stands at an elevation of 16m. Foul ground, over which the sea nearly always breaks heavily, fronts the N and W sides of Oude Schip.

A dangerous rock and Die Middlemas, a rock 4.5m high, lie about 0.8 mile WNW and 0.2 mile WSW, respectively, of Oude Schip. A dangerous wreck lies in the bay which is entered close S of Oude Schip.

Little Lions Head (Klien Leeukop), 436m high, rises 1.8 miles ENE of Oude Schip and is prominent from seaward.

5.56 Duikerpunt (34°02'S., 18°18'E.), the W extremity of the Cape Peninsula, is located 0.7 mile SSW of Oude Schip and consists of a bold headland. This point, which is radar conspicuous, is fronted by foul ground and several above-water rocks. A stranded wreck lies close N of the point but is reported (2007) to be not easily distinguished.

Karbonkelberg, 652m high, rises 1 mile E of Duikerpunt and is conspicuous from seaward.

Vulcan Rock, which dries 0.9m and is always marked by breakers, lies 1.5 miles S of Duikerpunt. Tafelberg, a rocky shoal patch, lies about 0.4 mile SE of Vulcan Rock. It has a least depth of 7.6m and breaks in heavy weather.

Hangberg (The Sentinel), a remarkable hill, rises close to the shore, about 2 miles SE of Duikerpunt. It is 330m high and appears to overhang when viewed from E. Duiker Island, 3m high, lies about 0.6 mile W of Hangberg and is fringed by foul ground and kelp. This flat rock is located close off a small rocky projection and breakers extend SW for about 0.3 mile from it.

Houtbaai (34°03'S., 18°21'E.), a fishing and pleasure craft center, lies 2.5 miles SE of Duikerpunt. This bay is entered between Badtamboer, located close SE of Hangberg, and Die Josie, a rocky point 1.2 miles SE. The coast on each side of the entrance is high and rugged, particularly on the E side, where hills rise precipitously and are separated by a series of ravines. The mouth of the Houtbaai River, usually dry in summer, lies at the head of the bay, which is low and sandy.

Two wrecks, with a least depth of 9m, lie in the entrance to the bay, about 0.4 mile ESE of Badtamboer.

York Point, located 0.5 mile NE of Badtamboer, is low-lying and composed of boulders.

Constantiaberg (34°03'S., 18°23'E.) rises on the E side of the bay, 2 miles NE of Die Josie. This hill is 928m high and conspicuous. A prominent radio mast, 143m high, stands near the summit.

A modern fishing harbor is situated close N of York Point. It is protected by breakwaters, 370m long. A number of fish factories, lighted at night, stand on the S side of the harbor. A wharf, extending NW from the inner side of the S breakwater, has depths of 2.5 to 3.5m alongside and can accommodate trawlers up to 43m in length. The harbor is a base for tuna and cray fish fleets.

Except during SE squalls, good sheltered anchorage may be obtained within the bay, with excellent holding ground of soft sand. Anchorage in the entrance to the harbor should be avoided. Although the bay is open to the SW, strong winds, apart from occasional short-lived squalls, seldom occur from this

**Houtbaai**

quarter. However, when SE winds blow, squalls come down very heavily off the land and an unpleasant short, choppy sea occurs.

5.57 Chapmans Point (34°05'S., 18°21'E.), located 1 mile SSW of Die Josie, is fronted by a reef on which the sea always breaks. Ratelklip, a reef, lies close offshore, 0.4 mile S of the point and the sea also always breaks heavily over it.

Chapmans Peak, 593m high, rises close E of Chapmans Point. When viewed from the W, this prominent peak presents two summits of dark appearance and of almost equal height.

Chapmans Bay lies between Chapmans Point and Klein-Slangkoppunt, 2 miles SSW, and provides no safe anchorage. The sandy beach at the head of this bay is backed by swampy ground in which there are lagoons and salt pans.

Slangkop Point (34°09'S., 18°19'E.), located 1.6 miles SW of Klein-Slangkoppunt, is low and sandy. The shore between is fronted by foul ground and patches of kelp. The land close within this point rises steeply to the summit of Slangkop, a prominent flat-topped hill, 178m high.

Slangkop Light is shown from a prominent round tower, 33m high, standing on the point. This light tower stands out against the dark background of the hills behind it.

**Slangkop Light**

A wreck, with a depth of 12.8m, lies about 1 mile W of the light. A wave-measurement buoy is moored about 4 miles SSW of the light and a restricted area, with a radius of 0.5 mile, surrounds it.

The coast between Slangkop Light and Die Eiland, 2.5 miles SE, is rocky and much encumbered with off-lying kelp. Die Ei-

land is a rocky boulder-strewn point upon which stand the brick buildings of a lobster factory. A prominent radio mast, 85m high, is situated on the point.

Sandkop rises 0.5 mile NNW of Die Eiland. This hill is 121m high and conspicuous because of a sand patch on its NW side. A range of hills stands parallel to the bight in the coast extending between Die Eiland and Schuster's Bay, 2 miles SE. Platberg, 308m high, rises 1.6 miles SE of Die Eiland and is a prominent summit along this range. Scarborough, a prominent village, stands close E of Schuster's Bay.

A detached shoal patch, with a least depth of 13.4m, lies about 1 mile WSW of Die Eiland and another detached shoal patch, with a depth of 14.5m, lies about 0.8 mile SW of Schuster's Bay. Vessels are advised to keep in depths of over 50m when navigating in this area.

Bonteberg, 226m high, rises 1 mile SSE of Schuster's Bay and is conspicuous from SW by virtue of the bluff slope on its W side. The low-lying valley of the Krom River is located about 0.7 mile S of Bonteberg. This river flows into a long narrow lagoon, which is separated from the sea by a low and sandy strip. The coast in this vicinity is fronted by submerged rocks and kelp, with depths of less than 15m lying up to 1 mile offshore.

Caution.—The area lying S of a line extending between Schuster's Bay and Smitswinkelbaai, about 6 miles SE, is a designated nature reserve. A large variety of animals, birds, and reptiles exist within this area and special regulations apply in regard to landing.

5.58 Olifantsbospunt (34°16'S., 18°23'E.), a rocky point, is located 4.5 miles S of Schuster's Bay. A stranded wreck, in three parts, lies on this point but is reported (2007) to be not easily distinguished

Albatrosrots (Albatross Rocks), a group of submerged rocks over the sea occasionally breaks, lies 0.6 mile WSW of Olifantsbospunt.

Hoek van Bobbejaan (34°19'S., 18°24'E.), consisting of a rocky headland, is located 2.4 miles SSE of Olifantspunt and fronted by foul ground. A stranded wreck lies on this point but is reported (2007) to be not easily distinguished. Brightwater, a farm with several white buildings, is situated 0.8 mile N of the point and is conspicuous from seaward.

An extensive rocky bank, with depths of less than 30m, extends about 3.5 miles WNW from Hoek van Bobbejaan and then continues in a SE direction toward Cape Point. Several shoals, with depths of 15m or less, lie on this bank and may best be seen on the chart. In bad weather, the sea breaks over these shoals and, during S gales, a continuous line of breakers extends from them to the coast. Vessels navigating in this area are advised to keep in depths of over 50m.

The coast extending between Hoek van Bobbejaan and the Cape of Good Hope, 4.5 miles SE, is generally rocky and fronted by submerged rocks. The Groot Blouberg range of low hills stands parallel to this section of the coast. Kommetjieberg rises 0.8 mile SE of Hoek van Bobbejaan. This prominent hill, 116m high, forms the summit of the range.

The Island, a reef of drying rocks, lies about 0.2 mile offshore, 2.5 miles SE of Hoek van Bobbejaan.

The Cape of Good Hope

5.59 The Cape of Good Hope (34°21'S., 18°29'E.), situated at the S extremity of the Cape Peninsula, resembles a ballet dancer's foot, with Cape Point being the pointed toe and Cape Maclear being the heel.

It should be noted that the Cape of Good Hope does not form the southernmost tip of Africa. This tip is actually formed by Cape Agulhas (34°50'S., 21°01'E.).



Cape Peninsula

Cape Point (34°21'S., 18°30'E.), the pointed toe, projects E. A prominent peak, 243m high, rises 0.4 mile WNW of the point and its summit is surmounted by a disused light structure.

Cape Point Light is shown from a prominent square tower, 9m high, standing at an elevation of 87m on the point. A fixed red light is shown from the base of the light tower, at an elevation of 78m.

Dias Rock, 2.5m high, lies close SSE of Cape Point and is connected to it by a submerged reef.

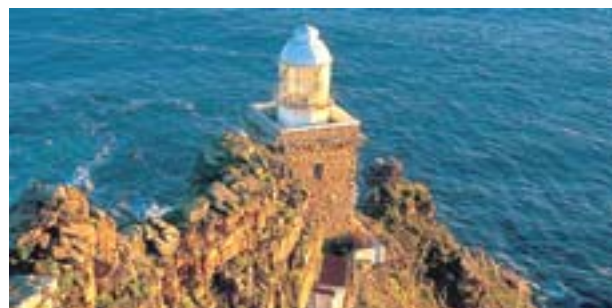


Cape Point Disused Light Structure

Cape Maclear (34°21'S., 18°28'E.), the heel, is located 1.2 miles W of Cape Point. Diasstrand, a small sandy beach, lies between these points and provides a landing for boats.

Vasco da Gama Peak, 262m high, rises conspicuously on the cape, 0.7 mile N of Cape Maclear.

An extensive rocky bank, with depths of less than 30m, lies off the Cape of Good Hope and may best be seen on the chart. It extends about 2 miles W and SW from Cape Maclear and about 2 miles S and 1.5 miles SE from Cape Point. Except



Cape Point Light



Cape Point Light from SW

during the calmest weather, the sea breaks over this entire area. South West Reefs extend about 1 mile SW from Cape Maclear and the sea generally breaks over them.



Cape Point from S

Bellows Rock (34°23'S., 18°30'E.), which dries 1m, lies 2 miles SSW of Cape Point Light and the sea always breaks over it. The position of this rock can easily be seen in fine weather and vessels may pass 0.5 mile S of it. However, on moonless nights during bad weather or with poor visibility, vessels are advised to keep well clear of this danger.

Anvil Rock, with a depth of 3.9m, lies about 1.2 miles SE of Cape Point Light and does not break unless there is a heavy swell running. Several shoal patches, which may best be seen on the chart, lie between this rock and Cape Point. These patches, together with the generally irregular nature of the bottom, render passage inside Anvil Rock hazardous for all except small vessels with local knowledge.



Cape Hangklip Light

5.60 Rocky Bank (34°25'S., 18°36'E.), with a least depth of 22m, is an extensive shoal area lying centered 6 miles SE of Cape Point Light.

Valsbaai (False Bay), a large bay, is entered between Cape Point and Cape Hangklip, 16.5 miles E, which is marked by a light.

For a description of the waters lying E of the Cape of Good Hope, including Valsbaai (False Bay), see Pub. 171, Sailing Directions (Enroute) East Africa and the South Indian Ocean.

Regulations.—The IMO has established regulations for laden tankers navigating off the coast of South Africa. Such vessels must maintain minimum distances from pertinent points situated along the coast. Laden tankers must maintain a

minimum distance of 20 miles from Cape Point when proceeding W and a minimum distance of 25 miles when proceeding E. Laden tankers sailing on voyages only between ports in South Africa are exempted from the above regulations but are expected to maintain a minimum distance of 10 miles from all salient points, subject to weather and sea conditions.

Exemptions apply to vessels using the Replenishment Area in the approaches to Cape Town (Table Bay). For further information, see Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean.

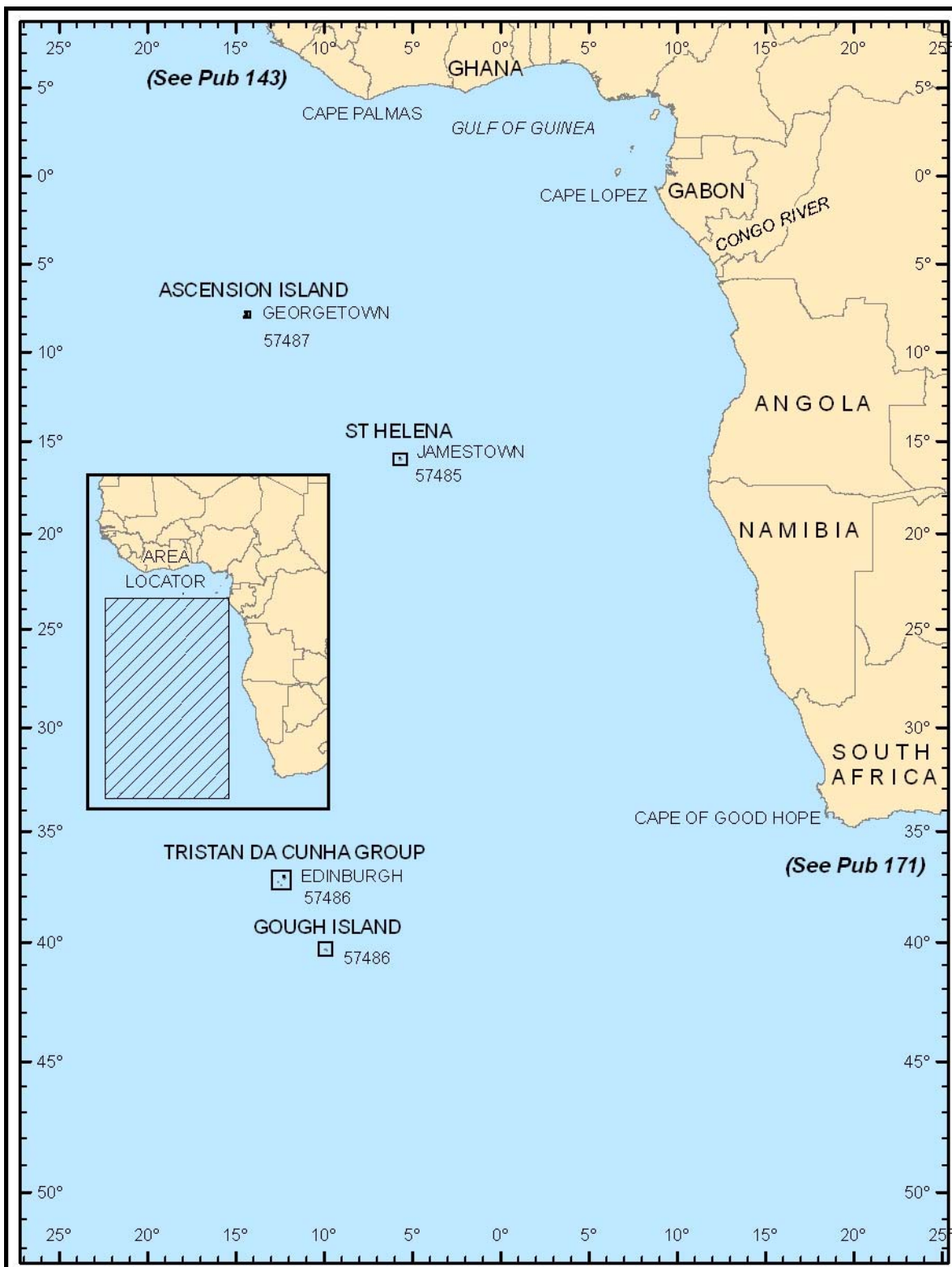
Caution.—Submarines exercise frequently off the S coast of South Africa, N of 36°S, between 16° and 20°E, and in the approaches to Valsbaai (False Bay).

Vessels may encounter numerous fishing boats in areas up to 4 miles offshore in the vicinity of the Cape of Good Hope and near Rocky Bank.

Vessels approaching the Cape of Good Hope should keep in depths of more than 100m until such time as their position has been accurately ascertained.

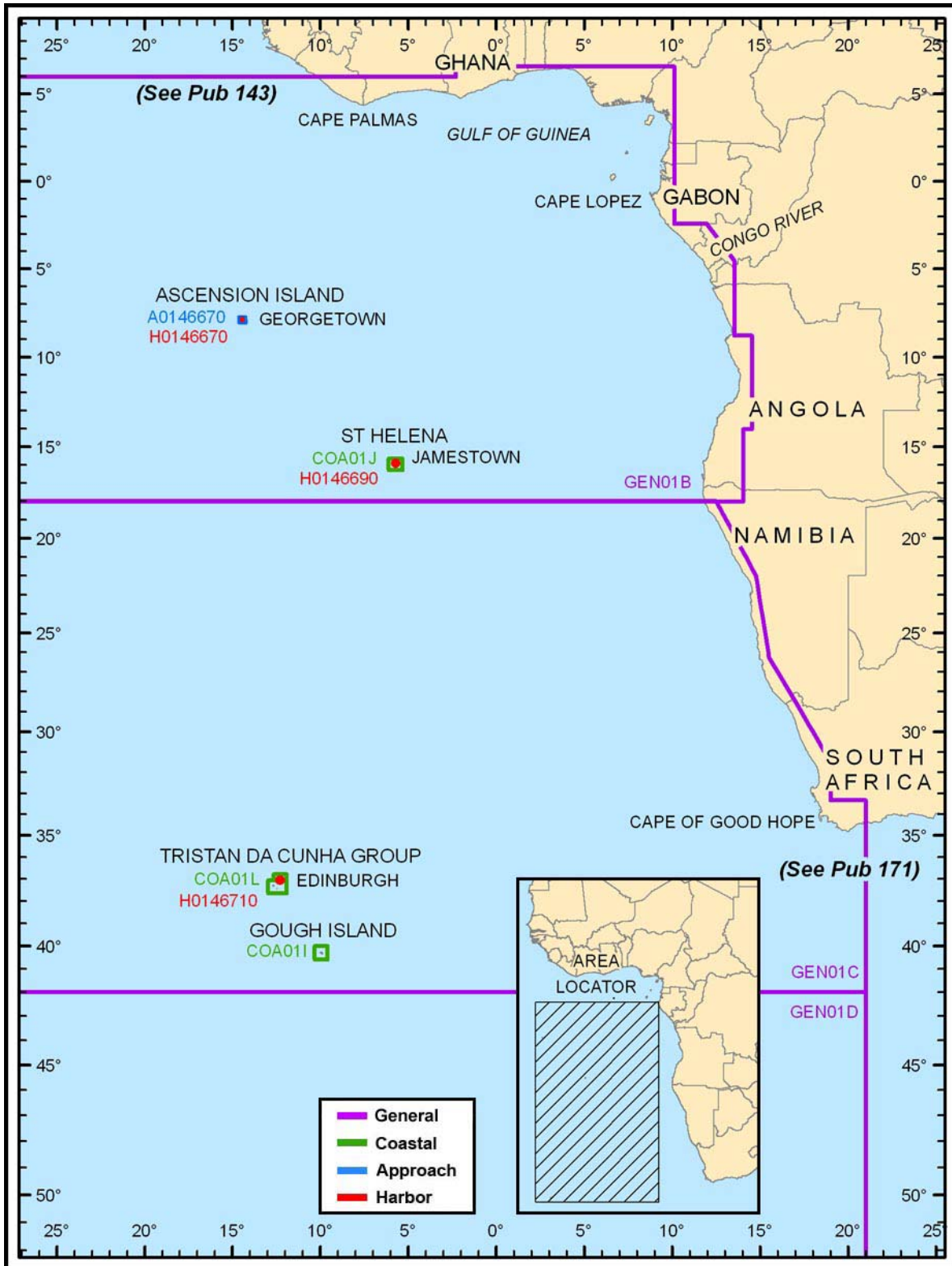
Explosives dumping areas (disused), with a radius of 5 miles, lie centered about 15 miles and 45 miles SSW of the Cape of Good Hope and may best be seen on the chart.

An explosives dumping area, with a radius of 1 mile, lies centered about 6.2 miles SSW of Cape Point Light.



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

SECTOR 6 — CHART INFORMATION



Additional DNC library coverage may be found in NGA DNC 01 (Limited Distribution) disc within the README\GRAPHICS folder.
SECTOR 6 — DNC LIBRARY INFORMATION

SECTOR 6

ISLANDS AND SEAMOUNTS IN THE SOUTH ATLANTIC OCEAN

Plan.—This sector describes Ascension Island, Saint Helena Island, the Tristan da Cunha Group, Gough Island, and Bouvetoya. This sector also describes certain seamounts in the E part of the South Atlantic Ocean. The descriptive sequence is from N to S.

Ascension Island

6.1 Ascension Island (7°56'S., 14°25'W.), being of volcanic origin, lies about 700 miles NW of Saint Helena Island and is a communications center. Georgetown, situated in the NW part of the island, is the only settlement and port, and is the center of administration. The surface of the island is extremely irregular and presents a rugged and uninviting appearance when viewed from seaward.

Ascension Island, along with Saint Helena, Tristan da Cunha, and Gough Island, form a British Overseas Territory. The Governor of this territory resides on Saint Helena. An airfield is situated on the island but is used only by military planes. The island is the site of a European Space Agency tracking station.

The Peak (7°57'S., 14°21'W.), forming the summit of Green Mountain, is 859m high and the island's greatest elevation.

Green Mountain takes its name from the color of the top and is surrounded by numerous other craggy peaks of less elevation, with deep gorges and dark ravines between. There are about 40 cones of various magnitudes on the island, being extinct craters, from many of which the courses of the lava streams may be traced to the sea. Rain falls more frequently on the summit of Green Mountain than on the lower parts of the island. Mist generally obscures the mountain for some part of the 24 hours. The only signs of vegetation on the island are on Green Mountain, where vegetables are successfully cultivated. Water was formerly obtained from the cement rain catchments on the mountain and conveyed through pipes to covered tanks in Georgetown. The island is now supplied by desalination facilities and little can be spared for shipping.

Devils Riding School (7°58'S., 14°23'W.), a crater more rugged and remarkable than the rest, is located 2.5 miles WSW of Green Mountain.

Tides—Currents.—The predominant set is W at 0.5 knot. Rollers take the form of either SW or NW rollers and may be expected about once every two weeks. They can be up to 3m in height and are strong enough to prevent lighters from mooring alongside the wharf. Locally, the smaller ones are called single rollers and the larger ones double rollers. When single rollers are running, landing may still be effected, but difficulty is often experienced in getting alongside the steps, and great caution should be exercised. The origin of these rollers is attributed to the swell produced by intense storms thousands of miles away in the North Atlantic Ocean and the South Atlantic Ocean.

The depths offshore on the E side of Clarence Bay are sufficient to prevent the swell acquiring the character of breaking rollers, except in cases where the undulation arrives from NW

and breaks directly upon the island. The waves are very low and of such great length that they are not noticeable in deep water, but on reaching shallow water they become shorter and higher. Off Clarence Bay, they frequently break on crossing the 10m depth curve. Rollers from either direction may occur during any month of the year, though the frequency of NW rollers is greater during the months of winter in the Northern Hemisphere, and of SW rollers during the months of winter in the Southern Hemisphere.

The shoals lying NW of the wharf appear to subdue the NW rollers which arrive at the wharf in the form of an ordinary swell. It then becomes quite possible to use the landing place, and lighters can be taken in and unloaded as long as the swell is not very heavy.

A combination of NW and SW rollers seldom occurs, although this combination raises a nasty lumpy sea extremely dangerous to boats. On these occasions, a pyramidal mass of water, 3.7 to 4.6m high, may rise in the direct track of boats steering for the wharf from the roadstead and break about 50m NW of Tartar Rock. Neither SW nor NW rollers break in the vicinity of the anchorage, nor in the vicinity of the mooring buoys for lighters. Rollers cross these areas in the form of a swell, the effect of which diminishes as the distance offshore is increased. The swell at the anchorage is not nearly so heavy as that at the mooring buoys for lighters, and lighters can always be used by vessels lying at the anchorage, although at the same time communication with the shore may be impossible.

6.2 West Coast—North Point (7°53'S., 14°23'W.), the N extremity of Ascension Island, is fronted by foul ground and a wreck. Shoal depths of less than 10m lie up to about 0.2 mile NNE of this point and it should be given a wide berth. An islet, surmounted by a cairn 11m high, lies close off the NE side of the point.

An unnamed headland, located 0.7 mile W of North Point, is fronted by shoals and foul ground and should also be given a wide berth.

English Bay Terminal (7°53'S., 14°23'W.), an offshore tanker berth, lies 0.3 mile W of North Point and consists of three mooring buoys. It can accommodate tankers up 183m in length and 12.2m draft. Special arrangements to berth here must be made through the Queen's Harbormaster, Ascension Island. Vessels should establish initial contact with the Assistant Harbor Master on VHF channels 16 or 08 to arrange pilot boarding in Clarence Bay.

A number of oil tanks stand on the shore of the bay about 0.5 mile WSW of North Point. A prominent radio mast stands near the head of the bay and several others are situated close S of the E edge of the bay.

Two beacons, in line bearing 180°, stand on the shore close W of the oil tanks. Two beacons, in line bearing 090°, stand on the N part of North Point and form an approach range. Two beacons, in line bearing 090°, also stand on the S part of the point.



Ascension Island from W

Vessels approach from W using the range beacons. The port anchor is let go about 0.5 mile W of the front beacon, when crossing the 180° transit beacons, and the starboard anchor is let go when 0.3 mile W of the front beacon. Vessels then turn to port and secure their stern to hooks on the shore located close N of the oil tanks. The alignment of the beacons situated on the S part of North Point indicate the final position of the stern of the vessel when secured.

Clarence Bay (7°55'S., 14°25'W.), forming the main anchorage and port of the island, lies 2.6 miles SW of North Point on the NW side of Ascension Island.

6.3 Georgetown (7°56'S., 14°25'W.) (World Port Index No. 46670), the only port and settlement on Ascension Island, lies in the S part of Clarence Bay. This bay is entered between Pyramid Point, located about 2 miles SW of North Point, and Catherine Point, located about 1.7 miles SW of Pyramid Point.



Georgetown

Depths—Limitations.—The main part of the settlement extends between Catherine Point and Fort Thornton, 0.6 mile NE. The coast in this vicinity is fronted by an extensive shoal area, with depths of 0.3 to 9m, which extends up to about 0.6 mile seaward and is marked by two spar buoys. Rollers break heavily on the outer edge of this area when they set in.

Tartar Rock, 2m high, lies close NW of Fort Thornton and a buoy is moored close WNW of it. Five rocks, 0.5 to 2m high, lie close offshore, N of Fort Thornton.

A wharf, used by passenger boats and lighters, is situated

close W of Fort Thornton. It is 23m long and has a depth of 3m alongside. Caution is required when using this wharf on account of the rollers (see Tides and Currents).

A number of mooring buoys, used by island ferries and lighters, are located N of the wharf within the inner part of the bay. Floating hoses may be encountered extending between these buoys and the shore.

Aspect.—Pyramid Point is 9m high. Pyramid Rock, 15m high, stands on the point near the water's edge. It is a brown peaked and contrasts in color with the nearby coast. This rock is a useful mark for approaching the anchorage, but it is difficult to distinguish from some bearings.

A lighted range, which may best be seen on the chart, is shown from structures standing about 0.2 mile E of Pyramid Point and leads in a NE direction. It is reported that this range is difficult to see during the day due to numerous masts standing in the vicinity. A prominent radar dome is situated close NE of the light structures.

Bates Point, formed of lava rock, lies 0.6 mile SSW of Pyramid Point. Bates Rock, above-water, lies close off the point and is surmounted by a beacon, which is reported to be difficult to see until close inshore.

Catherine Point (7°56'S., 14°25'W.) is low and a number of conspicuous fuel tanks stand 0.2 mile SE of it.

A light is shown from a column standing about 0.3 mile ENE of Catherine Point when vessels are in the vicinity.

Fort Hayes stands on Hayes Hill, 31m high, which is situated 0.4 mile NE of Catherine Point. Fort Thornton stands on a hill, 23m high, situated 0.2 mile NNE of Fort Hayes. A prominent flagstaff stands about 0.2 mile SSE of Fort Thornton.

Redpole Monument stands 0.3 mile ESE of Fort Thornton and is conspicuous. It consists of a square pyramidal obelisk, 5m high, with an apex, 23m high.

A lighted approach range, which may best be seen on the chart, is shown from structures standing in the vicinity of Redpole Monument and leads in a SE direction. It is shown when vessels are approaching the anchorage.

Cross Hill, one of many rounded hills on the island, rises about 1 mile E of Catherine Point and overlooks the settlement. It is surmounted by a conspicuous tower. A mast, situated close NW of the tower, stands at an elevation of 283m and is marked by a red light.

Regulations.—There is a port radio station at Georgetown.

Scheduled vessels should send their ETA 48 hours in advance, via Ascension Island (ZBI), Saint Helena (ZHH), Cape Town (ZSC), or other coast radio station. The port authority may be contacted on VHF channels 8 and 16. Unscheduled vessels should send an ETA 72 hours in advance addressed to the Assistant Harbor Master.

Nobody is allowed on the island without the permission of the administrator.

Contact Information.—Georgetown Harbor Master can be contacted as follows:

1. Telephone 247-7000 Ex.101
2. Facsimile 247-6152

Anchorage.—Designated and numbered anchorage berths, which may best be seen on the chart, are situated in Clarence Bay. They have depths of 16 to 62m and can accommodate vessels up to 75,000 tons. Vessels working cargo from lighters are advised to use a berth lying near the 30m depth curve. The anchorage berths are allocated by the port authority. No tugs or pilots are available.

Vessels should anchor with a good scope of chain as the wind sometimes blows strongly off the high land. Vessels usually lie to a single anchor heading toward the land, but instances have occurred when they have swung the stern toward the shore.

Since vessels roll almost continuously at this anchorage, it is necessary to keep this possibility in mind when a berth is selected. Anchorage S of the outer buoys marking the N side of the shoal area lying off Georgetown is unsafe.

Vessels approaching from S or W should avoid the shoal area off Georgetown by keeping Pyramid Point ahead bearing not less than 055°.

Caution.—A dangerous wreck was reported (1983) to lie about 0.3 mile WSW of Catherine Point.

A disused cable area, the limits of which are shown on the chart, lies in the N part of Clarence Bay. Several old moorings foul the bottom between this area and the mooring buoys situated in the inner part of the bay.

It is reported that Catherine Point should not be used for fixing the vessel's position as it consists of detached rocks with no definite extremity.

6.4 Payne Point (7°57'S., 14°25'W.) is located 1.1 miles S of Catherine Point, the S entrance point of Clarence Bay. A prominent mast, 154m high, stands about 0.6 mile ENE of the point and is marked by red obstruction lights.

Cat Hill, surmounted by a conspicuous radar dome and a dish aerial, rises 0.3 mile E of the point. South West Bay Red Hill, on which stands a mast marked by red obstruction lights, rises 1 mile E of the point.

An aeronautical radiobeacon is situated about 0.5 mile E of Payne Point and two masts stand close NE of it.

South West Bay is entered between McArthur Point, located 0.7 mile SSE of Payne Point, and Portland Point, about 1 mile S. McArthur Point is fronted by shoals. A number of masts and aeri- als are situated ENE of Portland Point. The bay has a fine sandy beach backed by a steep lava cliff, the highest point of which rises to an elevation of 75m. A smooth plain lies 0.5 mile inland from the head of the bay and Wideawake Airfield is situated in its vicinity.

An aeronautical lighted beacon is shown, for 30 minutes be-

fore and after aircraft movements, from a structure standing 1.5 miles NE of Portland Point. This lighted beacon is obscured by high land on some bearings.

Saddle Crater Hill, 116m high, and South Gannet Hill, 228m high, rise, respectively, 0.9 mile ENE and 1.4 miles E of Portland Point. Both of these hills are surmounted by prominent dish aeri- als.

South Point (8°00'S., 14°24'W.), the S extremity of Ascension Island, is fringed by several rocks and islets. An islet, with a rock awash lying close E of it, is located about 0.2 mile off-shore, 0.5 mile W of the point.



South Point

Caution.—Due to the existence of submarine cables, anchorage is prohibited within an area, which may best be seen on the chart, lying in the vicinity of South West Bay and extending up to about 1.5 miles seaward.

An unsurveyed area, which may best be seen on the chart, lies centered 0.5 mile WNW of Portland Point.

Meteorological rocket firings take place from a position 0.7 mile NNE of Portland Point. Lights are shown from the point when the range, with a radius of 8 miles, is in use. The range authority attempts to avoid the known ETA of any approaching vessels.

6.5 Ascension Island—Northeast Coast—Porpoise Point (7°54'S., 14°21'W.), surmounted by a cairn, is located 1.5 miles ESE of North Point and North East Point lies 1.2 miles farther SE.



Ascension Island from N

North East Bay lies 0.4 mile W of North East Point and its entrance points are fringed by foul ground. Anchorage, fairly

sheltered from the predominating SE wind, may be obtained within this bay. It is reported that rollers only enter the bay about six times during the year.

The coast extending between Hummock Point, located 0.5 mile SE of North East Point, and South East Head, 2.7 miles SE, is high, rugged, and inaccessible, with deep water lying close off it.

Boatswain Bird Island, 104m high, lies 0.2 mile offshore, about 2 miles SE of North East Head. Boatswain Bird Rocks, with depths of less than 1m, lie 0.2 mile offshore, about 0.3 mile SE of this island.



Boatswain Bird Islet

South East Head (7°57'S., 14°18'W.), the E extremity of Ascension Island, rises to an elevation of 145m. White Hill, 525m high, stands 1.3 miles W this headland.



South East Head



Porpoise Point

Caution.—A firing practice area extends about 2.5 miles NE from the vicinity of Porpoise Point. It lies between positions located on shore about 0.6 mile ESE of North Point and about

0.4 mile W of North East Point. Although no restrictions are placed on the right to transit the firing practice area at any time, vessels should exercise caution when in the area. Red flags are shown when the area is in use. The area is operated using the clear range procedure; exercises and firing only take place when the area is considered to be clear of all shipping.

6.6 Southeast Coast—South Point (8°00'S., 14°24'W.), the S extremity of the island, is located 6.5 miles WSW of South East Head and has previously been described. The coast between is high, rugged, and inaccessible. This section of shore is exposed to the full force of the SE tradewinds and the sea breaks upon it with great violence.

Mountain Red Hill, with an elevation of 547m, rises about 1 mile inland, 2.6 miles NW of South Point.

Saint Helena Island

6.7 Saint Helena Island (15°58'S., 5°42'W.) lies 703 miles SE of Ascension Island and is most famous for being the place of Napoleon's exile from 1815 until his death in 1821.



Saint Helena Island

From a distance of about 60 miles, the island resembles a huge pyramidal-shaped fortress rising abruptly from the sea. No signs of vegetation are visible until a nearer approach is made, when it can be seen in the valleys and on the summits of the hills, in striking contrast to the precipitous and almost inaccessible cliffs, which form the coastline. These cliffs, 300 to 550m high, are divided by chasms, through which streams flow from the high lands of the interior and terminate in small coves partially exposed to the sea.

Landing is impracticable except on the NW or leeward side of the island. In favorable weather, landing may be effected in Prosperous Bay and Sandy Bay, on the E and S sides, respectively, of the island.

Saint Helena Island is divided into two unequal parts by a ridge of mountains, 600 to 820m high, extending in a curve from Castle Rock Point, the S extremity of the island, to **Stone Top Point** (15°59'S., 5°39'W.), near the SE extremity. The principal peak of the ridge is **Mount Actaeon** (15°58'S., 5°42'W.), 820m high, which forms the summit of the island. Diana Peak, 794m high, and High Peak, 798m high, rise, respectively, close SE and about 2 miles WSW of Mount Actaeon.

Towering fragments of basalt are located on each side of the SW part of the above ridge. Two of the most remarkable are located on the S side of the ridge and are formed of strangely-contorted columnar basalt. **Lot** (15°59'S., 5°43'W.), 60m high, stands with its top at an elevation of 454m; and **Lot's Wife**, 49m high, stands about 1.5 miles SW, with its top at an elevation of 462m.



Stone Top Point



Lot

Flagstaff Hill (15°55'S., 5°41'W.) rises to an elevation of 693m near the N end of the island and is prominent.

Tides—Currents.—The most singular phenomenon connected with this part of the ocean is the setting in of very heavy continuous swells or rollers from NNW. They are most prevalent during the months of January and February, when the waves break on the NW coast of Saint Helena Island with astonishing grandeur. When rollers are setting in, landing in ships boats is dangerous and only shore boats should be used. These rollers rise without any apparent cause for, as a rule, the weather is good and the wind light. If a vessel is moored in a depth of 31m there is no danger, as the rollers only commence to be dangerous within about 200m of the shore.

Local reports indicate that December to March is the time when rollers are most frequent. Ruperts Bay is reported to be more affected than James Bay. Up to 3 day's warning of rollers from the NW may be passed from Ascension Island by radio, which is relayed to ships via VHF by Saint Helena Radio.

6.8 Northwest Coast—Sugarloaf Point (15°54'S., 5°42'W.) is the N extremity of Saint Helena Island. The land

0.3 mile behind this point rises to Sugarloaf Hill, which has an elevation of 272m and is surmounted by a conspicuous white rock.

Buttermilk Point (15°54'S., 5°42'W.), marked by a light, is located 0.3 mile WSW of Sugarloaf Point; Banks Point lies 0.2 mile SSW of it.

Chubbs Point (15°55'S., 5°43'W.) is located 1 mile SW of Buttermilk Point. A light is shown from a mast standing on the NW side of a building situated on this point.

Ruperts Bay (15°55'S., 5°43'W.) lies close N of Chubbs Point and is the site of a tanker discharging facility. A mooring buoy, to which the stern is secured, lies in the center of the bay. Discharging is carried out through a floating hose, which is fixed to the shore by a gantry.

A prominent chimney stands on the SE side of the bay. Two range beacons, which assist vessels to berth, are situated on the E side of the bay and lead in an E direction. It is reported that these beacons have not been maintained and are difficult to identify.

Anchorage may be obtained off this bay but it is reported that abandoned submarine cables lie in the vicinity.

Munden's Point (15°55'S., 5°43'W.) is located about 0.2 mile WSW of Chubbs Point. A white cottage stands about 0.2 mile ESE of the point and is conspicuous from W or NW, but is obscured by trees on certain bearings.

Caution.—A detached shoal, with a depth of 66m, was reported (1974) to lie about 2 miles N of Buttermilk Light.

A detached shoal, with a depth of 68m, lies about 4.3 miles WNW of Chubbs Point Light.

6.9 Jamestown (15°55'S., 5°43'W.) (World Port Index No. 46690), the capital of Saint Helena Island, is situated at the head of James Bay. The bay is entered between Munden's Point and Ladder Hill Point, 0.4 mile SSW. It provides an anchorage where cargo is worked from lighters.

James Bay and Ruperts Bay, previously described in paragraph 6.8, afford the only landing places on the island. Landing in ship's boats can usually be carried out at the wharf in James Bay. However, a dangerous swell can become heavy at times, especially during the months of January and February. During periods of heavy swell, it is better to lie off the landing place and make use of the shore boats to effect landing ashore.

Deep valleys descend between steep rocky hills to the heads of James Bay and Ruperts Bay. The two valleys are separated by a ridge rising from Munden's Point which attains a height of 283m. James Valley, descending to James Bay, in which stands the settlement of Jamestown, is bordered on its SW side by a ridge which descends from High Knoll. The summit of the ridge is located 1 mile S of James Bay. This ridge extends to Ladder Hill, where it terminates abruptly in a stupendous perpendicular cliff facing the sea. Ruperts Valley, descending to Ruperts Bay, is bordered on its NE side by Ruperts Hill, which attains a height of 411m.

Winds—Weather.—The SE wind is prevalent in James Valley and Rupert Valley, but where there is high ground the prevailing wind is deflected so that a light NE wind blows along the NW side of the island. The interaction of this wind and the main SE wind causes a confused sea in the vicinity of Ruperts Bay and Sugarloaf Point.

Tides—Currents.—The tidal rise at Saint Helena Island is



Approach to James Bay



Approach to Jamestown



Jamestown Harbor



Jamestown

0.9m at MHWS and 0.7m at MHWN. The tidal current in James Bay is reported to set N during the rising tide and SW during the falling tide, although a vessel reported (1984) experiencing no tidal currents while at anchor.

Depths—Limitations.—A concrete wharf, 91m long, is situated on the NE side of James Bay and has a depth of 2.7m alongside its outer end. The wharf is equipped with a crane for the discharge of lighters; steps at its N end are used by harbor launches to land passengers.

A number of lighter and small craft moorings are situated within James Bay.

Dangerous wrecks lie within James Bay about 150m and 250m NNE of Ladder Hill Point.

A fish haven, which may best be seen on the chart, lies about 0.4 mile W of Ladder Hill Point.

A large wreck area, with a least depth of 17.8m, lies about 0.4 mile NNW of Ladder Hill Point and a foul area, in which ammunition has been dumped, is located close NE of it.

Anchorage can be taken as convenient, in depths of 27 to 51m, between 0.2 mile and 0.4 mile offshore, anywhere along the coast between Ladder Hill Point and Lemon Valley Bay, 1.5 miles SW. However, anchorage off James Bay should not be taken in depths of less than 30m due to the rollers and ground swell (see Anchorage).

Aspect.—A lighted range, which may best be seen on the

chart, is shown from beacons standing on Ladder Hill. It leads in a S direction and indicates the approach into James Bay.

Although these range beacons are clearly visible by day, the vertical difference in height between them reduces their transit accuracy. Only the lower beacon can be easily identified. The upper beacon is situated close E of a prominent flagstaff.

An old artillery barracks stands on the summit of Ladder Hill. The tower of Saint James Church, standing at the head of James Bay, is conspicuous. A white monument, conspicuous from seaward, is situated on the shore close NW of this church. The prominent government office building, known as The Castle, stands close ENE of the church.

A white beacon, 2m high, stands on the W extremity of Sampson's Battery, 0.7 mile SSE of Munden's Point.

Pilotage.—Pilotage is not available but the Harbormaster will give advice to vessels on request.

Regulations.—No boat, except the Health Officer's boat, is permitted to go alongside any incoming vessel which intends to anchor, nor is any contact with other vessels or with the shore permitted until pratique has been granted. Any vessel placed in quarantine shall continue to show a yellow flag and by night shall exhibit, from the foremast, two white lights in a

vertical line, at a distance apart of not less than 1.2m or more than 1.8m. Vessels calling at Saint Helena Island for refuge to land a sick person, or for other reasons, are advised to anchor.

Port officials, including medical staff, will not board unless the vessel is at anchor. However, if a vessel is unable to anchor, it should heave-to 1 mile NNW of Ladder Hill Point.

If anyone is to be landed, a ship's boat must be used. The Saint Helena Island port launch will meet the boat in the mooring area, about 0.2 mile N of Ladder Hill Point. During the operation, contact should be maintained with the Saint Helena Island coast radio station. If a vessel is likely to arrive outside the normal operating times of the radio station, a request should be made in advance to maintain communication until the operation is completed.

Vessels should send an ETA at least 24 hours in advance through Saint Helena (ZHH). Vessels intending to use the anchorage should contact Port Control or Saint Helena on VHF channel 16 for assistance.

Anchorage.—Anchorage may be taken as convenient off James Bay, but in depths of not less than 30m due to the rollers. The bottom in the roadstead is coarse sand, gravel, and silt. Three designated anchorage berths lie N, NNW, and NW of Ladder Hill Point and may best be seen on the chart. They should be used by large vessels intending to remain for any length of time.

Caution.—A local magnetic anomaly, causing variations of up to 7° greater than charted, was reported (1972) to exist in the vicinity of Munden's Point.

A historic wreck lies 0.3 mile WNW of Munden's Point. Anchoring near this wreck is prohibited.

6.10 Northwest Coast (continued).—Lemon Valley Bay lies about 1.5 miles SW of Ladder Hill Point.

Long Ledge, a narrow reef, extends about 0.2 mile NW from the coast, 0.5 mile SW of the W entrance point of Lemon Valley Bay. The Lion, an isolated above-water rock, lies close offshore, 0.2 mile SW of Long Ledge.

Lighter Rock lies close offshore, 1 mile SW of Long Ledge. Egg Island, 88m high, lies 1 mile SSW of Lighter Rock and is prominent. Peaked Island and Thompson's Valley Island lie 0.2 mile and 0.8 mile, respectively, SW of Egg Island.

Anchorage can be taken in a depth of 37m about 0.2 mile NW of Egg Island.



Saint Helena—Egg Island (lower right)

South West Point (16°00'S., 5°47'W.) is the W extremity of Saint Helena Island. This point rises to a flattened peak, known as Man and Horse, close inland.



South West Point (Man and Horse)

6.11 North and East Coasts.—Flagstaff Bay lies between Sugarloaf Point, the N extremity of the island, and a point 2 miles E. It has not been thoroughly examined. The indications are that this bay is fairly steep-to and is clear of known dangers.

Barn Long Point (15°55'S., 5°39'W.), the NE extremity of Saint Helena Island, is located 3 miles ESE of Sugar Loaf Point. The remains of a vast crater can be traced between Flagstaff Hill, rising 1.6 miles WSW of the point, and The Barn, a mountain standing at the NE end of the island. This latter mountain is 616m high and resembles a building.



The Barn

Barn Ledge lies about 0.8 mile offshore, 1 mile SE of Barn Long Point. This detached rocky shoal has a least depth of 5.9m. The shallow area around this shoal is generally marked by a heavy ground swell.

Prosperous Bay is entered between Black Point, located 1 mile SSE of Barn Long Point, and Bay Point, 0.8 mile SE. Anchorage can be taken within this bay in a depth of 22m about 0.2 mile offshore.

Saddle Point (15°57'S., 5°38'W.), the E extremity of the island lies 0.7 mile SE of Bay Point. The intervening coast is steep-to.

6.12 South Coast.—**Gill Point** (15°58'S., 5°38'W.) is located 1.4 miles S of King and Queen Point and is fronted on its S side by Shore Islet. George Islet, a detached rock, lies about 0.5 mile SSE of this point.

Stone Top Point, 494m high and prominent, rises 1 mile SW of Gill Point.

Rough Rock, a point on this precipitous part of the coast, is located 1.5 miles SW of Gill Point. Rough Rock Islet and Flat



Prosperous Bay

Rock lie 0.1 mile E and 0.4 mile WSW, respectively, of Rough Rock.

Powell Point is located 3.5 miles SW of Gill Point. Two rocks, known as The Buoys, lie 0.2 mile SE of this point.

Sandy Bay, located 1.3 miles W of Powell Point, is entered N of Horse's Head. A landing place lies on the SW shore of the bay and an old battery is situated on the N shore.



Sandy Bay

Along the S coast of the island to the W of Sandy Bay, a horizontal stratum of columnar basalt stretches for a considerable distance forming a stupendous wall, 15 to 55m high. The Chimney, an isolated portion of this wall, lies close offshore, 0.8 mile WSW of Sandy Bay. It consists of a remarkable hexagonal column of basalt, 20m high.

Castle Rock Point (16°01'S., 5°45'W.), 165m high, is located 2.2 miles SW of Sandy Bay and is fronted by rocks. The intervening coast is precipitous and apparently steep-to, though it has not been thoroughly examined. A number of off-lying rocks front this section of the coast, including The Chimney, Lot's Wife Ponds, and White Bird Islet.

From Castle Rock Point, the coast extends 3 miles NW to South West Point and is fronted by several rocks and islets.

Robert Rock, an islet, lies 0.2 mile S of Castle Rock Point. Speery Islet lies 0.5 mile SW of Castle Rock Point; Flat Rock and Salt Rock lie close NE and E, respectively, of it.



Speery Islet

An area, with depths of less than 100m, extends up to about 5 miles S of Castle Rock Point and may best be seen on the chart. A rocky patch, with a depth of 18.3m, lies about 1.8 miles SW of Castle Rock Point.

Speery Ledge, an isolated reef with reported (1977) depths of 3 to 7.3m, lies about 1.3 miles S of Castle Rock Point.

Off-lying Seamounts

6.13 Grattan Seamount (9°45'S., 12°45'W.), with a depth of 70m, lies 140 miles SE of Ascension Island and a depth of 213m lies 40 miles E of it.

Pillsbury Seamount (0°30'N., 17°00'W.), with a depth of 881m, lies 530 miles NNW of Ascension Island.

Cardno Seamount (12°53'S., 6°08'W.), with a depth of 77m, lies 180 miles N of Saint Helena Island. A seamount, with a depth of 115m, lies 90 miles NNE of Cardno Seamount. Another seamount, with a depth of 152m, lies 720 miles NE of Cardno Seamount.

Bonaparte Seamount (15°45'S., 6°52'W.), with a depth of 105m, lies 70 miles WNW of Saint Helena Island.

Dampier Seamount (11°09'S., 0°28'W.), with a depth of 594m, lies 430 miles NE of Saint Helena Island.

Kutuzov Seamount, with a depth of 410m, lies 155 miles WNW of Saint Helena Island.

An unnamed seamount, with a depth of 515m, lies 170 miles NW of Saint Helena Island and about midway between Cardno Seamount and Kutuzov Seamount.

An unnamed seamount, with a reported depth of 152m, lies in position 3°02'S, 0°45'E, about 960 miles ENE of Ascension Island.

The Tristan da Cunha Group

6.14 The Tristan da Cunha Group lies 1,320 miles SW of Saint Helena Island and consists of five islands, as follows:

1. Tristan da Cunha.
2. Inaccessible Island.
3. Nightingale Island.
4. Middle Island.
5. Stoltenhoff Island.

Tristan da Cunha (37°06'S., 12°17'W.) is the largest with Inaccessible Island, the second largest, lying 18 miles SW of it.

Nightingale Island, Middle Island, and Stoltenhoff Island lie close together, about 16 miles SSW of Tristan Island and 10 miles SE of Inaccessible Island.

The group is of volcanic origin. There was a volcanic eruption on Tristan Island in 1961 and the entire population of the island was temporarily evacuated to the United Kingdom. Most islanders returned in 1963.

The current generally sets NE, but other sets are common. A velocity of 2 knots may be attained.

At Tristan Island, the rollers may occur at all times during winds or calm. They are always heavier in calms. Although rollers are more frequent during the winter months, the heaviest rollers occur in December, January, and February, three of the finest months, when they sometimes last 3 or 4 days; this also applies to Gough Island and the other islands in the Southern Hemisphere, according to the account of whalers.

Good radar returns have been reported from the Tristan da Cunha Group at a distance of 24 miles. Tristan Island may be detected by radar at about 95 miles, and Nightingale Island and Inaccessible Island at about 80 miles.

6.15 Tristan da Cunha (37°06'S., 12°17'W.), about 6 miles in diameter, takes the form of a truncated cone, with its sides rising at an angle of about 45° to Queen Mary's Peak, a central peak 2,060m high. The sides of the island consist of walls of inaccessible cliffs, 300 to 610m high, rising directly from the sea, except on the NW side. On the latter side there is, in front of the cliffs, a comparatively low and grassy slope, 30 to 60m high, which terminates in Herald Point, the NW extremity of the island. The sides of the mountain mass as far as the central dome are covered with brushwood, intermixed with ferns and long grass. At elevations above 1,500m, which coincides with the normal upper level of the clouds, the mountain consists of loose stones and volcanic rubble, with occasional rocks and boulders.



Tristan da Cunha

Winds—Weather.—Wind from a NW direction has been observed to eddy around the island and to increase in strength as it does so, backing to NW again about 2 miles SE of the island. According to the islanders, this is a common phenomenon.

Thunderstorms are rare, but violent storms occur three or four times a year. Between June and October, the upper part of The Peak is often snow-covered, and sleet, snow, and hail are occasionally experienced at sea level. Mariners are advised to consult the islanders concerning the weather, as they are reported to be able to predict changes within a very short time of their taking place when normal signs give no indication of their

approach.

Depths—Limitations.—The island is surrounded by deep water except on the N and SW coasts, where shelves extend more than 1 mile offshore. Rocks and shoals generally front the points on the S part of the island. Detached shoals lie about 0.7 mile and 1.5 miles ENE of Stonyhill Point (37°09'S., 12°16'W.), located near the S extremity of the island.

The island is practically surrounded by a belt of kelp. It was reported (1970) that the kelp was dense enough to cause blockage of sea water intakes as far off the coast as the 40m depth contour.

6.16 Edinburgh of the Seven Seas (Edinburgh)(37°03'S., 12°18'W.) (World Port Index No. 46710) is the only permanent settlement of the Tristan da Cunha group. Edinburgh Anchorage serves as the primary anchorage for the island and lies off the N coast. The settlement of Edinburgh stands on the grassy slope which terminates in Herald Point, the NW extremity of Tristan da Cunha Island. The Ridge, a point terminating in a yellow cliff, is situated 1.2 miles E of Herald Point. During the volcanic eruption on Tristan Island in 1961, lava flowed into what was formerly Falmouth Bay and Quest Bay, which lie between Herald Point and The Ridge. By 1962, the lava field had extended up to 0.3 mile seaward beyond the original coastline.



Edinburgh Settlement and Anchorage

Depths—Limitations.—The anchorage was surveyed in 1972. However, mariners are cautioned that following the volcanic eruption in 1961, there is a possibility that isolated pinnacles, undetected by the above survey, may be encountered offshore.

Depths of less than 5m extend up to about 0.3 mile seaward off Herald Point. A rocky shoal, with a depth of 3m, was reported (1982) to lie 0.2 mile offshore, about 0.4 mile NE of Herald Point.

Calshot Harbour, a small boat harbor, is located 0.2 mile E of Herald Point and is protected by moles. It has depths up to 2.4m at HW. The use of this harbor is hazardous due to reefs lying inside it and in the approach. In addition, breakers are continuous in the vicinity of the entrance during any form of swell. Local knowledge is necessary. Attempting to enter the harbor by boat is difficult at all times.

A helicopter landing area is situated 0.3 mile E of Herald Point. Helicopter operations are possible most days and are the best way of landing. The landing area is indicated by a circle of

white stones and a small “H.” The ground slopes away slightly towards the shore.

Aspect.—Herald Point is 18m high and steep-to. The Hardies, two rocks, the higher of which is 37m high, lie about 2 miles SW of Herald Point.

A prominent mast, 10m high, stands close E of the point. A conspicuous wind generator is situated on the point. A crayfish canning factory is situated close SE of the point.

A prominent flagstaff stands near Prince Philip Hall, the social center, which is situated 0.3 mile SE of the point. A conspicuous tank stands 0.5 mile SE of the point.

Two sets of range beacons, which may best be seen on the chart, exist in close proximity to Edinburgh and may be of use when approaching and anchoring. The first set of range beacons, in line bearing 202.7° , is situated on the grassy slope close S of Herald Point and only becomes visible at a distance of about 2.5 miles. The second set of range beacons, in line bearing 114° , is situated 1.2 miles E of Herald Point and is reported to only become visible at a distance of about 1.5 miles.

Anchorage.—Anchorage may be obtained, in depths of 28 to 36m, about 0.6 mile NE of Herald Point, but choppy seas may be experienced here.

It is reported (1993) that a vessel anchored in a depth of 34m about 0.7 mile NNE of Herald Point. This anchorage was found to be adequate and provided a lee from the SW swell.

Due to the uncertainty of the weather, vessels should keep their main engines ready. During strong winds, vessels are advised to seek shelter in the lee of Inaccessible Island.

Caution.—A local magnetic anomaly, causing compass variations of up to 14° W, was reported (1968) to exist within 3 miles of the coast in the vicinity of Edinburgh.

These range beacons described above were reported (2005) to be storm damaged, in a bad state of repair, and no longer conspicuous.

6.17 Inaccessible Island ($37^\circ 17'S.$, $12^\circ 40'W.$), the second-largest island of the Tristan da Cunha group, consists of a high mass of rock with a table-topped summit. Its tallest peak, 561m high, rises on the W side of the island and is reported to be a crater with water in it. The irregular slopes of the summit terminate on all sides in precipitous cliffs about 335m high. The NW coast of the island is low with the cliffs receding sufficiently to allow the summit to be reached without difficulty. Kelp-covered reefs extend seaward on either side of the landing place.



Inaccessible Island

The NE coast of the island, also low, has two waterfalls, the E of which is larger and more conspicuous. Kelp was reported on the NE side of the island in depths of 20m at distances of up to 0.5 mile offshore.

A rock, 0.6m high, lies close offshore, about 0.8 mile ESE of North Point, the N extremity of the island.

Carlisle Bay, a marked indentation, is located on the NE side of the island. A beach, a waterfall, and the remains of a hut are situated at its head.

A rock, 1m high, lies close offshore, close S of East Point, the E extremity of the island.

South Hill stands on the S point of the island and is a remarkable conical, rocky hill. It is 348m high and rises in front of the cliffs. A similar conical hill, 210m high, stands about 0.6 mile NW of South Hill.

A detached rock, 70m high, lies close to the shore, 0.5 mile NE of South Hill.

Pyramid Rock, 18m high, lies about 0.2 mile SW of South Hill and an above-water rock is located close W of it.

Two other rocks, awash, lie off the SW side of the island. The outer rock lies 0.5 mile offshore, about 0.7 mile SSW of West Point, the W extremity of the island.

Depths of less than 100m lie up to about 1 mile offshore on all sides of the island except the W side, where they extend up to about 4.5 miles seaward.

Good landing may be made on the beach near the hut at the head of the bay. From here a path leads to the top of the cliff. Another landing place is located about 0.2 mile W of the hut.

Regulations.—Inaccessible Island was declared a nature reserve in 1994. Landing is prohibited without a permit from the Administrator of Tristan da Cunha. Permits are normally only granted for scientific visits. The island is of great scientific interest to botanists and biologists due to its undisturbed environment.

Anchorage.—Favorable anchorage may be made in **Carlisle Bay** ($37^\circ 17'S$ $12^\circ 40'W$). The best anchorage, in a depth of 35m, lies about 0.8 mile NNE of the waterfall bearing 197° , but caution should be exercised as the survey of the island is incomplete.

Anchorage may also be made obtained of the S coast, 1 mile E of South Hill ($37^\circ 37'19'S$ $12^\circ 41'W$), in a depth of approximately 30m.



Nightingale Island

6.18 Nightingale Island ($37^\circ 24'S.$, $12^\circ 28'W.$), with a diameter of about 1 mile, has two peaks. The E most peak, 337m high, is rugged and precipitous. It appears conical when seen from NE or SW. The other peak, 293m high, has gentle slopes on all but its S side. The coasts of the island, with the exception

of the NE side, are precipitous and cut into deep recesses and caves.

Stoltenhoff Island, lying 0.8 mile N of Nightingale Island, is a precipitous flat-topped rock, 99m high. It consists of one large and two smaller sections, separated by narrow chasms which can only be distinguished from a particular bearing.

Middle Island, 46m high, is located between Nightingale Island and Stoltenhoff Island. Pin Rock, 9m high, lies off its NW extremity.



Middle Island and Stoltenhoff Island

There are apparently no known off-lying dangers in this island group. A few submerged rocks border the S coast of Nightingale Island, but their positions show up well. Several above-water rocks lie about 0.2 mile S of the SE end of Nightingale Island. Kelp extends 0.3 mile offshore from the E side of the islands. There is less kelp on the S and W sides, which are the most exposed.

The passage between Stoltenhoff Island and Pin Rock is about 0.2 mile wide and appears deep.

The passage between Middle Island and Nightingale Island is about 275m wide, but it is completely blocked with detached rocks.

Nightingale Island is visited by the settlers of Tristan Island several times a year for birds, eggs, and guano. Walking on the island is difficult during the breeding season of the penguins and Great Shearwaters, except along the old sealers roads and on the plateaus and ridges. Their nests and burrows occupy almost the entire ground, and tussock grass, 2 to 3m high, overruns the island.

The water on Nightingale Island tends to be tainted, possibly due to the number of birds. Drinkable water can be obtained in four large and several small ponds or bogs on the plateau below the lower peak, and also in a small bay lying about 0.3 mile W of the sealers' road leading from the NE landing place.

Landing may most easily be effected on the rocks at the NE extremity of Nightingale Island. Caution should be exercised as a small rock, awash, lies about 50m off the point. A number of huts stand near the NE landing place and a path leads to the three ponds on the plateau. The old landing place located on the SE side of the island is seldom used.

Depths of less than 100m lie up to about 1 mile offshore on all sides of these islands.

Gough Island

6.19 Gough Island (40°19'S., 9°56'W.), lying 230 miles SSE of Tristan Island, is a dependency of Saint Helena. It is 7 miles long, well-wooded, and watered. Except for a meteoro-

logical and scientific station, the island is otherwise uninhabited.

Cliffs rise steeply behind narrow boulder beaches around most of the island. The cliffs at North East Point (40°17'S., 9°56'W.), the NE extremity, are 365m high and sheer. Those extending between Reef Point, located 2 miles SSE of North East Point, and Haulround Point, about 2.2 miles SSE, are also sheer, but not very high. In most other parts of the island, vegetation, chiefly tussock grass, grows on the steep cliffs up which routes can often be found.



Gough Island

On the W side of the island, the steep cliffs attain a height of 460m in places. At the S end of the island, the land is comparatively low. The interior of the island consists of an undulating boggy plateau, with an elevation of 600m or more from which the summits rise in easy slopes. The highest summits are Edinburgh Peak, 910m high, and Expedition Peak, 909m high, which stand 2 miles, respectively, SSW and SW of North East Point. South Peak, 760m high, rises 2 miles NNW of South Point (40°22'S., 9°53'W.), the S extremity of the island.

In most places, the cliffs around the island rise steeply from the sea and numerous waterfalls descend in long cascades.

The sea area in the vicinity of Gough Island has not been fully surveyed, but it is reported that the island may be approached safely up to about 1 mile, except off West Point, the W extremity, and North East Point, where reefs extend up to about 0.8 mile W and 0.2 mile N, respectively. The reef fronting West Point is reported to break heavily.

The island is apparently steep-to on all except its E side, where depths of 37m are found lying up to 0.5 mile offshore. Several islets and large rocks lie off the island, but, with the exception of Penguin Islet, they are all located close inshore.

Crawfish are numerous close inshore. Kelp grows around much of the island.

Winds—Weather.—Scientific expeditions have found that, in the summer, eastward-moving depressions passed mainly to the S of the island. However, as winter approached, their tracks moved N. By mid-April, the depressions were passing to the N of the island, causing many more E winds with consequent deterioration of landing conditions. The rainfall was heavy and strong winds and gales were frequent.

Tides—Currents.—Currents are strong at times, but erratic, being mostly wind generated.

Regulations.—Gough Island and the waters surrounding it within 3 miles have been declared a World Heritage Site. Landing is prohibited without a permit from the Administrator of Tristan da Cunha. Permits are normally only granted for scientific visits. Emergency visits must be reported as soon as practicable to the Administrator and must be as brief as absolutely necessary in accordance with safety and health requirements.

All visiting vessels, including yachts, must be in possession of rodent free certification and may be required by the Administrator to call at Tristan da Cunha to clear customs, immigration, and health controls before proceeding to Gough Island.

6.20 Reef Point (40°18'S., 9°54'W.), is located 2 miles SE of North East Point; Hawkins Bay lies 0.7 mile NW of it.

Penguin Islet, 117m high, lies 0.5 mile ENE of Reef Point; an above-water rock is located close SE of it. Channel Rock, 7m high, lies between Penguin Islet and Reef Point. Passage between this rock and the islet is not advisable, except by boat.

Dell Rocks (not named on the chart), about 5m high, lie close offshore, 1 mile SSE of Reef Point.

Hawkins Bay (40°18'S., 9°55'W.), lies on the NE side of the island NW of Reef Point. Good anchorage may be obtained in Hawkins Bay, off Deep Glen (not named on chart), in a depth of 22m, sand and stone.

Milford Bay (40°19'S., 9°54'W.) provides good anchorage off Capsize Sands (not named on the chart), clear of Reef Point, in depths of 18 to 27m. Milford Bay is entered between Reef Point and Dell Rocks. Buttress Rock, 79m high, lies close offshore, about 3 miles NW of the outermost Dell Rocks.

Quest Bay (40°20'S., 9°54'W.) lies in the SE part of the island and is defined by a shallow bight formed between the mouth of The Glen to the N and Haulround Point to the SE. Archway Rock, 21m high, lies close SW of Dell Rocks off of the mouth of The Glen. The Glen, located at the N end of the bay, gives access to the interior of the island. The Glen Beach consists of small boulders and shingle. It should be approached from the SE in order to clear a submerged rock lying in the center of the cove.

Luff Point is situated 0.3 mile SSE of Haulround Point; Number One, an islet, 73m high, lies close N of it.

The Admiral, an islet, 52m high, lies between Luff Point and South East Point, 0.4 mile S. The Commodore, an islet, 56m high, lies close NNW of The Admiral. Several other islets and rocks lie close off this stretch of coast.

Transvaal Bay (40°21'S., 9°53'W.), a small bay with a stream at its head, lies between South East Point and Cavern Head, 1 mile SSW. A meteorological and scientific station, manned by South African scientists, is situated close inshore on the N side of this bay. It consists of several white buildings, prominent from E, and is well-lighted at night. The station is in radio contact with South Africa and can be contacted on VHF channel 16 (call sign: Gough Island).

South West Point is located 1.2 miles WNW of South Point. South West Islet, 104m high, lies 0.2 mile SE of South West Point; an above-water rock is located close SE of it. Saddle Islet, 119m high, lies close offshore, 0.8 mile NNW of South West Point.

Gaggins Point is located 2 miles NW of South West Point and Sea Elephant Bay lies between it and West Point, 3 miles WNW, which is fronted by a reef.

North Point is located 2.5 miles NNE of West Point and 3 miles W of North East Point. The coasts in this vicinity are fronted by several rocks and islets. Tristania Rock, 165m high, and Isolda Rock, 91m high, lie close offshore 0.8 mile and 1.9 miles, respectively, NNE of West Point. Round Island, 54m high, and Lots Wife, 107m high, lie close offshore 0.7 mile and 1.3 miles, respectively, E of North Point. An unnamed islet,

134m high, lies between Lots Wife and the shore.

Snug Harbor (40°22'S 9°54'W) lies to the NW of South Point and may be used for anchorage with slight protection from N wind, in a depth of 27 m. The prevailing SW swell renders anchorage on this side of the island uncomfortable.

Anchorage.—There are no sheltered bays, but there are a number of open roadstead anchorages. Those located off the E side of the island provide the best shelter from the prevailing W and SW winds.

Good anchorage may be obtained in a depth of 22m, sand and stones, off the head of Hawkins Bay. Anchorage may also be obtained in depths of 18 to 27m within Milford Bay, off Capsize Sands, the beach extending about 0.4 mile NNW from Buttress Rock.

Anchorage may be obtained in a depth of 27m within Quest Bay about 0.4 mile E of Archway Rock. This anchorage, which is known as The Glen Anchorage, is normally used with winds between W and S. The bottom consists of black volcanic sand and shell with good holding ground. Landing on The Glen Beach is made difficult, and even dangerous, by the surf. At the foot of Archway Rock, there is a place where experienced boatmen can carry out a landing in almost any weather. At the corner of the rock nearest the N end of the beach, there is a chimney up which an active man carrying a coil of rope can climb. At the top of the rock there are a few island trees to which the line can be secured. In this way, landing on, or departure from, the island can be effected in any but the worst weather.

Anchorage off the W side of the island is not recommended, as it is the weather side and steep-to. The prevailing SW swell renders anchorage on the W side of the island uncomfortable.

Anchorage can be obtained in a depth of 37m within Transvaal Bay during a NW wind. Landing can be made on the NE side of an archway rock, located at the entrance to a cove on the N side of the bay. Stores may be hoisted by a crane on the cliff, which can safely handle loads up to 0.25 ton. A boat can secure to an anchor in the rocks.

Anchorage can be obtained in a depth of 27m within Snug Harbor, which provides slight protection from N winds.

Landing can be made in calm weather in a number of places around the island. The best position for landing will obviously depend upon the wind and swell prevailing at the time. From most beaches, access to the interior of the island is very difficult due to the cliffy coastline. Quest Bay offers the best access to the island's interior through The Glen.

Off-lying Seamounts and Other Dangers

6.21 The table titled **Off-lying Seamounts off the West Coast of Africa** includes those seamounts that are named, those which form a danger to navigation, or those that could assist navigation. Many other seamounts are charted and others may exist. Seamounts are listed from N to S as you approach the coast of West Africa from the W.

Valdivia Bank (25°55'S., 5°30'E.) has a least known depth of 23m and lies near the main shipping route NW of the Cape of Good Hope.

A local deflection of the compass of 6°E was reported (1965) near the SE edge of Valdivia Bank. Anomalies have also been reported in position 25°10'S, 9°50'E and in position

28°03'S, 12°16'E.

A depth of 115m was reported (1966) to lie in position 26°08'S, 6°30'E.S

Bouvetoya

6.22 Bouvetoya (54°26'S., 3°25'E.), formerly known as Bouvet Island, is a territory of Norway and consists of a single volcanic cone with a wide indented crater. Olav Peak attains an

elevation of 780m at the center of the island.

Bouvetoya lies about 1,360 miles SW of the Cape of Good Hope and 997 miles SE of Gough Island. Bouvetoya is the most isolated piece of land on the earth's surface. The island is uninhabited.

Winds—Weather.—Bouvetoya lies in the path of strong W winds. Thick clouds usually obscure the covering ice cap from view. Snowfalls are frequent. Temperatures rarely exceed 2°C in summer and average about 1.5°C in winter.



Bouvetoya from NW



Bouvetoya

Ice.—The mean position of the sea ice limit at the time of greatest extent (September to October) probably lies close S of Bouvetoya. It is therefore only in worse than average years that the island is likely to be engulfed by sea ice and even then, only during the period from about August to November.

Tides—Current.—A slight E current has been observed in the vicinity of Bouvetoya.

Aspect.—Wave action has created a very steep coast. Cliffs as high as 500m surround the island. The slopes of the central cone terminate on all sides in precipitous cliffs or glaciers, descending abruptly to sea level. The two largest of these glaciers are Posadowsky Glacier, located W of **Cape Valdivia** (54°24'S., 3°24'E.), the N extremity of the island, and Christensen Glacier, located about 1 mile E of Cato Point, the SW extremity.

The E side of the island is entirely covered with an ice sheet which extends up the crater slopes to an elevation of about 425m and reaches the sea as an ice wall, about 100m high. Small beaches, composed of black volcanic sand or shingle, are found on the E side of the island. It has been reported that the easiest way to access the island is by using a helicopter from a ship.

The N and W sides of the island are comparatively free from ice, except for isolated glaciers, and are much steeper than the S and E sides of the island.

Cape Circumcision (54°25'S., 3°21'E.), the NW extremity of the island, is easily recognized by its dark color, which stands out prominently against the glaciers descending to the sea on either side of it. Several rocks, partly submerged, lie up to about 0.3 mile NE of this cape. From this cape, extending E, volcanic steam may be visible on calm days.

A rock, 1.2m high, and Norris Reef lie 0.4 mile W and 0.5 mile SW, respectively, of Cape Circumcision.

Norvegia Point, located 2 miles S of Cape Circumcision, is surmounted by a conspicuous knoll.

Mosby Peak, 671m high, and Lykke Peak, 767m high, rise 0.8 mile NE and 1 mile E, respectively, of Norvegia Point.

Benn Skerries and two detached rocks, one submerged and one above-water, lie within 0.5 mile W and 0.5 mile SSW, respectively, of Norvegia Point.

Larsoya (Lars Islet), 21m high, lies close off Cato Point and submerged rocks extend up to about 0.3 mile SW of it. Ice may ground in the vicinity of Larsoya and Cato Point, forming a breakwater.

A pinnacle rock, with a depth of 7.3m, was reported (1964) to lie about 0.8 mile S of Cato Point.

Williams Reef lies close SSW of Cape Fie, the SE point of the island. Lindsay Reef lies close N of Cape Meteor, the E extremity of the island.

Spies Rocks lie up to about 0.3 mile NE of Cape Lollo, which is located 0.8 mile N of Cape Meteor.

Norvegia Rock, with a depth of less than 1.8m, position doubtful, is charted 0.5 mile ENE of Cape Valdivia.

Lille Kari, 1.8m high, lies 0.3 mile offshore, 2 miles ESE of Cape Valdivia. Store Kari, 3m high, lies 0.8 mile E of the same cape.

Anchorage.—Temporary anchorage can be taken in a depth of 40m about 0.4 mile off Christensen Glacier.

Anchorage can also be taken in a depth of 27m about 0.6 mile ENE of Cape Meteor.

Vessels may anchor in a depth of 40m about 0.4 mile ENE of Store Kari and 0.4 mile N of the landing place located close W of Posadowsky Glacier.

Landings, at all times difficult, have been made at a small cove located close W of Posadowsky Glacier, at a beach located 0.2 mile S of Norris Reef, near Norvegia Point, on Larsoya, and near Cato Point.

Caution.—It has been reported (1994) that Bouvetoya lies about 2 miles W and 0.8 mile N of its charted position.

Dangers not shown on the chart may exist in the vicinity of the island.

The rocks off-lying the coast of the island are generally covered with ice and may therefore be mistaken for icebergs.

Off-lying Seamounts near Bouvetoya

6.23 The **Meteor Seamounts** (48°30'S., 9°00'E.), with a least depth of 532m, lie 475 miles NE of Bouvetoya.

Spiess Seamount (54°25'S., 0°15'E.), with a least depth of 285m, lies 120 miles W of Bouvetoya.

A seamount, with a least depth of 207m, is reported to lie about 100 miles ENE of Bouvetoya.

A rock, 46m high, existence doubtful, was reported (1929) to lie in position 56°07'S, 23°39'E, about 720 miles E of Bouvetoya, and 1,277 miles S of Cape Agulhas.

Off-lying Seamounts off the West Coast of Africa

Seamount	Location	Depth	Remarks
Unnamed seamount	3°03'S, 0°44'E	152m	—
Unnamed seamount	8°30'S, 17°00'W	256m	—
Grattan Seamount	9°43'S, 12°50'W	70m	Lies 144 miles SE of Ascension Island Light.
Unnamed Seamount	9°45'S, 12°05'W	Reported depth of 213m	Another unnamed seamount, with a depth of 316m, lies close SSE.
Stvor Seamount	9°55'S, 5°25'W	525m	Lies about 367 mile NE of St. Helena Island Light.
Dampier Seamount	11°09'S, 0°27'W	594m	Lies about 425 miles NE of St. Helena Island Light.
Unnamed seamount	11°40'S, 5°15'W	115m	
Malahit Guyot Seamount	12°50'S, 2°40'W	384m	Lies about 264 miles NE of St. Helena Island Light.
Cardno Tablemount	12°53'S, 6°08'W	77m	Lies about 183 miles NNW of St. Helena Island Light.
Unnamed Seamount	13°00'S, 5°40'W	158m	
Kutuzov Seamount	15°11'S, 8°16'W	410m	Lies about 160 miles WNW of St. Helena Island Light.
Bagration Seamount	15°30'S, 6°30'W	1,341m	Lies about 52 miles NW of St. Helena Island Light.
Bonaparte Seamount	15°40'S, 7°00'W	105m	Lies about 76 miles WNW of St. Helena Island Light.
Ewing Seamount	23°15'S, 8°15'E	812m	A local magnetic anomaly has been reported in the vicinity of Ewing Seamount.
Molloy Seamount	27°55'S, 8°50'E	2,317m	
Tripp Seamount	29°37'E, 14°15'E	144m	Lies 125 miles WSW of the mouth of the Orange River. A similar depth was reported (1985) to lie 5 miles further SE.
Vema Seamount	31°41'S, 8°20'E	Reported depth of 7m	Lies 465 miles WSW of the mouth of the Orange River and constitutes a danger to deep-draft vessels. There is some evidence that the top of the seamount consists of a plateau about 5 miles in diameter, with depths of 45 to 90m, with some shallower peaks. An unconfirmed depth of 7m is reported to lie on the S side of the plateau.

Off-lying Seamounts off the West Coast of Africa			
Seamount	Location	Depth	Remarks
Wust Seamount	34°00'S, 3°30'W	775m	Two reported shoals (2007) lie to the NE and SW of Wust Seamount. The shoal to the NE lies in an area centered on position 33°00'S, 2°40'W.; the shoal to the SW is in position 34°29'S, 5°00'W. Unconfirmed depths of 218 to 353m lie within 110 mile E and ENE of this seamount and may best be seen on the chart.
Engelbrecht Seamount	36°11'S, 14°10'E	2,321m	—
Protea Seamount	36°45'S, 18°15'E	1,406m	One of a number of seamounts located on the Agulhas Ridge which extends between 150 and 880 miles SW of Cape Agulhas.
Argentina Seamount	37°27'S, 18°05'E	1,797m	—
Wyandot Seamount	37°47'S, 15°38'E	1,894m	—
Zapiola Seamount	38°10'S, 26°00'W	1,926m	—
Erica Seamount	38°12'S, 14°50'E	1,087m	—
Schmitt-Ott Seamount	38°27'S, 13°45'E	1,287m	—
Crawford Seamount	38°48'S, 10°36'W	463m	Lies 95 miles NNW of Gough Island.
R.S.A. Seamount	39°30'S, 6°40'W	176m	Lies 160 miles ENE of Gough Island.
Panzarini Seamount	40°00'S, 11°50'E	1,346m	—
Richardson Seamount	40°10'S, 14°40'E	1,550m	—
Unnamed seamount	—	185m	Has been reported to lie 160 miles WNW of Gough Island.
Unnamed seamount	—	269m	Lies 120 miles NW of Gough Island.
McNish Seamount	40°10'S, 11°50'E	128m	Lies 70 miles ENE of Gough Island. A reported depth of 90m lies about 20 miles W of it.
Unamed seamount	40°05'S, 9°10'W	90m	—
Zenker Seamount	41°05'S, 6°00'W	1,094m	Lies 180 miles ESE of Gough Island.
Discovery Seamount	42°05'S, 0°20'E	326m	Other unnamed seamounts, with depths of 326m and 660m, lie 86 and 140 miles, respectively, WSW of Discovery Seamount. Another unnamed seamount, with a depth of 316m, lies 110 miles SW of Discovery Seamount, and a seamount, with a depth of 633m, lies 70 miles W of it.

Afrikaans

AFRIKAANS	English	AFRIKAANS	English
A		gevaar	danger
		golf	wave
		groen	green
aanleplek	wharf	H	
B		hawe	harbor, port
baai	bay	hawehoof	mole
baaitjie	cove	hawekom	basin
baggerbank	spoil ground	heuvel	hill
baken	beacon	hindernis	obstruction
bank	bank	hoek	corner
berg	mountain	hoog	high
berge	mountain, mountain chain	hoogte	height, elevation
blinder	submerged rock	hout	wood
blou	blue	J	
boei	buoy	jakkals	jackal
boot	boat	K	
branding	surf	kaai	jetty, quay, wharf
branders	breakers	kaap	cape, headland
breekwater	breakwater	kabellengte	cable
buffel	buffalo	klip	stone
D		kloof	gorge
deurvaart	passage	knoop	knot
diepte	depth	koers	course
dok	dock	kompas	compass
dooiety	neap tide	kop	hill
dorp	village	koppie	hillock
droog	dry	krans	cliff
drywend	afloat	kus	coast, shore
duiker	cormorant	L	
duin	dune	laag	low
E		land	land
eb	ebb	landteken	landmark
eiland	island	leeu	lion
eilandjie	islet	leimerk	leading mark
eskarpe	escarpment	M	
F		magneties	magnetic
fontein	spring	malgas	gannet
G		mast	mast
geel	yellow	meer	lake
gestrand	aground	meerplek	mooring
gety	tide		

AFRIKAANS	English	AFRIKAANS	English
merk	mark	seemyl	mile
mis	fog	seewarts	offshore
modder	mud	skeep	ship
moeras	swamp	skeepswerf	dockyard
mossel	mussel	skiereiland	peninsula
		snelheid	speed
	N	springty	spring tide
nek	pass	stad	city, town
newel	mist	stilwater	slack water
noord	north	stormwind	gale
		strand	beach, shore
	O	stroom	current
olifant	elephant	suid	south
ondersee berg	seamount	swart	black
onderwater	submerged		T
oorspoel	awash	tafel	table
oos	east	teken	mark
op land	ashore	toring	tower
	P		V
peiling	bearing	vaam	fathom
piek	peak	vaarwater	fairway
pier	pier	vallei	valley
pikkewyn	penguin	vls	fish
pelikaan	pelican	vlakwater	shoal
punt	point	vlei	marsh
	R	vloed	flood
radiobaken	radio beacon	vloedbos	mangrove
reen	rain	voorgebergte	bluff
rivier	river	voorstrand	foreshore
riviermonding	estuary	vuurtoring	lighthouse
rob	seal		W
rollers	rollers	wal	embankment
rooi	red	walvis	whale
rots	boulder, rock	werweling	eddy
	S	wes	west
sand	sand	wit	white
sandbank	bar	wolk	cloud
see	sea	wrak	wreck
see gras	kelp		Y
seekaart	chart	yster.....	iron
seemeer	lagoon		

Dutch

DUTCH	English	DUTCH	English
A		H	
aan.....	at, near, on	haven.....	harbor
B		helpt.....	half
baak.....	beacon	het.....	the
berg.....	mountain, hill	heuvel.....	hill
binnen.....	inner	hoek.....	cape, point
blauwe.....	blue	hoofd.....	head
bocht.....	bay, bend, light	hoog.....	high
bol.....	ball	hout.....	wood, timber
boom.....	tree	K	
bosch.....	forest	kaap.....	cape, headland
boschje.....	small wood, brush	kake.....	quay
breed.....	broad	kegel.....	cone
brug.....	bridge	kil.....	channel
buiten.....	outer	klein.....	small
bult.....	hump	klip.....	rock
D		kop.....	head
dam.....	dam, breakwater	kreek.....	creek
de, den.....	the	kromme.....	crooked
diep.....	deep	kust.....	coast
dijk.....	dike	L	
dorp.....	village	laag, lage.....	low
draaikalk.....	eddy	lang.....	long
drempel.....	bar	licht.....	light
dric.....	three	loods.....	pilot
driehoek.....	triangle	loodswezen.....	pilotage
droogte.....	shoal	M	
duin.....	dune, sandhill	meer.....	inland sea
dwers.....	across, athwart	middel, midden.....	middle
E		modder.....	mud
eiland.....	island	molen.....	mill
F		N	
friesche.....	frisian	nauw.....	narrows
G		nieuw.....	new
gat.....	channel	noord.....	north
geul.....	narrow channel	noorder.....	northern
groei.....	green	O	
gronden.....	grounds	oost.....	east
groot.....	great	oud.....	old

DUTCH	English	DUTCH	English
P		T	
peilschaal	tide gage	toegang.....	access
plaat.....	shoal	tramweg	tramway
plaatje.....	small shoal		
plat	flat	U	
polder	reclaimed land	uit	out
punt	point		
R		V	
rak	channel	vaart	canal
rechthoekig.....	rectangular	vaarwater.....	fairway
reddingboot	lifeboat	valsch	false
rede.....	roadstead	van	of
rode, rood	red	veerboot	ferry
rots	rocks	verklipper	warning light
rug	ridge	vlechte	flat below surface
ruitvormig	diamond-shaped	vliegtuigen	aircraft
S		W	
schaar	channel	wad.....	drying coastal bank
scherm	screen	wal	banks, wall
schor.....	shoal	watergetijden	tidal current
schutsluis.....	lock gate	waterweg.....	waterway
seinen	signals	weg.....	way
sluis	lock	werk	work
smal.....	narrow	wester	western
spits, spitse	pointed	wit, witte	white
spoorweg	railway	wrak	wreck
staart.....	tail (of a bank)		
stad	town	Z	
steen	stone	zand.....	sand
steiger	jetty, pier	zee.....	sea
steile	steep	zeegat	estuary
strand.....	beach, shore	zuid	south
stroom	current, stream	zuider	southern
		zwart	black

French

FRENCH	English	FRENCH	English
A		G	
anse	bay, creek	golfe	gulf
archipel	archipelago	goulet	narrow entrance
arriere port	inner port	grand(e)	great
avant port	outer port	I	
B		ile	island
baie	bay, gulf	ilot	islet
balise	beacon	J	
banc	bank, sandbank	jetee	jetty
barre	bar	L	
basse	shoal	lac	lake
bassin	basin	lagune	lagoon
blanc	white	M	
bois	wood	maison	house
bouche	mouth (of river)	menhir	a large raised stone
C		milieu	middle
canal	channel, canal	mole	pier
cap	cape, headland	mont	mountain
chaloupe	launch	mouillage	anchorage
chalutier	trawler	moulin	mill
chateau	castle	N	
chaussee	bank	noir	black
chenal	channel	nord	north
clocher	steeple	O	
colline	hill	occidentale	western
couvent	convent	orientale	eastern
crique	creek	ouest	west
D		P	
digue	mole, breakwater	passee	channel
E		pertuis	opening or strait
ecluse	lock of a canal or basin	petit	small
eglise	church	pic	peak
est	east	plerre	stone
etang	lake	piton	mountain peak
F		plateau	tableland or flat
falaise	cliff	pointe	point
faux	false		
fleuve	river		
fosse	ditch, a deep		

Portuguese

PORTUGUESE	English	PORTUGUESE	English
A			
a, as	the (fem.)	comento	convent
aldeia	hamlet	coroa	sandy head
alto, s	height, heights	cruz	cross
altura, s	height, heights	D	
amarclo	yellow	de dentro (adj.)	inner
ancordouro	anchorage	desembarcadouro	landing
angra	inlet, bight, cove	doca	dock
aquario	aquarium	duna	dune
areia	sand	E	
arquipelago	archipelago	enseada	bay, bight, cove
atalaia	lookout	entrada	fairway
azul	blue	ermida	hermitage
B		espigao	projecting point
bacia	basin	esporao	groyne
baia	bay	estacada	pier, projecting wharf, mole
baixio	shallow, shoal	estaleiro	shipyard
baixio, a	shallow, shoal	este, leste	east, eastern
baliza	beacon	esteiro	creek
banco	bank	estreito	strait, narrows
barra	bar	estuario	estuary
barrio	district (of a town), ward	F	
basilica	basilica	fabrica	factory
bateria	mouth, entrance	farillhao	stack, steep-sided rocky islet
branco, a	white	fora	outer
C		fortaleza	fortress
cabeco, a	summit of a hill or shoal	forte	fort
cabo	cape	foz	mouth of a river
cais	quay, wharf	fundeadoiro	anchorage
cala	creek, channel, narrow inlet	G	
calheta	inlet	grande	large
canal	channel	golfo	gulf
capela	chapel	I	
carreira	narrow channel, slipway	greja	church
casa	house	ilha	island
casal	farmhouse	ilheu, ilhota	islet
castelo	castle	istmo	isthmus
catedral	cathedral	L	
cemiterio	cemetery	lago	lake, lock
chale	chalet	lagoa	small lake, marsh
cidade	city, large town	laguna	lagoon
cidadela	citadel	laje	flat-topped rock
cinzento	grey	lugar	hamlet, place
colina	hill, hillock		
colonia	colony, settlement		
concha	cove		

PORTUGUESE	English
M	
mar	sea
mata	forest, wood, thicket
meridional	southern
moinho	mill
molhe	mole, pier
montanha	mountain
monte	mount
morro	hill, knoll
N	
note	north
O	
o, os	the (masc.)
occidental	western
oeste	west
oriental	eastern
P	
palheiros	fishing village
paredao	sea wall
pedra, s	rock, stones
pena	rocky, peak
penedo	rocky, peak
peninsula	peninsula
pequeno	small
pico	peak
pinhal	pine wood
ponta	point (of land)
pontal	point, promontory
ponte	bridge, pier
ponte-cais	pier, jetty
portinho	small port or harbor
porto	port, harbor
povoa	large town
povoacao	village
povoado	village

PORTUGUESE	English
praia	beach
preto, a	black
promontorio	promontory
Q	
quebra-mar	breakwater
quebrada	cut, gap, precipice
R	
rampa	ramp, boat-slip
restinga	spit, reef
ria	estuary, lagoon, sunken valley
ribeiro	brook
rio	river
rocha	rock
rochedo	rocky place
rocher	rock, rocky place
S	
s. santo, a, sao	saint
sanatorio	sanatorium
sepenstrional	northern
serra	mountain range
serro	rocky reef or ridge
sul	south
T	
terra	land
torre	tower
V	
vale	valley
varadouro	landing
verde	green
vermelho, a	red
vigia	lookout
vila	town, village, villa

Spanish

SPANISH	English	SPANISH	English
A		C	
abra.....	cove, creek, haven, opening	cabeza	shoal head
acantilados	cliffs	cabezo	shoal head, summit of a hill
adentro	(adj.) inner, inside	cabo.....	cape
afuera	(adj.) outer, outside	cadena	chain (of mountains, etc.)
aguada	watering place	cala.....	narrow cove or creek with steep sides
agudo, da.....	(adj.) sharp, pointed	caleta	cove
aguja.....	needle	caleton.....	large cove
albufera	lagoon, pond	campo	any tract of country
aldea.....	village	canada	glen
alto, a.....	(adj.) tall, high	canal.....	channel
altos.....	heights	canalizo.....	narrow channel
alturas.....	heights	cano.....	creek
amarillo, a	yellow	canto	bluff
ancho.....	(adj.) wide, broad	capilla	chapel
ancladero	anchorage	cargadero	shore or ship loading appliance
anclaje	anchorage	carrera, carreiro.....	narrow channel or passage
ancon.....	open bay or roadstead	casa	house
angostura.....	narrows	cascada.....	waterfall
archipelago.....	archipelago	caserio.....	hamlet, group of houses
arena.....	sand	castillo.....	castle
arenal.....	extensive area of sand	castro.....	headland, hillock surmounted by ruins
arrecife	reef	cayo.....	cay
arroyito.....	brook	cerrito.....	hillock
arroyo	steam, rivulet	cerro	hill, hillock
astillero.....	shipyard	chico, a.....	small
atalaya	watchtower, high viewpoint	chubasco	squall
azul.....	blue	cima	summit, crest
B		ciudad	city, town
bahia.....	bay	ciudadela.....	citadel
bajio	shoal	co	rocky shoal, rock
bajo.....	(n) shoal (adv.) below, under (adj.) low	colina	hill, hillock
baliza.....	beacon	collado	hillock, elevation
balneario.....	seaside resort	colonia	colony, settlement
bancha	bank	colorado	reddish in color
banco (de arena).....	bank (sandbank)	comarca.....	region
barlovento	windward	concha.....	bay or cove
barra	bar (of a river, etc.)	cono	cone
barranco	precipice, ravine	convento.....	convent
barrera	barrier (e.g. mountain barrier)	cordillera.....	mountain range
barrio.....	ward, section (of a town)	corona	crown, summit
bateria.....	battery	cortadura.....	cut, cutting, very narrow channel or defile
blanco, a.....	(adj.) white (n) target	costa.....	coast
boca.....	mouth	coto	summit
bodega.....	storehouse	cruz	cross
boqueron	wide mouth, opening or entrance	cuartel	barracks
boquete.....	narrow entrance, gap	cuesta	sloping ground, hill, hillock
bravo, a.....	coast, shore, beach exposed to heavy seas	cueva.....	cave
brazo.....	arm (of the sea, etc.)	cumbre	summit, peak
		cuna.....	quoin, wedge
		cuspidate.....	summit

SPANISH	English	SPANISH	English
D		I	
darsena	basin, dock, backwater	iglesia.....	church
delta.....	delta	insua.....	small islet or rock
departamento.....	department	interior	inner
desembarcadero	landing place	isla.....	island
desembocadura.....	mouth of a river	islete.....	islet
desierto.....	desert	islita	small island, islet
dique.....	mole, dock, embankment, levee	islote	barren islet, skerry
distrito	district	islotillo or islotito	small barren islet (dim.)
doble.....	double	istmo	isthmus
duna.....	dune		
E		L	
el.....	definite article (masc.)	la, las.....	definite article (fem.)
embocadura.....	mouth	lago	lake
ensenada.....	bay	laguna	lagoon, pond
entrada.....	entrance	laja	flat rock
ermita	hermitage	largo, a	long
escollera	breakwater, wavetrap	lastra	rocky ledge
escollo	shallow rock, reef awash	laxe.....	rock
espigon	arm of a mole	levante.....	eastern
estacion	station	loma	hillock, knoll
estancia.....	ranch, country estate	lomo.....	ridge
este	east	los	definite article (masc.)
estero.....	creek, inlet	lugar	village, place
estrecho	straits, narrows	lugarajo	hamlet
estuario.....	estuary	llana	plain
exterior	outer, exterior	llano, a	plain, flat (adj.)
		llanura	plain
F		M	
farallon.....	stack, steep sharp-pointed rocky islet	malecon.....	quay, mole
faro	lighthouse	mar	sea
fondeadero	anchorage	margen	shore, river bank
fortaleza	fortress	marisma	marsh
fraile.....	friar	medano	dune, sandhill
freo.....	strait	medio	middle
freu.....	narrow strait between island and mainland	meridional.....	southern
fronton.....	wall-like cliff	mesa or meseta	tableland, plateau
fuerte	fort	mogote	hummock
G		molino.....	mill
garganta.....	narrow restricted passage, sound	monasterio	monastery
garita	sentry box, lookout hut	montana	mountain
golfo.....	gulf	monte	mountain, mount
gran, grande	large, great, big	monte	forest, group or clump of trees
gris	grey	monticulo.....	knoll
grupo	group (of islands)	moreno.....	brown
H		morro	headland, bluff, head of breakwater
hacienda	farm, plantation	muelle	pier, jetty, mole
herradura	horseshoe-shaped bay	muralla.....	a barrier wall of mountains, cliffs, etc.
		N	
		negro, a	black

SPANISH	English
norte	north
nuevo, a	new

O

oscuro	dark
occidental	western
oeste	west
oriental	eastern
oriente	east
orilla	shore, edge, bank (of a river)
oscuro	dark

P

palacio	palace
pan de azucar	sugar loaf
pantano	swamp, marsh
pardo	grey
parque	park
pasco	promenade, avenue
pasale	passage
paso	pass
pedregal	stony or rocky patch
pena	rock
penasco	a large rock
peninsula	peninsula
penon	rocky mountain
pequeno, a	small
peton	pinnacle rock
picacho	sharp peak
pico	peak
pedra	stone, rock
placer	shoal
playa	beach
poblacion	town
poblado	village
poniente	western
pozo	well, deep hole in river or sea bed
presa	barrage, weir
promontorio	promontory
provincia	province
puebla	village
pueblecito	small town, village
pueblito	hamlet
pueblo	town
puente	bridge
puerto	port, harbor
punta	point
puntal	narrow point

Q

quebrada	ravine, gully
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SPANISH	English
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R

rada	roadstead
redondo, a	round
regato	torrent, stream
restinga	reef
reventazones	breakers
ria	sunken valley forming estuary
riachuelo	riverlet
ribera	shore, river bank
rincon	inner angle or corner, a small cove
rio	river
roca	rock
rocalloso, a	pebbly, stony
rochel	rocky patch
rodal	shoal, usually rocky and of some extent
rojo, a	red
rompeolas	breakwater
rompientes	breakers
roquero	rocky shoal

S

salinas	saltpans
san, santo, a	saint
seco	dry
seno	bight, sound
septentrional	northern
serrania	mountain ridge
sierra	mountain range
silla	saddle
sotavento	leeward
sucio, a	foul
sud, sur	south
surgidero	anchorage

T

tenedero	holding ground, anchorage
tetas	nipples
teton	large nipple
tierra	land
torre	tower
touza	rock (usually lying off a larger feature)

V

vado	ford
valle	valley
varadero	slipway
vega	plain (noun)
ventisquero	glacier
verde	green
viejo, a	old
vigia	lookout

SPANISH	English	SPANISH	English
villa	town, villa		
villorio.....	hamlet	Z	
volcan.....	volcano		
vuelta.....	bend, turn (of a channel)	zona.....	zone

	Position			Sec. Para		Position			Sec. Para
	o	'				o	'		
BRASS OIL TERMINAL	4	04 N	6	17 E	3.3				
BRASS RIVER	4	17 N	6	13 E	3.2				
BREAKER POINT	5	39 N	0	02 E	1.31				
BRITTANIA BLINDER	32	42 S	17	52 E	5.43				
BUMBU	5	53 S	13	09 E	4.53				
BURUTU	5	21 N	5	30 E	2.25				
BUTTERMILK POINT	15	54 S	5	42 W	6.8				
C									
CABECA DA BALEIA	11	35 S	13	46 E	4.79				
CABECA DA COBRA	6	33 S	12	30 E	4.55				
CABINDA	5	32 S	12	12 E	4.37				
CABINDA TERMINAL	5	26 S	12	05 E	4.34				
CABO BATA	2	06 N	9	45 E	3.48				
CABO CAMPO	2	19 N	9	47 E	3.47				
CABO DAS TRES PONTAS	10	23 S	13	32 E	4.75				
CABO DE SANTA MARIA	13	25 S	12	32 E	4.86				
CABO DE SANTA MARTA	13	53 S	12	25 E	4.88				
CABO DOS PUNTAS	1	41 N	9	36 E	3.51				
CABO LEDO	9	41 S	13	12 E	4.75				
CABO NEGRO	15	40 S	11	56 E	4.91				
CABO SAN JUAN	1	10 N	9	20 E	3.54				
CALABAR	4	58 N	8	19 E	3.25				
CALABAR RIVER	4	33 N	8	23 E	3.24				
CAMEROON MOUNTAIN	4	13 N	9	10 E	3.1				
CAMEROON RIVER	3	50 N	9	26 E	3.38				
CAMPS BAY	33	57 S	18	23 E	5.55				
CANAL D'ASSINIE	5	07 N	3	20 W	1.15				
CANAL DE SANTO ANTONIO	6	07 S	12	22 E	4.44				
CANUKU TERMINAL	7	06 S	12	28 E	4.63				
CAP CAMEROUN	3	54 N	9	28 E	3.37				
CAP ESTERIAS	0	37 N	9	20 E	3.64				
CAP LOPEZ	0	37 S	8	43 E	3.72				
CAP LOPEZ TERMINAL	0	38 S	8	43 E	3.74				
CAP SANTA CLARA	0	30 N	9	19 E	3.65				
CAPE CIRCONCISION	54	25 S	3	21 E	6.22				
CAPE COAST	5	06 N	1	14 W	1.24				
CAPE COLUMBINE	32	50 S	17	51 E	5.44				
CAPE CROSS	21	46 S	13	57 E	5.10				
CAPE DESEADA	32	19 S	18	19 E	5.40				
CAPE DONKIN	31	56 S	18	16 E	5.38				
CAPE FORMOSO	4	16 N	6	05 E	3.2				
CAPE MACLEAR	34	21 S	18	28 E	5.59				
CAPE NACHTIGAL	3	57 N	9	13 E	3.33				
CAPE NUN	4	17 N	6	04 E	2.34				
CAPE OF GOOD HOPE	34	21 S	18	29 E	5.59				
CAPE PALMAS	4	22 N	7	44 W	1.2				
CAPE POINT	34	21 S	18	30 E	5.59				
CAPE SAINT MARTIN	32	43 S	17	55 E	5.43				
CAPE SAINT PAUL	5	50 N	0	58 E	2.2				
CAPE THREE POINTS	4	45 N	2	05 W	1.18				
CAPE TOWN	33	55 S	18	25 E	5.53				
CAPE VALDIVIA	54	24 S	3	24 E	6.22				
CAPITAINES LIGHT	0	37 S	8	43 E	3.72				
CARDNO SEAMOUNT	12	53 S	6	08 W	6.13				
CASTLE ROCK POINT	16	01 S	5	45 W	6.12				
CATHERINE POINT	7	56 S	14	25 W	6.3				
CAUTION REEF	22	45 S	14	31 E	5.12				
CAVALLA POINT	4	21 N	7	36 W	1.2				
CAVALLA RIVER	4	22 N	7	32 W	1.3				
CEIBA TERMINAL	1	24 N	9	13 E	3.53				
CHAMEISBAAI	27	55 S	15	40 E	5.26				
CHANOMI CREEK	5	35 N	5	23 E	2.24				
CHAPMANS POINT	34	05 S	18	21 E	5.57				
CHUBBS POINT	15	55 S	5	43 W	6.8				
CLARENCE BAY	7	55 S	14	25 W	6.2				
CLIFF POINT	29	07 S	16	49 E	5.30				
CLIFF POINT	31	36 S	18	07 E	5.37				
COGO	1	05 N	9	42 E	3.60				
CONCEPTION BAY	23	55 S	14	30 E	5.14				
CONGO RIVER	6	05 S	12	30 E	4.43				
CONSTANTIABERG	34	03 S	18	23 E	5.56				
CORISCO BAY	0	54 N	9	16 E	3.55				
COTONOU	6	21 N	2	26 E	2.7				
CUNTALA OIL FIELD	6	18 S	12	19 E	4.56				
D									
DABUNDSCHA POINT	4	06 N	8	58 E	3.30				
DALIA TERMINAL	7	41 S	11	46 E	4.69				
DAMPA HILL	5	29 N	0	23 W	1.27				
DAMPIER SEAMOUNT	11	09 S	0	28 W	6.13				
DANGER POINT	26	16 S	14	57 E	5.19				
DASSENEILAND	33	25 S	18	05 E	5.49				
DEBUNDSCHA POINT	4	06 N	8	58 E	3.30				
DELTA OIL FIELD	5	41 N	5	03 E	2.19				
DELTA SOUTH OIL FIELD	5	36 N	5	06 E	2.19				
DEVILS PEAK	33	57 S	18	27 E	5.52				
DEVILS RIDING SCHOOL	7	58 S	14	23 W	6.1				
DIAMANTS	5	52 S	13	23 E	4.53				
DIAZ POINT LIGHT	26	38 S	15	06 E	5.21				
DIONE	1	23 N	9	28 E	3.52				
DISCOVERY SEAMOUNT	42	05 S	0	15 E	6.23				
DJENO	4	55 S	11	56 E	4.23				
DJENO OFFSHORE TERMINAL	4	56 S	11	54 E	4.23				
DOCTOR REEF	32	46 S	18	06 E	5.41				
DODO RIVER	4	53 N	5	29 E	2.27				
DORINGBAAI LIGHT	31	49 S	18	14 E	5.38				
DOUALA	4	03 N	9	41 E	3.39				
DOUGLAS BAY	26	18 S	14	57 E	5.20				
DUIKERPUNT	34	02 S	18	18 E	5.56				
DUMINY PUNT	32	55 S	17	51 E	5.45				
E									
EA OIL FIELD	4	49 N	5	21 E	2.28				
EASTER POINT	25	18 S	14	48 E	5.16				
EBOME TERMINAL	2	48 N	9	49 E	3.46				
EDINBURGH ANCHORAGE	37	03 S	12	18 W	6.16				
EDOP OIL FIELD	4	09 N	7	58 E	3.20				
EGITO PRAIA	11	58 S	13	46 E	4.79				
EJISIMANKU HILL	5	20 N	0	41 W	1.26				
EJULEBE OIL FIELD	5	35 N	5	00 E	2.19				
EKOUNDOU OIL FIELD	4	18 N	8	25 E	3.27				
EKPE OIL FIELD	4	06 N	7	35 E	3.17				
EKU OIL FIELD	4	16 N	8	06 E	3.20				
ELF GABON OIL TERMINAL	0	38 S	8	43 E	3.74				
ELIZABETH POINT	26	55 S	15	11 E	5.22				
ELMINA POINT	5	05 N	1	20 W	1.23				
EMERAUDE OIL FIELD	5	03 S	11	47 E	4.24				
ENANG OIL FIELD	4	12 N	7	55 E	3.20				
ENGLISH BAY TERMINAL	7	53 S	14	23 W	6.2				
ENSEADA DE SUTO	9	38 S	13	13 E	4.75				
ENSEADA DO BONFIM	13	49 S	12	32 E	4.87				
ENSEADA DO QUICOMBO	11	18 S	13	49 E	4.78				
ENSEADA LANDANA	5	14 S	12	09 E	4.30				
ENSEADO DO CAPULO	7	59 S	13	11 E	4.71				
ERHA OIL TERMINAL	5	21 N	4	20 E	2.18				
ESCRAVOS OIL & GAS TRML	5	30 N	5	00 E	2.17				
ESCRAVOS RIVER	5	34 N	5	10 E	2.19				
ESPOIR TERMINAL	5	03 N	4	27 W	1.11				
ESSUNGO OIL FIELD	6	13 S	12	10 E	4.56				
ESTRELA OIL FIELD	6	26 S	12	21 E	4.56				
ESTUAIRE CAMEROUN	3	50 N	9	26 E	3.38				
ESTUAIRE DU GABON	0	18 N	9	26 E	3.65				
ETAME TERMINAL	3	45 S	10	31 E	4.16				
ETIM OIL FIELD	4	09 N	8	03 E	3.20				
F									
FAKO	4	13 N	9	10 E	3.1				
FARILHAO POINT	22	10 S	14	17 E	5.11				
FAUSSE POINTE NOIRE	4	53 S	11	54 E	4.22				
FISHTOWN RIVER	4	24 N	5	50 E	2.32				
FLAGSTAFF HILL	15	55 S	5	41 W	6.7				
FORCADOS OIL FIELD	5	23 N	5	18 E	2.22				
FORCADOS OIL TERMINAL	5	10 N	5	10 E	2.23				
FORCADOS RIVER	5	23 N	5	16 E	2.22				
FORT ORANGE LIGHT	4	56 N	1	42 W	1.20				
FOUCHE POINT	4	23 N	7	01 E	3.4				
FOXTROT PLATFORM	5	02 N	4	41 W	1.10				
FRONTON DE CARACAS	3	25 N	8	48 E	3.82				
FUTILA OIL TERMINAL	5	27 S	12	11 E	4.36				
G									
GALLOVIDIA REEF	26	10 S	14	56 E	5.19				
GAMBA OIL TERMINAL	2	50 S	10	00 E	4.10				

	Position			Sec. Para		Position			Sec. Para
	°	'				°	'		
GCO OIL FIELD	5	57 S	12	10 E	4.41				
GEORGETOWN	7	56 S	14	25 W	6.3				
GILL POINT	15	58 S	5	38 W	6.12				
GIMBOA TERMINAL	7	33 S	12	10 E	4.66				
GIRASSOL TERMINAL	7	39 S	11	41 E	4.68				
GOAP POINT	29	18 S	16	53 E	5.32				
GOMBE-BETA MARINE TERMINAL	1	12 S	8	56 E	4.3				
GOUGH ISLAND	40	19 S	9	56 W	6.19				
GRAND BASSAM	5	12 N	3	43 W	1.15				
GRAND BATANGA	2	50 N	9	53 E	3.45				
GRANDE BEREBI	4	39 N	6	54 W	1.5				
GRANDE JACK	5	11 N	4	28 W	1.10				
GRAND-LAHOU	5	09 N	5	00 W	1.10				
GRAND-POPO	6	17 N	1	50 E	2.6				
GRATTAN SEAMOUNT	9	45 S	12	45 W	6.13				
GREAT BERG RIVER	32	46 S	18	09 E	5.42				
GREAT TABLE MOUNTAIN	20	14 S	13	31 E	5.9				
GREEN POINT	33	54 S	18	24 E	5.52				
GREENWICH ROCK	5	37 N	0	01 W	1.29				
GROENRIVIERMOND LIGHT	30	50 S	17	35 E	5.36				
GRONDIN OIL DRILLING AREA	1	10 S	8	40 E	4.2				
GROSSE BAY	26	45 S	15	06 E	5.22				
GROVE POINT	5	40 N	0	03 E	1.31				
GROWA POINT	4	21 N	7	37 W	1.2				
GUNZA-KABOLO	11	12 S	13	50 E	4.77				
H									
HALIFAX ISLAND	26	39 S	15	05 E	5.22				
HOARUSIB RIVER	19	05 S	12	34 E	5.6				
HOEK VAN BOBBEJAAN	34	19 S	18	24 E	5.58				
HOLLAMS BIRD ISLAND	24	38 S	14	32 E	5.15				
HOLLANDBIRD ISLAND	24	38 S	14	32 E	5.15				
HOMEWOOD COVE	28	46 S	16	34 E	5.30				
HONDEKLIP BAY LIGHT	30	18 S	17	16 E	5.34				
HONDEKLIPBAAI	30	19 S	17	16 E	5.34				
HOSPITALPUNT	32	57 S	17	53 E	5.45				
HOTTENTOT BAY	26	08 S	14	57 E	5.18				
HOUTBAAI	34	03 S	18	21 E	5.56				
HUGHES POINT	5	27 N	5	14 E	2.22				
I									
ICHABOE ISLAND	26	17 S	14	56 E	5.19				
IDOHO OIL FIELD	4	22 N	8	00 E	3.20				
IKALOU OIL FIELD	4	33 S	11	21 E	4.18				
ILES DES PRINCES	5	54 S	13	08 E	4.53				
ILHA DE SAO TOME	0	15 N	6	37 E	3.90				
ILHA DO PRINCIPE	1	37 N	7	24 E	3.86				
ILHEU BOMBOM	1	42 N	7	24 E	3.87				
ILHEU DAS CABRAS	0	25 N	6	43 E	3.91				
ILHEU DE SANTANA	0	14 N	6	46 E	3.93				
ILHEU GAGO COUTINHO	0	00	6	32 E	3.94				
ILHEUS DO PINA	13	27 S	12	31 E	4.87				
ILOT OSCAR	5	53 S	13	18 E	4.53				
IMA OIL TERMINAL	4	13 N	7	23 E	3.16				
IMPALA OIL FIELD	7	00 S	12	23 E	4.56				
INACCESSIBLE ISLAND	37	17 S	12	40 W	6.17				
INDA OIL FIELD	4	21 N	7	06 E	3.5				
INIM OIL FIELD	4	12 N	8	00 E	3.20				
ISLA DE BIKO	3	30 N	8	40 E	3.77				
ISLA DE CORISCO	0	56 N	9	19 E	3.56				
ISLA DE MANDYI	0	56 N	9	19 E	3.56				
ISLAS ELOBEY	1	00 N	9	30 E	3.58				
ISLOTE TORTUGA	1	24 S	5	38 E	3.96				
ISLOTES LOROS	3	33 N	8	34 E	3.85				
ISLOTES PONGUE	2	12 N	9	45 E	3.48				
IWORO	6	25 N	3	01 E	2.9				
IZONGO POINT	4	04 N	9	01 E	3.31				
J									
JACQUEVILLE	5	12 N	4	23 W	1.10				
JAKKALSHOK	31	21 S	17	54 E	5.37				
JAMESTOWN	15	55 S	5	43 W	6.9				
JOHN OWEN BAY	29	16 S	16	53 E	5.32				
JUBILEE OIL FIELD	4	32 N	2	55 W	1.16				
K									
K5 OIL CENTER TERMINAL	3	46 N	8	45 E	3.80				
KAAP VOLTAS	28	43 S	16	33 E	5.29				
KALAEKULE OIL FIELD	4	16 N	7	19 E	3.15				
KAMBALA OIL FIELD	5	43 S	12	05 E	4.39				
KAPTEINSKLOOF	32	43 S	18	35 E	5.41				
KEGELBERG	26	25 S	15	06 E	5.20				
KERBE HUK	28	14 S	16	00 E	5.26				
KING AND QUEEN POINT	15	57 S	5	38 W	6.11				
KINLELE	5	52 S	13	06 E	4.53				
KITA OIL FIELD	4	05 N	8	26 E	3.27				
KITINA OIL FIELD	4	55 S	11	23 E	4.24				
KIZOMBA A TERMINAL	6	19 S	11	03 E	4.58				
KIZOMBA B TERMINAL	6	21 S	11	09 E	4.59				
KIZOMBA C TERMINAL	6	14.0 S	11	16.5 E	4.60				
KLEINTAFELBERG	32	33 S	18	28 E	5.41				
KNOLL POINT	25	28 S	14	50 E	5.16				
KOEBOG POWER STATION	33	41 S	18	26 E	5.50				
KOGO	1	05 N	9	42 E	3.60				
KOKO	6	00 N	5	28 E	2.20				
KOKONGA OIL FIELD	5	36 S	11	42 E	4.39				
KOLE OIL TERMINAL	4	13 N	8	33 E	3.27				
KOMBI OIL FIELD	4	37 S	11	21 E	4.18				
KOMBO OIL FIELD	4	17 N	8	30 E	3.27				
KOME KRIBI 1 TERMINAL	2	55 N	9	48 E	3.44				
KONZI OIL FIELD	0	16 S	9	13 E	3.69				
KOUILOU RIVER	4	29 S	11	42 E	4.18				
KPEME	6	12 N	1	31 E	2.4				
KPONE BAY	5	40 N	0	03 E	1.31				
KRIBI	2	56 N	9	54 E	3.43				
KROMANTI	5	12 N	1	04 W	1.25				
KROMANTSE	5	12 N	1	04 W	1.25				
KUITO OIL FIELD	5	28 S	11	32 E	4.27				
KUITO OIL TERMINAL	5	28 S	11	30 E	4.27				
KUPUNDJI	5	53 S	12	18 E	4.38				
KURAMO ISLAND	6	27 N	3	43 E	2.11				
KWA IBO RIVER	4	33 N	7	59 E	3.20				
KWABEN HILL	5	17 N	0	47 W	1.26				
KWANDA	6	07 S	12	19 E	4.45				
L									
LAGEAS	14	24 S	12	21 E	4.88				
LAGOS	6	24 N	3	24 E	2.10				
LAMBERT'S BAY	32	05 S	18	18 E	5.39				
LANGVLEI	32	13 S	18	21 E	5.40				
LE TROU SANS FOND	5	05 N	4	00 W	1.13				
LEKKI	6	24 N	4	07 E	2.11				
LIBREVILLE	0	23 N	9	27 E	3.67				
LIBWA OIL FIELD	5	56 S	12	15 E	4.41				
LIKOUALA OIL FIELD	5	07 S	11	46 E	4.24				
LIMBE	4	01 N	9	12 E	3.34				
LIMBE SHIPYARD	4	00 N	9	08 E	3.32				
LIMBOH OIL TERMINAL	4	00 N	9	08 E	3.32				
LIMBOH POINT	4	01 N	9	08 E	3.31				
LIONS HEAD	33	56 S	18	23 E	5.52				
LLHEU CAROCO	1	31 N	7	26 E	3.88				
LOANGO OIL FIELD	4	30 S	11	16 E	4.18				
LOBITO	12	20 S	13	34 E	4.80				
LOBITO LIGHT	12	19 S	13	34 E	4.80				
LOMBO EAST OIL FIELD	6	51 S	12	24 E	4.56				
LOMBO EAST OIL TERMINAL	6	50 S	12	22 E	4.61				
LOMBO OIL FIELD	6	52 S	12	24 E	4.28				
LOME	6	08 N	1	17 E	2.3				
LONGJI	3	05 N	9	59 E	3.41				
LOT	15	59 S	5	43 W	6.7				
LUANDA	8	48 S	13	15 E	4.73				
LUBA	3	30 N	8	34 E	3.84				
LUCINA OIL TERMINAL	3	38 S	10	45 E	4.14				
LUDERITZ BAY	26	39 S	15	09 E	5.21				
LUKAMI OIL FIELD	5	51 S	12	08 E	4.41				
LYAK OIL FIELD	4	10 N	8	10 E	3.20				
M									
MACLEAR'S BEACON	33	58 S	18	26 E	5.52				
MALABO	3	45 N	8	47 E	3.81				
MALONGO	5	24 S	12	12 E	4.33				
MALONGO OIL AND GAS FIELD	5	24 S	12	04 E	4.32				

