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SECTOR 3 — CHART INFORMATION

SECTOR 3

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. 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.), a conspicuous mountain, rises abruptly from the land on the NE shore of the bight. It reaches an elevation of 4,069m and is covered with trees and verdure of luxuriant growth, except in the vicinity of the rounded summit. Fako is also a volcano, but it has not been active since 1922. 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 percent 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.

Caution.—Vessels are warned that numerous wellheads, submerged obstructions, and offshore platforms, exist within the 200m curve 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.). Some of these wellheads may protrude more than 5m above the seabed and may be unmarked. Some of the platforms and structures may be disused, abandoned, and unlit. In addition, oil and gas exploration is being carried out along the coastal areas. Vessels should exercise care when navigating in this vicinity as many of the associated structures and objects are not charted.

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

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

Numerous submarine pipelines lie offshore and in many cases are not buried in the seabed. Depths over these pipelines may be reduced by as much as 2m.

Vessels are cautioned that security off the West African coast and within some ports is a serious problem. In recent years (1986-2000) 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.

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.

Brass Oil Terminal (4°04'N., 6°17'E.), lying about 17 miles SE of Cape Formoso, consists of a lighted central platform which is equipped with a racon. No. 1 SBM and No. 2 SBM are situated 1 mile E and 1 mile W, respectively, of the platform, in a depth of 27.4m. Vessels of up to 300,000 dwt and 22.8m draft can be handled, with a minimum length of 220m and a maximum length of 366m.

Vessels should send an ETA to the terminal via Lagos Radio 7 days, 72 hours, 48 hours, and 24 hours before arrival. Vessels should then contact the terminal by VHF before arrival and when anchoring. Anchorage is available, in depths of 27 to 29m, good holding ground, about 2.5 miles NE of the platform. Berthing takes place only during daylight hours. Pilotage is compulsory. Pilots can be contacted by VHF and board in the vicinity of the anchorage.

A platform, with a very conspicuous flare, is situated 10 miles SE of the terminal and is connected to it by a submarine pipeline.

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 to within about 300m of 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.

Caution.—An unlit riser pipe, which was reported (1987) to be radar conspicuous, lies about 7 miles SSW of West Point.

In the rainy season, the river entrance is often completely obscured.

3.3 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 this river entrance, the point appears to be the extremity of the land as 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 Creek, about 0.3 mile wide, lies close W of Fouche Point. A prominent radio mast is reported to stand on Fouche Point.

A dangerous wreck lies about 6 miles S of the point and is marked by a buoy. A stranded wreck, radar conspicuous, lies 3.2 miles SW of the point. Another stranded wreck is reported to lie about 6 miles SW of the point.

3.4 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.

Inda Oil Field (4°21'N., 7°06'E.), with several platforms, lies centered about 4 miles SW of Field Point.

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 maximum 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 1.8m, 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. It is marked by lighted buoys and is dredged to a depth of 12.5m (1997).

Aspect.—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 main light (Bonny) is shown from a framework tower standing 1.2 miles N of this point. A prominent beacon is situated 0.3 mile NNE of the 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.

Pilotage.—Pilotage in the river is compulsory. Pilots can be contacted by VHF and board close S of the seaward entrance of the approach channel. River pilots for Onne, Okrika, and Port Harcourt board in the anchorage roadstead off the town of Bonny. Vessels should send an ETA message 7 days, 72 hours, 48 hours, and 24 hours prior to arrival.

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 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.

It was reported (1986-2001) 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.

3.5 Bonny Offshore Terminal (4°11'N., 7°14'E.) lies about 13.5 miles SSE of Field Point, in a depth of 27.4m. It

consists of a lighted platform and two SBMs. A submarine pipeline extends NNW from the terminal to the shore. Vessels of up to 320,000 dwt and 22.8m draft can be handled; there are no limitations for length or beam. Vessels should send an ETA via Lagos Radio 7 days, 3 days, and 2 days prior to arrival. Vessels should then contact the terminal by VHF 3 hours prior to arrival.

Pilotage.—Pilotage is compulsory. Pilots can be contacted by VHF and board at the anchorage. They act as berthing masters and remain on board throughout the loading operations. The designated anchorage area lies about 3 miles S of the platform; vessels must not proceed closer to the terminal without a pilot. While berthed at the terminal, vessels must have their engines ready with immediate use of full power available.

Caution.—A sunken oil rig, with the helipad and leg visible, lies about 12 miles SE of the terminal. Vessels should keep well clear of this wreck, which was reported to be marked by two buoys.

All vessels, other than tankers in the process of berthing or unberthing, should keep at least 3 miles away from the terminal platform.

During the rainy season (June to September), heavy swells may be encountered at the anchorage.

Gas is escaping to the surface in a position about 11 miles SE of Bonny Offshore Terminal. All vessels are advised to keep clear. The area of escaping gas is marked by buoys.

3.6 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 three factors. The datum depth in the channel, the height of tide, and the underkeel clearance allowed.

It has been reported (1997) that the approach channel has been dredged to a depth of 12.5m 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.

The inshore terminal lies close S of the town, at the E side of the river. It consists of three river berths, each formed by several mooring buoys. It has been reported (1996) that this inshore terminal has been closed. The mooring buoys have been removed, but obstructions and foul ground remain in the vicinity.

A storage tanker 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.

It is reported (1996) that several platform structures have been established at the E side of the entrance channel, 3.2

miles SW of Field Point. A submarine pipeline extends E, NE, and N and connects these structures to a point on the mainland.

Anchorage.—Vessels proceeding to Bonny may anchor, in depths of 14 to 16m, about 9.5 miles S of Fouche Island. When anchored, vessels should report their date and time of arrival to the port authority by VHF.

3.7 Onne (4°39'N., 7°09'E.), a new port, lies 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 of up to 55,000 dwt. There are facilities for general cargo, container, ro-ro, and bulk vessels. The entrance channel within the creek is dredged to a depth of 9.2m.

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 an L-shaped jetty, 259m long, which has a square dolphin at the outer end. Coastal and ocean tankers up to 50,000 dwt and 192m in length can be handled. Berthing is carried out during daylight hours only. The approach river channel has a datum depth of 8.8m (1989). Vessels of up to 7.9m draft can berth; vessels of up to 9m draft can depart on the flood tide.

3.8 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.

Depths—Limitations.—There are eight principal dry cargo berths, which are 128 to 186m long; one palm oil berth; and one tanker berth. In addition, there are several mooring buoy berths, with depths of 8m. Generally, vessels of up to 183m in length and 7.6m 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 datum depth of 8.8m (1989).

Signals.—When two black balls are displayed from the signal station of the port, a vessel is known to be proceeding upriver from Bonny and outbound vessels should take necessary precautions, especially when navigating the bends.

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.

3.9 Between the Bonny River and the Opobo River, 27 miles E, the coast is low and swampy. It is covered with mangroves 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, which is not used, enters the sea 11 miles E of Field Point. A platform is situated 9 miles S of the river mouth; a submarine pipeline extends NW from it to a point on the shore.

Ima Terminal (4°13'N., 7°23'E.) is located 13.5 miles SSE of the W entrance to the Adoni River. Pilots board in the anchorage area, which has a radius of 1.5 miles, centered about 3 miles SE of the terminal.

Caution.—Vessels navigating along this stretch of the coast should not approach without local knowledge into depths of less than 15m.

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.

An obstruction lies about 32 miles SSW of the entrance to the Opobo River. It was reported (1986 and 1988) that discolored water and breaking seas had been observed in an area lying about 4 miles WNW of this obstruction. Caution should be exercised.

3.10 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 was reported (1957) to have a least depth of 2.1m. 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.

Odudu Terminal (4°00'N., 7°46'E.), lying about 29 miles SSE of the entrance to the Opobo River, consists of a storage tanker moored bow-on to an SBM. Pilotage is compulsory. Pilots can be contacted by VHF and board in the anchorage area, which has a radius of 1.5 miles and lies centered about 3 miles NNE of the tanker. Vessels should send an ETA message 72 hours, 24 hours, and 4 hours in advance of arrival. Vessels are generally moored to the stern of the storage tanker. The terminal can handle vessels of between 80,000 and 280,000 dwt, with drafts up to 19.5m. All vessels must fly the Nigerian national ensign when in the vicinity of the terminal.

Caution.—Between the Opobo River and the Calabar River, 40 miles E, numerous oil and gas structures, platforms, wellheads, buoys, and associated submarine pipelines lie up to 30 miles offshore.

3.11 Between the Opobo River and the Kwa 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 Kwa 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 **Kwa 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 radio mast are situated about 1 mile E of the river entrance.

Caution.—A dangerous wreck is reported to lie about 11.2 miles S of the river entrance.

The Kwa Oil Field extends up to 50 miles seaward of the river entrance and consists of numerous platforms, structures, and submarine pipelines, which may best be seen on the chart.

3.12 Kwa Ibo Offshore Terminal (Qua Iboe) (4°14'N., 8°02'E.) lies 19 miles S of the entrance to the Kwa Ibo River. It consists of an operations platform, equipped with a racon, and three SBMs which are moored 1.2 miles SE, 1 mile SSE, and 3.4 miles SE of it. The terminal lies in depths of 25.9 to 27.4m and can handle vessels of up to 350,000 dwt and 22m draft.

Vessels should send an ETA via Mobil Lagos 7 days in advance. Confirmation messages should then be sent 72 hours and 24 hours prior to arrival. Vessels should contact the operations platform by VHF as soon as possible on their approach. Anchorage can be obtained in the charted anchorage area lying about 10 miles SE of the operations platform. Pilotage is compulsory. Pilots, acting as mooring masters, can be contacted by VHF and board in the anchorage area.

Caution.—Vessels should use extreme care when anchoring, as a submerged gas pipeline lies between the two anchorage areas.

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, above-water pipes, and submarine pipelines are situated in this vicinity.

3.13 Zafiro Terminal Storage Tanker (3°51'N., 8°07'E.) is moored about 22 miles SSE of Kwa Ibo Offshore Terminal. A restricted area, with a radius of 4.3 miles, surrounds the terminal.

The **Calabar River** (4°33'N., 8°23'E.) has an estuary which is entered between West Point, located 17.5 miles E of the Kwa Ibo River, and East Point, 13 miles ESE. This estuary is formed by the waters of several rivers. 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 lighted 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 lighted buoy is moored about 13.5 miles S of West Point. The main channel is marked by lighted buoys.

Caution.—The buoys marking the channels may be moved as conditions change. It is reported that many of them are unlit. In addition, the outer buoys are very exposed and are liable to be out of position.

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 structures, obstructions, terminal platforms, above-water pipes, wellheads, and submarine pipelines situated in this area. Also, 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, lies S 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 lighted 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.

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 lighted buoy.

Several unsurveyed areas lie in the approaches to the river and may best be seen on the chart.

3.14 Calabar (4°58'N., 8°19'E.) ([World Port Index No. 46230](#)) is situated on the E bank of the Calabar River, 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 for vessels over 1,000 grt. 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 E of **Parrott Island** (4°49'N., 8°17'E.) and contact the port by VHF in order to request pilotage. Movements are carried out in daylight only.

Anchorage.—Vessels may anchor outside the estuary, in a depth of 22m, mud, about 11 miles SSW of West Point, clear of any pipelines.

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.

3.15 Antan Oil Terminal (4°13'N., 8°20'E.) ([World Port Index No. 46225](#)) is situated about 19 miles SSE of West Point. It lies in a depth of 38m and consists of a 285,000 dwt storage tanker moored by a stern yoke to an SPM platform. Vessels of between 100,000 and 270,000 dwt can be handled and are moored bow to bow with the storage tanker. Vessels should

send an ETA 72 hours, 24 hours, and 4 hours before arrival. A designated anchorage area, with a depth of 45m, lies about 4 miles S of the terminal. Pilotage is compulsory. Pilots, acting as mooring masters, can be contacted by VHF and board at the anchorage. All vessels must fly the Nigerian national ensign when in the vicinity of the terminal.

3.16 Kole Oil Terminal (4°15'N., 8°30'E.), the petroleum port for Rio-del-Rey, is situated about 14 miles S of the Bakasi Peninsula. It consists of a production platform, a storage tanker, and two SBMs. The main SBM is moored 2.5 miles SSW of the storage tanker, in a depth of 30m. It can handle vessels of up to 250,000 dwt and 22m draft. A designated anchorage area lies centered 1 mile S of the SBM.

Vessels should send an ETA 72 hours, 48 hours, and 24 hours before arrival. Pilotage is compulsory. Pilots, provided by the Cameroon Port Authority, act as mooring masters. They can be contacted by VHF and board about 1 mile S of the anchorage area.

Caution.—The terminal lies in the SE part of a large restricted area, which may best be seen on the chart.

3.17 Moko Abana Oil Field (4°12'N., 8°26'E.), consisting of several platforms, lies centered 9 miles SW of Kole Terminal to which it is connected by a submarine pipeline.

Moudi Marine Terminal (Victoria Oil Terminal) (4°08'N., 8°27'E.) lies 7 miles S of Kole Oil Terminal, in a depth of 57m. It consists of two wellhead platforms, a production platform, a flare structure, a storage tanker, and an SBM. Vessels of between 50,000 and 280,000 dwt can be handled. A designated anchorage area lies 2 miles ENE of the SBM.

Vessels should send an ETA, via Douala, 72 hours, 48 hours, and 24 hours before arrival. Pilotage is compulsory. Pilots, acting as mooring masters, can be contacted by VHF and board in the vicinity of the anchorage. Vessels must have their engines available at all times.

Caution.—The terminal lies within a restricted area which may best be seen on the chart.

3.18 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, located 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 and structures are situated in this vicinity.

Bibundi Bay (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 (Dabundscha Point) (4°06'N., 8°58'E.), which is marked by a light, consists of a bold headland terminating in red limestone cliffs, up to 15m high.

3.19 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 Rock), 15m high, lies close offshore and is connected to the coast by a rocky reef. Habicht Rock, with a depth of 1m, lies 0.7 mile SE of Batoki Rock and about 0.4 mile offshore. Foul ground extends between it 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 is situated 0.3 mile N of the point and a tall chimney, marked by a light, stands close to it.

A quay, 150m long, fronts the refinery and has depths of 10 to 12m alongside. It can accommodate vessels of up to 130m in length.

Limboh Point Oil Terminal (4°00'N., 9°08'E.), lying 1.5 miles S of the point, consists of an SBM which is moored in a depth of 21m. Vessels of up to 90,000 dwt, 243m in length, and 18m draft can be handled. Pilotage is compulsory. Pilots can be contacted by VHF and board about 1 mile S of the SBM.

Caution.—A restricted area, which may best be seen on the chart, extends up to 2 miles S from Limboh Point. Only vessels proceeding to the terminal may navigate within this area.

A submerged rock is reported to lie close to the quay and is marked by a lighted buoy.

3.20 Nyeme 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 westernmost 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.

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.

The village of Bota, a railroad terminal, is situated on the NW shore of the bay. It is fronted by a mole which is used by small craft and lighters.

3.21 Cape Nachtigal (3°57'N., 9°13'E.) is the S extremity of the Monkey Peninsula. A main 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.

Limbe (Victoria) (4°01'N., 9°12'E.) ([World Port Index No. 46260](#)) is situated at the head of Morton Bay, which lies on the NE side of Ambas Bay. It is the port for **Buea** (4°10'N., 9°14'E.), which stands 10 miles inland. A range, consisting of lighted beacons, leads between Ambas Island and Mondoleh Island to the roadstead where cargo is worked. Vessels can anchor, in depths of 12 to 16m, good holding ground, in four designated anchorage berths. Local knowledge is required.

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 tornado, enters from the S or SW between Ambas 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.

3.22 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 (Cameroon Mountains). The land behind this cape rises gradually and regularly from the coast.

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, which is 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 on the coast to the N of Nicol Island.

The **Bimbia River** (3°58'N., 9°17'E.) is entered between Entrance Point, marked by a light, 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 (1984) to have a least depth of 5.2m, 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 18 to 20m in places.

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.

3.23 Tiko (4°04'N., 9°22'E.) ([World Port Index No. 46270](#)), a large town, stands on the mainland close W of Tiko Island, about 8.5 miles NE of Entrance Point.

Depths—Limitations.—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.—Pilotage is compulsory. Pilots can be contacted by VHF and are provided from Douala. They generally board within Ambas Bay, close NE of Mondoleh Island.

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 great caution.

3.24 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 fronts this portion of the coast and extends up to 5.5 miles offshore. This bank has depths of less than 5m and the sea breaks heavily on it. 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. A racon was reported (1993) to be situated at the tower.

A dangerous wreck was reported (1991) to lie, in an approximate position, about 17.5 miles SW of Cap Cameroun.

3.25 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 5.8m at LW (1994). 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.—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.

The buoys marking the channel are moved as necessary to conform to frequent changes in the banks.

3.26 Douala (4°03'N., 9°41'E.) ([World Port Index No. 46280](#)) lies 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 is situated on the NW bank and connected to Douala by a prominent bridge.

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.

Tides—Currents.—The tides at Douala rise 2.6m at springs and 2.2m 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 2,000m of principal quayage at Douala, which provides 11 berths. These berths have a depth of 8.5m alongside and have facilities for handling general, bulk, timber, and oil cargo. 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 300m long, with a depth of 8.5m alongside; a banana quay, which is 150m long, with a depth of 7m alongside; a container and ro-ro terminal, which has 500m of quayage with a depth of 11m alongside; and a tanker dolphin berth, which has a depth of 7m alongside.

Generally, vessels of up to 30,000 dwt and 200m in length can be handled. It is reported (1994) that vessels of up to 8m draft can transit the river channel and be accommodated in the port at springs; vessels of up to 6.4m draft can be accommodated at neaps.

Pilotage.—Pilotage is compulsory. 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 the Base/B9 Lighted Buoy. Vessels are required to maintain a listening watch on VHF while transiting the channel.

Anchorage.—Anchorage may be obtained, in depths of 7 to 11m, within a designated area lying SSE of Base/B9 Lighted Buoy. Vessels are required to maintain a listening watch on VHF while at this anchorage.

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.

Due to numerous armed robberies in the vicinity of the port, it was reported (1993) that personnel should use caution and not go ashore at night.

The Cameroon River to Bahia de Corisco

3.27 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.

3.28 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 on this coast the tornadoes blow offshore.

The **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 Njong, 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.

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.

Longji (3°05'N., 9°59'E.) lies 12 miles SSE of the Riviere Njong 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.

3.29 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. Vessels transiting this area are advised to keep at least 2 miles offshore and in depths of at least 20m.

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.

3.30 Kribi (2°56'N., 9°54'E.) ([World Port Index No. 46290](#)) 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. Good anchorage is available, in a depth of 7m, sand and mud, 0.8 mile WNW of the harbor. 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.

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 a church, with a prominent spire, stands near its S end. A conspicuous pylon is situated 0.3 mile N of the church.

Caution.—Several oil exploration drilling rigs and structures are generally encountered in the approaches to Kribi, within the 200m curve; vessels are advised to navigate with care.

3.31 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, by vessels with local knowledge, in depths of 10 to 12m, gray sand, off Grand Batanga. A landing place lies between two factories, but 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.

Ebome Marine Terminal is located 4 miles W of Baie Banoko. The terminal has an SPM, which can accommodate vessels up to 230,000 dwt. The depth at the SPM is 30m. There is a stand-by anchorage 2 miles W of the SPM. Pilots board the vessel at the anchorage. The terminal lies within a restricted area, as shown on the chart. Only vessels using the terminal are authorized to enter the restricted area.

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.

3.32 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 (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 0.7 mile offshore and should be given a wide berth.

The **Riviere Campo** (2°21'N., 9°50'E.) enters the sea at the head of Baie Campo, 3.5 miles NE of Cabo Campo. The boundary between Cameroon (Cameroun) and Equatorial Guinea lies in the vicinity of this river. 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 mouth. 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.

Islotes Pongue (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 5.5m high and whitened by guano, assumes the appearance 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.

Caution.—Several dangerous wrecks, some stranded, lie off this stretch of the coast and may best be seen on the chart.

3.33 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. An aeromarine light is shown from a brick tower, 35m high, standing on the cape; a prominent tower is situated 1 mile NE of it.

Bahia de Bata 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 Mbia, 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 Mbia; and the Rio Utonde, which enters the sea 5 miles S of the mouth of the Rio Biadibe.

3.34 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 river, 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, is 850m high and conspicuous.

3.35 Bata (1°52'N., 9°46'E.) ([World Port Index No. 46305](#)) is a small roadstead port where cargo is worked by vessels at anchor. A dog-legged wharf, 370m long, fronts the town and is used by barges and small craft. A pipeline extends to a position about 1 mile W of the wharf. Vessels can moor to a buoy which

is situated at the seaward end of the pipeline, but this buoy is reported (1993) to be in a dilapidated condition.

A conspicuous mission building, with twin domes surmounted by crosses, 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.

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 is also available for small vessels, in depths of 5 to 7m, about 0.4 mile WNW of the head of the wharf.

3.36 Puerto Nuevo (Puerto Macias Ngueema) (1°49'N., 9°44'E.) lies 1 mile S of the mouth of the Rio Ecuco and 3 miles SW of Bata, which it is considered a part of. The harbor consists of an L-shaped jetty extending 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. 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 8. Anchorage is available, in a depth of 16m, about 0.5 mile W of the head of the jetty.

Caution.—It was reported (1991) that shoals were extending seaward from the mouth of the Rio Ecuco and several wrecks lie off the entrance.

It was reported (1993) that the local pilot spoke only Spanish.

It was reported (1991) that vessels moored at the inner berths of the jetty are frequently subject to a heavy swell.

Numerous oil exploration drilling rigs, structures, and wellheads may be encountered in the approaches to Bata and Puerto Nuevo.

3.37 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 Ngaba is located 5.8 miles SW of Puerto Nuevo and 6.7 miles NE of Cabo Dos Puntas. A light is shown from a metal tower, 24m high, standing on this point.

Punta Mbode (1°37'N., 9°36'E.) is located 3 miles S of Cabo Dos Puntas. A light is shown from a framework tower, 12m 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 vessels of up to 4.3m draft.

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.

3.38 Between Punta Joho and Cabo San Juan, 29 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 Rio Etembue. Mumunein Bank, a rocky shoal area, lies 2 miles NW of this point 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. Isote 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.

3.39 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 for 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 E 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 cape 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 close 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.

Bahia de Corisco

3.40 Bahia de Corisco (Corisco Bay) (0°54'N., 9°16'E.) is entered between Cabo San Juan and Cap Esterias, 33 miles S. 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 Biguna, 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 1 mile SW of Punta Corona and a detached shoal, with a depth of 8.2m, lies 0.8 mile WSW of it.

Banco Lauria lies centered 7 miles WSW of Punta Corona. It consists of a stony patch and has a least depth of 3m.

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. Good anchorage is available about 0.5 mile S of the point. The village of Calatrava is situated in the vicinity of this point.

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, 2.7, 4, 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 Efulé is situated 3.7 miles NW of Punta Yeke.

Caution.—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.

3.41 Isla de Corisco (Isla de Mandyi) (0°56'N., 9°19'E.) lies 14.5 miles S of Cabo San Juan. It is administered from Puerto Iradier and belongs to Equatorial Guinea. A light is shown from a tower, 3m 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.

3.42 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.

3.43 Islas Elobey (1°00'N., 9°30'E.) 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 is wooded. Islote 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 tornadoes 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.

3.44 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. 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, and forms the boundary between Equatorial Guinea and Gabon.

The least depth in the approach channel is 6.2m. Pilotage is not compulsory, but pilots are available. A lighted buoy is moored about 5 miles NW of Isla Elobey Chico.

Cogo (Puerto Iradier) (Kogo) (1°05'N., 9°42'E.), lying 7.5 miles NE of the river entrance, is situated on the N bank of the river. 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.

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.

3.45 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, 8m 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.

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.

3.46 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 Estuaire du Gabon

3.47 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 pylon 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 SW 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 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.

Estuaire du Gabon

3.48 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.

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.

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.

3.49 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 tower, 12m high, standing on the point.

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 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 tornado 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 tornado 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.—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.

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.

3.50 Libreville (0°23'N., 9°27'E.) ([World Port Index No. 46430](#)), 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, protected by a detached breakwater, fronts the town and is used by small coasters, local ferries, barges, yachts, and fishing vessels. Vessels may anchor, in depths of 8 to 9m, mud and clay with good holding ground, about 1 mile SW of the wharf.

It was 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.

3.51 Port Owendo (Port Ovendo) (0°17'N., 9°30'E.) 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 facilities include a main quay, 450m long, which is situated on the SW side of Pointe Owendo. It provides three berths, with depths of 9.5 to 11m alongside. Vessels of up to 220m in length and 9m draft can be accommodated. It was reported (1995) that Berth No. 1 had a depth of 11m alongside, Berth No. 2 had a depth of only 4.5m alongside, and Berth No. 3 had a depth of only 5.5m.

A cement pier, 60m long, is situated on the E side of the point. It can handle vessels of up to 130m in length and 5.8m draft.

There is also a bitumen berth, consisting of head and stern mooring buoys, lying off the SE extremity of the point. It can handle vessels of up to 100m in length and 5.8m draft.

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 12m alongside and can handle vessels of up to 10.4m 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 Conicoue. These latter hills attain heights of 50 to 80m. A light is shown from a square tower, 10m high, standing on the point.

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 grt. 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. Pilots can be contacted on VHF channel 12 and 16. All vessels must call the pilot on VHF channel 12 upon arrival at Themis Lighted Buoy and maintain a continuous listening watch for further instructions from the pilot. The pilot boards in the vicinity of Pilot Lighted Buoy. Information concerning the buoys marking the approach channel is given by VHF.

Anchorage.—Anchorage is available, in depths of 9 to 10m, mud, with good holding ground, about 1.1 miles SW of the head of the manganese pier. Vessels may also anchor, in depths of 6 to 8m, sand and mud, with good holding ground, between 0.6 and 2 miles SE of Pointe Owendo.

Caution.—The local authorities or agent should be contacted in advance, as silting may often reduce the depths alongside the berths.

The river tidal currents run strongly at times and can attain rates of up to 5 knots after heavy rains.

Estuaire du Gabon to Baie du Cap Lopez

3.52 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, between 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; 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 160m and 108m, 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 WNW 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. An 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.

3.53 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

3.54 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 trees and is slightly higher than the nearby coast.

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. A main light is shown from a framework tower (Capitaines Light) standing on the E side of the cape. Several prominent chimneys are situated close W of the light.

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 3.1m and extends up to about 0.9 mile NW from the cape.

Banc du Prince, with depths of less than 10m, 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 2.6m, is steep-to, and is marked by a lighted buoy at the seaward end.

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 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.

Banc Rousselot, with depths of less than 5m, extends up to about 1 mile E from Pointe Akosso, located 3 miles SSE of Pointe Clairette.

A prominent television tower, 123m high, stands 0.9 mile SSW of Pointe Akosso.

Tides—Currents.—The tides 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.

3.55 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 consists of a loading platform with dolphins which is connected to the shore by an L-shaped pier, 340m long. The berth has a depth of 25m alongside and can accommodate vessels of between 35,000 and 250,000 dwt, between 215 and 340m in length, and up to 20.5m draft.

Pilotage.—Pilotage is compulsory. Pilots can be contacted by VHF and board about 1.5 miles ENE of Cap Lopez. 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.

Anchorage.—Anchorage is available, in depths of 62 to 70m, about 1 mile ENE of the pier.

Caution.—An obstruction was reported (1987) to lie in the vicinity of the oil berth.

A submarine pipeline, which may best be seen on the chart, extends E and NE from within Baie du Prince and connects with the **Konzi Oil Field** (0°16'S., 9°13'E.) and Batanga.

Between February and April, a risk of tornadoes exists.

3.56 Port-Gentil (0°43'S., 8°48'E.) extends S from Pointe Clairette. It is sheltered from the E, W, and S, but is open to winds from 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 11m 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.

An oil refinery (SER Terminal) berth lies close SE of Point Clairette and consists of two large dolphins and two mooring

buoys. It has a depth of 13m and can accommodate tankers of up to 80,000 dwt, 183m in length, and 10.1m draft.

Pilotage.—Pilotage is compulsory. Pilots are provided from the station at Cap Lopez Terminal and generally board about 1.5 miles NE of Pointe Clairette.

Regulations.—A regulated area, which may best be seen on 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.

Anchorage.—Anchorage may be obtained, in a depth of 18m, mud, about 0.3 mile SE of Pointe Clairette, but vessels must proceed to this roadstead only under pilotage.

Anchorage may also be obtained, in a depth of 12m, mud, within the bay lying S of Banc du Talisman.

Caution.—Numerous oil platforms and structures are situated in the E part of Baie du Cap Lopez.

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.

Islands in Bight of Biafra

3.57 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

3.58 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 3,008m 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, this peak 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



Isla de Bioko (Masie Nguema Biyogo) (Fernando Poo) from E

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 was reported (1993) that the lights on Isla de Bioka were unreliable and may be extinguished.

Navigation in the claimed territorial waters, within 12 miles of the island, is also reported (1993) to be inadvisable.

3.59 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 airport is situated 2 miles S of Punta Europa and an aeronautical light is occasionally shown in its vicinity.

Caution.—An offshore platform, equipped with a racon, is situated 15.5 miles NW of Punta Europa. A gas pipeline extends SE and S from this platform to a terminal standing close E of Punta Europa. This pipeline is marked, in the

vicinity of the shore, by buoys and anchoring near it is extremely dangerous and prohibited.

3.60 Zafiro Terminal (3°51'N., 8°07'E.) lies about 36 miles WNW of Punta Europa; the terminal is surrounded by a circular restricted area 4.25 miles in radius. The pilot boards about 3.25 miles NNW of the terminal.

Punta Europa Marine Terminal (3°47'N., 8°43'E.), an oil loading facility, lies close offshore, 0.7 mile ENE of Punta Europa. It consists of four mooring buoys lying in a depth of 38m. Tankers of up to 60,000 dwt and 213m in length can be accommodated.

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.

Vessels should send an ETA via their agent 72 hours, 48 hours, and 24 hours in advance. Vessels should then contact the terminal by VHF when within 25 miles. Pilotage is compulsory. Pilots, acting as mooring masters, usually board about 1.5 miles N of the terminal and remain on board the vessels throughout the loading operations. Vessels berth and unberth during daylight hours only.

No designated anchorage berths exist and 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.

3.61 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, at the SE side of the bay, has a quay, 274m long, with depths of 8 to 9m alongside and a pier, 27m wide. Vessels usually moor and berth stern-to at this quay.

The new part of the harbor, at the SW side of the bay, has a bulk quay, 305m long, with a depth of 15m alongside.

Vessels of up to 23,000 grt, 176m in length, and 13.7m draft 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 buildings in the town are conspicuous from seaward.

Punta de la Unidad Africana, marked by a light, is the N extremity of a narrow peninsula which extends 0.4 mile NNW from the coast and forms the E side of Bahia 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.

Punta Cristina, located 0.5 mile SW of Punta de la Unidad Africana, is the N extremity of a bluff peninsula which terminates in vertical cliffs.

Islotes de Enrique consists of several rocks, 12 to 14m high, and lies at the W side of the Bahia de Malabo, close NW of Punta Cristina.

Bahia 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.

Shoal water, best seen on the chart, extends W from Punta de la Unidad Africana and NE from Islotes de Enrique.

The entrance fairway leading into the harbor is indicated by a lighted range.

Pilotage.—Pilotage is compulsory for vessels over 50 grt. Pilots can be contacted by VHF 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).

Caution.—It is reported that the range structures are difficult to distinguish by day against the background and the front one is frequently obscured by vessels at the pier.

The navigation aids in the vicinity of the port were reported (1996) to be unreliable.

3.62 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.

Isolote de Horacio lies close offshore, 0.5 mile SE of Punta Hermosa. A light is shown from a tower, 16m high, standing on the N part of this islet.

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.

Punta Caracas (Fronton de Caracas) (3°25'N., 8°48'E.) is located 21 miles SSW of Punta Hermosa. A light is shown from a pyramidal tower, 8m high, standing on this point. Isolote 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.

Bahia de la Concepcion (Bahia 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 a tornado. 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 is in a depth of 18m, sand, 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.

3.63 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.

Bahia 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.

Luba (3°30'N., 8°34'E.) ([World Port Index No. 46330](#)), a small port, lies 0.8 mile SE of Punta Barcelonesa and is used for exporting bananas. A jetty, 123m long, provides a berth at the head, 50m long, with a depth of 7.3m alongside. Small vessels of up to 6.7m draft can be handled. Larger 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.

Islotes 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 westernmost islet.

Punta Achada is located 8 miles NNE of Islotes 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

3.64 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** (3°36'N., 7°24'E.), which is 947m high.

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 Baía de Santo Antonio.

3.65 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 its summit. A conspicuous radio mast is reported (1995) to be situated 0.5 mile S of the light.

Pedra de Gale, 2.7m 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. Ilheus dos Mosteiros, 20m high, lies close within the seaward end of this spit. Vessels are advised to stay well clear of the outer end of this spit.

Ponta Capitao, formed by a steep-to tongue of land, is located 0.8 mile S of Ponta dos Mosteiros.

3.66 Baía de Santo Antonio (1°39'N., 7°27'E.) ([World Port Index No. 46375](#)) is entered between Ponta Capitao 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.

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, of the tornado 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 Baía 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. A low rock lying close off the S side of this islet is prominent when seen from E or W. 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.



Ilha do Principe from W



Ilha de Sao Tome from NE

Ponta do Grosso ($1^{\circ}33'N.$, $7^{\circ}21'E.$), 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 ($1^{\circ}36'N.$, $7^{\circ}20'E.$), located 3.2 miles NNW of Ponta do Grosso, is a salient headland which is fronted by rocks on its NW side. A peak, 263m high, stands 0.5 mile inland of this point.

3.67 Baia das Agulhas ($1^{\circ}37'N.$, $7^{\circ}22'E.$), 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 tornado 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. Tornadoes blow from the E, but care should be taken, as they may be squally after coming over the high land.

Ponta Hora ($1^{\circ}42'N.$, $7^{\circ}24'E.$) 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

3.68 Ilha de Sao Tome ($0^{\circ}15'N.$, $6^{\circ}37'E.$) 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 $1^{\circ}30'N$ until the longitude of $6^{\circ}E$ 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 $6^{\circ}E$, 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 (1990) that the navigation lights on Ilha de Sao Tome are unreliable.

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.

3.69 Ponta Cruzeiro ($0^{\circ}25'N.$, $6^{\circ}40'E.$) 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 ($0^{\circ}25'N.$, $6^{\circ}43'E.$) 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 ($0^{\circ}21'N.$, $6^{\circ}44'E.$) 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 stand close SW of it. A conspicuous barracks building stands 0.3 mile SW of the hospital.

A fort, from which a light is shown, stands on Ponta Sao Sebastiao. An area of reclaimed land projects 0.2 mile NNW from this point and its N end forms a quay 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 tornado 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.

3.70 Sao Tome (0°21'N., 6°44'E.) ([World Port Index No. 46380](#)), the capital 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.

Pilotage is not available.

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. This berth had good holding ground, but poor protection from the open sea.

Small vessels may anchor, in depths of less than 5m, in the inner part, but the sea breaks right across the bay after tornados or when the swell sets in. Pilotage is not compulsory and there are no official pilots. However, the Port Captain can be contacted by VHF and will act as a pilot if requested.

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.

Unexploded ordnance is reported to have been dumped on the banks lying NE and NNE of Ponta Sao Sebastiao.

The long swell can often make lighterage operations difficult.

Vessels approaching from SE or S should keep in depths of more than 35m and at least 1.5 miles offshore until they reach the lighted range leading to the anchorage.

3.71 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 radio mast, 33m high, stands close W of the point and a church, with a prominent tower, is situated 4.5 miles W of it.

Between Ponta Praiao and Ponta do Io, 12 miles SW, the coast is irregular, with rocky heads and sandy bays. The land rises regularly from the shore and is intersected by several rivers.

Ilheu de Santana lies about 0.7 mile offshore, 3.2 miles S of Ponta Praiao. It is 50m high, rocky, and covered with bushes. 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 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.

Caution.—Magnetic anomalies have been reported to exist up to 10 miles SW of Ponta Praiao.

3.72 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.

Ilheu Gago Coutinho (0°00'N., 6°32'E.) 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, 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.

A light has been established on the island.

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 close in 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.

Pagalu

3.73 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, 630m high, rises 1 mile S of the lake; Pico Surcado, 655m high, rises 1 mile farther SE.

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 tornadoes 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 Pagala.

3.74 Punta del Palmar (1°24'S., 5°37'E.) is the N extremity of Pagalu. A light is shown from a tower, 7m 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. 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.

3.75 From Punta del Paso, the coast trends SSE for 0.8 mile to Punta Dudjiguele. Bahia de San Pedro, at the head of which stands the village of San Pedro, lies between this point and Punta Jasgania, 0.3 mile SSE.

Punta Dologany, 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 (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.

3.76 Punta Alvaro (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 (1°25'S., 5°36'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.