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## SECTOR 5 — CHART INFORMATION

## SECTOR 5

### SOUTHWEST COAST OF IRIAN JAYA AND OFF-LYING ISLANDS

**Plan.**—This sector begins by describing the islands to the N and NW of Irian Jaya, including the large Pulau Waigeo and lesser islands, and the straits between them and the mainland. Next, beginning at Tanjung Yamursba, the N most point of Irian Jaya, and then W, the NW coast of Irian Jaya is described to its W most point on Salawati. Then in an E direction, the SW coast of Irian Jaya is described to Bensback River, the point dividing Irian Jaya and Papua New Guinea. This last part of the coast includes Selat Sele, Teluk Berau, and the many bays and rivers entering the sea along this coast.

#### General Remarks

**5.1 Winds—Weather.**—Among the SW coast of New Guinea the seasonal change in wind and weather are the same general character as in the Afura and Banda Seas, with the E monsoon predominating. During the W monsoon there is much rain along the coast and squalls are fairly frequent. The W monsoon weakens in April and the E monsoon becomes established in May, although the winds are variable in both months. The E monsoon blows with much constancy from June to November, but locally is influenced by the development of land and sea breezes. The W monsoon prevails in December, but it is not dependable. The seasonal distribution of rainfall depends upon the topography, but as a rule the wet season extends from December to March and the dry season reaches its height in August and September.

Along the extreme S coast in the vicinity of Port Mresby and to the E, the W monsoon is poorly developed and predominates only in January and February. The wind begins to turn in March and is quite variable in April and again in December. The velocity of the wind is highest in July and August, when it averages 14 to 15 knots in the open sea.

The seasonal distribution of rainfall on the coasts of New Guinea is quite variable, and depends to a large extent upon exposure to the monsoons. The E monsoon is, as a rule, relatively dry except where it strikes elevated regions.

On the S coast the E monsoon is cool and generally agreeable, but on the N coast there is little difference between the temperatures of the two seasons.

It is much cooler in the elevated regions of New Guinea, especially at night and in the early morning. On the tops of the highest mountains, there are snow and ice at all seasons.

The Coral Sea is a place of origin for tropical cyclones, the majority of which cross E Australia or skirt the E coast.

**Tides—Currents.**—With the exception of the tidal currents, the surface currents in the area covered by this volume move, generally speaking, in the direction of the prevailing monsoon. This general movement, therefore changes semi-annually. The actual direction of the currents is greatly influenced by the geographical locations of the various islands. They are not very strong in the more open passages and seas.

In Afura Sea, during the entire year, the currents set in a SW to W direction from Torres Strait to Timor Sea and Banda Sea.

#### Islands North of Irian Jaya

**5.2 Kepulauan Asia** (1°03'N., 131°15'E.) consists of the islands of Fani, Igi, and Miarin, all on a narrow reef 6.5 miles, long in a NNW-SSW direction. The islands are low, but are covered with tall trees. The reef projects about 0.75 mile N from the N most island and 0.5 mile W from the W sides of the islands. There are no anchorages in this group. The islands are uninhabited, but are sometimes visited by the natives from Kepulauan Ayu. A pillar is on the W side of Pulau Miarin, the S most island. The channel between Kepulauan Asia and Kepulauan Ayu is considered to be free from dangers.

**Kepulauan Ayu** (0°30'N., 131°07'E.), about 22 miles S of Kepulauan Asia, consists of almost 20 islets on two extensive reefs separated by a 1 mile-wide, deep, clear channel, free of dangers.

Pulau Aju, the largest of the group, is near the E end of the S and smaller reef. The island, with several villages, has a maximum elevation of 106m in its NW part. Ur Babo, two small uninhabited islets on the W part of the reef about 4 miles WNW of Pulau Aju, are covered with coconut palms.

Mios Kuan, the S most islet on the large N reef, is a sandbank covered with coconut palms. A conspicuous plume-shaped casuarina tree is at the S end of the islet and a small shrub-covered islet is off the N end. A village is on Mios Kuan. Mios Ros is a small, round, tree-covered islet on the E edge of the reef about 1 mile E of the N end of Mios Kuan.

A lagoon in the central part of the N reef is entered through a narrow channel that leads in from the W side of the reef. On the N side of the entrance to this channel is a group of black stones which cover only for a short time during exceptionally HW. A vessel 55m long and with a draft of 3.4m has entered the lagoon. There is a detached 1.8m reef, barely marked by discoloration, on the S side of the entrance and a 4m patch in the middle of the channel about 1.25 miles within the entrance. Temporary anchorage may be taken in the entrance to the channel, but the current there is strong. A more secure anchorage without strong currents is in 33m, just S of the inner end of the channel. Local knowledge is necessary. The flood current in the entrance channel has a maximum strength of 5 knots. Slack water is of short duration, especially during spring tides. Vessels proceed with the reef in sight, conning from aloft. Ordinarily the edges of the reefs are clearly visible, but there are several reefs and rocks along the channel; some of these dangers do not discolor well.

**5.3 Pulau Abdon** (0°30'N., 131°07'E.), in the central part of the reef on the W side of the lagoon, has a maximum elevation of 90m. It has been practically stripped of trees and is used by the natives for the cultivation of a type of beet, one of their dietary staples. There are a few houses and coconut palms on the S side of the island. Pulau Reni and Pulau Ruton, N of

the lagoon, about 5.5 miles NE of Pulau Abdon, are two low islands on which there are coconut plantations and several houses. In the central part of each of these islands there is a conspicuous square tree. Pulau Kanobe, on the NW part of the reef N of the entrance to the lagoon, is 61m high and entirely covered with trees and is uninhabited. Mios Mandung, 1.75 miles NNW of Pulau Kanobe, is partly sandy and partly rocky. The sandy portion is covered with coconut palms among which are houses.

**Tides—Currents.**—In the vicinity of Pulau Aju the lowest water that can be expected, occurring in June or July and December or January, is 1m below mean sea level, and the highest tide, occurring at all semidiurnal spring tides is 0.7m above mean sea level. Sometimes the prevailing meteorological conditions are such as to cause a fall of as much as 1.2m below mean sea level.

Currents were observed to set strongly in a W direction, especially through the channel separating the two reefs of Kepulauan Ayu. No surf was observed on the reefs. According to the natives, the NW monsoon causes a prevailing E current which breaks strongly on the reefs.

**Budd Islet** (Moff) (0°32'N., 130°44'E.), about 20 miles NW of Pulau Aju, is low, covered with trees, and uninhabited. The islet has been reported to be a good radar target at a distance of 16 miles.

**Caution.**—Caution must be exercised in approaching Budd Islet, Kepulauan Ayu, and Kepulauan Asia. When the sun is low and the sea calm the edges of the reefs cannot be seen. Further, the reefs rise so steeply that soundings give little warning of approach to them. The reefs dry only at LW springs.

## Islands Northwest of Irian Jaya

**5.4** A chain of islands, the W most of which is Pulau Sayang, described in paragraph 2.64, extends NW for 40 miles from off the W end of Pulau Waigeo.

**Pulau Wayag** (0°10'N., 130°03'E.), Pulau Stephanie, Pulau Quoy, Pulau Coquille, and Pulau Uranie, and the other islands of this chain are rocky with an average elevation of about 198m. The islands are uninhabited except for occasional turtle hunters. The islands are heavily infested with mosquitoes. Many small detached rocks are around these islands. A 4.9m shoal marked by discoloration is 1 mile S of the SW end of Pulau Wayag, and a 7.6m shoal which does not discolor is 1 mile farther S. A 9.1m shoal which discolors well is 1.75 mile S of Pulau Stephanie. The tidal currents in the vicinity of these islands are strong, particularly during spring tides.

The channel between this group of islands and Pulau Kawe is wider and easier to navigate at night than is Selat Bougainville, the passage S of Pulau Kawe. Pulau Deem, a small wooded islet, 52m high, on the S side of the W entrance to this channel and 1.25 miles off the NW end of Pulau Kawe, is a good landmark. Two shoal patches, barely above-water, are 0.75 mile off the N coast of Pulau Kawe, 2.25 and 3.75 miles E of Pulau Deem; they usually break. Currents run through the channel with considerable strength and strong tide rips are frequently encountered W of Pulau Deem.

**Directions.**—Vessels approaching the passage between Pulau Wayag and Pulau Kawe from W should steer for the SE

point of Pulau Uranie on a bearing of 081°, then, when the NE point of Pulau Kawe bears S, alter course to E. Do not approach Pulau Kawe closer than 2.5 miles.

**Pulau Kawe** (0°04'S., 130°08'E.), the largest island NW of Pulau Waigeo, has a very irregular outline. Its N part is very heavily wooded, but the reddish-colored hilly S section is only sparsely wooded. The highest point of the island, near the center of its main part is 717m high. The island is reported to be a good radar target at a distance of up to 30 miles. Two inlets penetrate the E side of the island for a distance of about 1.75 miles. Several rocky islets are off the E side of the island. An islet about 1.25 miles SE of the E most point of Pulau Kawe extends in a SE direction in Selat Bougainville, with a reef at its outer end. Pulau Balabalak, 1.75 miles W of Pulau Kawe, has several low grass-covered hills. There are several rocks between the two islands.

**5.5 Selat Bougainville** (0°08'S., 130°12'E.), a strait between the NW coast of Pulau Waigeo and the island SE of Pulau Kawe, is generally deep, but several shoal patches, including a 9.1m shoal and a 6.7m shoal, 8 miles SW and 9 miles SSW, respectively, from the summit of Pulau Kawe, are at the W end. Farther E, on the N side of the channel, 5 miles NE of the 6.7m shoal and 4.5 miles S of the summit on Pulau Kawe, are two above-water rocky patches. The tidal currents running over the uneven depths cause strong overfalls and eddies. In the narrower parts of the strait currents frequently attain a rate of 3 knots.

The best route for vessels coming to the strait from S is through the channel between the islands of Pulau Ju and Pulau Minyafuin.

When approaching from W, after leaving the strait between Pulau Gebe and Pulau Ju from a position about 4 miles S of Pulau Ju, steer for the summit of Pulau Batanpele on a course of about 104°. This will lead about 3 miles S of the 5.8m shoal SSW of Pulau Kawe. Then alter course to 054°, steering for the high island of Pulau Me. On this course Tanjung D'Entrecasteaux is approached to about 1 mile. When the cape is abeam, steer 036° for the highest islet of Kepulauan Seprang. There is a 0.5m shoal 1.25 miles N of Pulau Me. Pass S of these rocky islets and N of the islets of Kepulauan Loh Loh.

## Pulau Waigeo

**5.6 Pulau Waigeo** (0°10'S., 131°00'E.), lying NW of the W end of Irian Jaya, consists almost entirely of hills and mountains which rise steeply from the sea. The highest elevations are on the N side of the island. **Buffalo Horn** (0°05'S., 130°45'E.), a 958m mountain peak about midway along the N coast is a good landmark, as is Serodjil, 939m high and 14 miles W. Teluk Mayalibit, a bay entered on the S side of the island, nearly divides the island in half. The island, covered with a dense forest, has a hot and moist climate.

The only place on the island that is visited frequently by vessels is **Saonek Road** (0°27'S., 130°45'E.), about midway along the S coast of the island. The only place where good water can be obtained is **Teluk Fofak** (0°03'S., 130°45'E.), on the N side of the island.

**West and SW Coast of Pulau Waigeo.**—These parts of the coast are extremely irregular and are characterized by numerous moderately high mountains with peculiar shapes. **Gunung Meja besar** (Groote Tafelberg) (0°14'S., 130°19'E.), the highest elevation in the W part of the island, 6 miles E of Tanjung Selvele, the W extremity of Pulau Waigeo, is 486m high. Waisilip, 310m high and 3.3 miles ESE of Gunung Meja besar, is conspicuous when seen from SW. Gunung Puri (Kasteelberg), 326m high and 5.5 miles E of Waisilip, is hard to make out, but when identified is a good mark.

Between **Pulau Pef** (0°26'S., 130°26'E.) and **Tanjung Manare** (0°16'S., 130°19'E.), the SW coast of Pulau Waigeo forms a large bight. Teluk Waisai is in the NE part of this bight, and Teluk Warparim, an indentation in the N shore of Pulau Gam, is in the SE part of the bight. Both of these bays afford good anchorage and, except for the reefs and shoals close along their shores, are clear of dangers. A channel close along the shore of Pulau Waigeo E of Tanjung Manare leads to Teluk Waisai, and a channel close around the NW extremity of Pulau Gam provides access to Teluk Warparim.

Vessels must exercise caution in navigating the above-mentioned channels as well as those among the islands in the bight. The use of the chart is essential. Good anchorage is available off Kampung Waisai, at the head of Teluk Waisai. Kampung Waiwoom, the only other village on the SW coast of Pulau Waigeo, is about 4 miles SSE of Kampung Waisai.

**Directions.**—Approaching from Selat Bougainville steer 120° for the peak on Pulau Biantsyi-besar. When Pulau Manare is abeam steer for the S point of the headland N of Pulau Biantsyi-kecil until Pulau Biantsyi-besar peak bears 189°, then alter course for the hilltop on Pulau Gemien bearing 102°. A sheltered anchorage can be found N of Pulau Gemien behind the small island lying N of that island.

Approaching Teluk Waisai from SW, steer for the NW point of Pulau Gemien bearing 050°.

Vessels bound for Teluk Warparim can approach Pulau Pef and Tanjung Ombrab closely. Leaving the bay and bound NW, an inner fairway can be followed. Keep the summit of Pulau Biantsyi-besar in range 307.5° with the middle of Pulau Peniki. When the E point of **Pulau Yeben** (0°29'S., 130°21'E.) bears 220.5°, alter course to 349° for Tanjung Waisai. Approach the latter point until Tanjung Manare bears 280° until the peak of Pulau Biantsyi-besar is abeam, then alter course for the N point of Pulau Ronsuar bearing 258.5°. When Pulau Manare is passed, the archipelago can be left for Selat Bougainville without further difficulty.

**5.7 Off-lying islands.**—Between Tanjung Selepele and the large hilly island of Pulau Gam there are many small islands and rocks. Among the larger of these islands are **Pulau Batanpele** (0°18'S., 130°13'E.) and Pulau Minyaifun, respectively, 4.5 and 7 miles S of Tanjung Selepele. Pulau Batanpele may be identified by its 368m summit. Pulau Ju, 1.75 miles W of Pulau Minyaifun and separated from it by a deep channel, is low. Two shoal patches with depths of 6.7 and 10m are, respectively, 2.5 and 1.75 miles NW of Pulau Ju. About 5.5 miles SSW of the S end of Pulau Ju is a 9.1m shoal. SE of this last group of islands is a group of small, low, coral islands including **Pulau Yasbekar** (Fwojo) (0°24'S., 130°13'E.), Pulau Arar-besar (Mios Arar-besar), Pulau (Jef)

Tsiep, and the Mutus Islands. Another group of islands is NE of the Mutus Islands; one of these, Pulau Biantsyi-besar, has a conspicuous peak, 136m high.

The drying reef on the N side of Pulau Biantsyi-besar has been reported to extend 0.3 mile from shore. Passage between Pulau Biantsyi-besar and its surrounding islands should be avoided because the area has not been fully surveyed.

**Pulau Gemien** (0°19'S., 130°30'E.), E of the last group and close to the shore of Pulau Waigeo, has a number of hills with a maximum height of 226m. These hills aid in identifying it at a considerable distance.

**5.8 Pulau Jeben** (0°29'S., 130°21'E.) and Pulau Apibok are two small rocky islets 5.5 miles WNW of the SW extremity of Pulau Gam. A drying reef is between the two islets, and several rocks extend out SW from the W end of Pulau Jeben. A 2.1m shoal is about 1 mile W of Pulau Jeben. A 5m shoal is located 3 miles ESE of the E side of Pulau Jeben.

The only permanent village on the islands of this group is on the N side of Pulau Minyaifun. Local knowledge is necessary. There is anchorage in 25m sand, off the village. The anchorage can be reached either from E or W by proceeding along the shore of Pulau Minyaifun at a distance of 183m.

**Tides—Currents.**—The highest water level that can be expected at the Mutus Islands occurs in May or June and November or December and is 0.7m above mean sea level. The lowest level to be expected is 0.4m below mean sea level.

**5.9 Teluk Alyu, (Aljoei)** (0°10'S., 130°18'E.), penetrating the W end of Pulau Waigeo for about 12 miles, is very irregular in shape. There are three large islands and several smaller islands in the entrance to the bay. There are two entrance channels one N and one S of this group of islands. Tanjung D'Entrecasteaux is the W extremity of the small W most island of the group. Tanjung Selepele, the S entrance point to Teluk Alyu, is backed by a conspicuous 425m hill. The S entrance, between Tanjung D'Entrecasteaux and Tanjung Selepele is narrowed to some extent by a drying reef projecting 0.6 mile NW from Tanjung Selepele and by a 3.9m shoal on the N side, but the channel itself is clear. In the N entrance channel there are two 5.8m shoals and, farther in, a 12.8m shoal.

The inner part of the bay consists of several irregular arms that are almost landlocked. The channel leading from the outer bay to the inner bay is divided into two narrow passages by along narrow island. A chain of small islets and rocks lies about 0.5 mile off and parallel to the NW side of this island. The N passage has a least width of about 0.2 mile and a least midchannel depth of 5.9m. A rocky shoal extends 0.3 mile off the coast of Pulau Waigeo directly N of the NE point of the narrow island. The S passage is wider at its W end and has the same least depth, but several rocks at its E end restricts its width. A 3.7m shoal is about 0.25 mile N of the small island in the center of the lower inner bay. The shores of the outer bay are steep and rocky with sandy patches in places. The chart is the best guide in entering the outer bay. Except for the small village of Kampung Selepele, near the point of the same name on the S side of the entrance to the outer bay, and another village on the N entrance, there are no inhabitants in the vicinity of the bay.

**Directions.**—The S entrance between Tanjung D'Entrecasteaux and Tanjung Selpele is the easier of the two. Enter the bay on a course of 098° with the S most of the Alyu Islands in range with the S point of the S most island in the entrance to the inner part of Teluk Alyu. This point may be rounded closely. The Alyu Islets are the chain of small islets close off the W part of the long unnamed island dividing the entrance to the inner bays into two channels.

The inner bays are reached either by the passage N of the long unnamed island or by the passage S of it. The S passage is a long winding channel with a least midchannel depth of 11.9m. There are no off-lying reefs. The E end is about 0.2 mile wide in the fairway.

Vessels using the N passage should steer 095° for the small islet NE of the long unnamed island. As soon as the NE point of the long unnamed island bears 135° alter course hard to starboard for that point for not more than 91m, then turn hard to port, setting course for approximately 104° midway between that point and the small islet mentioned above.

Vessels departing by the N passage should keep in the middle of the passage between the NE point of the long unnamed island and the small islet NE of it on course 282°. Straight ahead is a small hilltop on the large 248m at the outer part of the bay. This hilltop is S of and somewhat lower than the 248m summit. When the NE point of the long unnamed island bears 135°, turn hard to starboard on a course of 315°. Follow this course for about 91m, then turn hard to port and proceed on a course of 275° with the small islet that is in the N entrance to the inner bay bearing 095° astern. The route should have a least depth of 18.3m.

From the inner bay a deep and clear passage leads into the spacious N bay. The middle inlet of this bay reaches to within about 0.3 mile of the head of Teluk Saripa on the N coast of Pulau Waigeo.

**Anchorage.**—The outer part of the bay affords anchorage in 42 to 55m. The inner part of the bay and the bay N of it affords excellent anchorage in 26 to 33m.

**Pulau Me** (0°07'S., 130°15'E.), off the NW extremity of Pulau Waigeo 1.5 miles NW of the N entrance to Teluk Alyu, is 233m high. Drying reefs extend off the several points of the island. A clear passage leads between Pulau Me and Pulau Waigeo, but there are frequently heavy tide rips in its narrowest part. A drying rock is 0.75 mile N of Pulau Me and a depth of about 0.45m is close N of this rock.

**5.10 North coast of Pulau Waigeo.**—Except for the shores of the bays this coast is very rocky. In some places the hills rise almost vertically from the water's edge. Most of the inlets along the coast afford suitable anchorage; the most sheltered is Teluk Fofak, which is discussed in paragraph 5.10. Between **Tanjung Bomasi** (Hoek Lamarche) (0°10'S., 131°18'E.), the NE extremity of the island, and **Tanjung Saobasar** (0°05'S., 131°10'E.), about 10 miles NW, there are no anchorages. This stretch of coast is low but it is backed by rather high hills. Tanjung Bomasi is low but can be recognized by Mount Pupri, 262m high and close S of the point. The more conspicuous elevations along this coast were described under the general description of Pulau Waigeo in paragraph 5.5.

**Winds—Weather.**—The winds of the SE monsoon frequently blow with a force of 7 or 8 over the mountains of

this coast, their full strength during part of the night and in the forenoon.

The principal inlets between the W end of the island and Teluk Fofak are Teluk Mane Tep, Teluk Wunoh, Teluk Saripa, and Teluk Arago. Teluk Mane Tep is an open bay E of Pulau Me. Teluk Wunoh, separated from Teluk Mane Tep by a steeply-rising tongue of high land, is an open inlet and is fronted by Pulau Wunoh, 106m high, near which are several rocks, some above water.

**Teluk Saripa** (0°07'S., 130°22'E.), 5.5 miles E of Pulau Me, is a large inlet that penetrates the island for 3.5 miles, and, with the N arm of Teluk Alyu, cuts nearly through the W part of the island. On the N side of the entrance is Pulau Sipsipa, from which a reef with rocks extends NW 0.75 mile. A similar reef extends in a NW direction from the W entrance point of the bay. Some small islets with extending reefs are near the head of the bay.

There is a village on the W side of Teluk Saripa, about 0.5 mile S of the W entrance point, and another at the head of a small inlet on the E side of the bay, about 1.5 miles SSE of the E entrance point.

**5.11 Teluk Arago** (0°03'S., 130°33'E.), 11 miles E of Teluk Saripa, is open to the N; in its S part there are two inlets. An island about midway between the entrance points has a reef with several rocks extending about 0.3 mile to the E. Pulau Schun is off the W entrance point to the bay.

**Caution.**—Kepulauan Seprang, a group of islets, the highest and westernmost of which is 38m high, is on the W side of the N entrance to Selat Bougainville, 5.5 miles NNE of Pulau Me. Kepulauan Loh Loh consists of six small, rocky islets 6 miles E of Kepulauan Seprang. Both of these island groups are good landmarks.

**Teluk Fofak** (0°02'S., 130°44'E.) is entered between Tanjung Forrest and Tanjung Rotsige. About 0.25 mile NNW of Tanjung Rotsige there are some rocky islets shaped like beehives. A 14.6m shoal is in the middle of the entrance to the bay, and foul ground, with Lelede Rocks, extends 0.35 mile from the E shore a short distance within Tanjung Rostige. The entrance channel has a least width of 0.3 mile and depths of 37 to 55m. A reef with an islet projects 0.4 mile NW from a point on the S shore of the bay facing the inner end of the entrance channel. A waterfall is on the N shore of the bay about 1 mile E of the inner end of the entrance channel. Good fresh water can be taken here; about 91m of hose is needed. The shore abreast the waterfall can be approached closely. A village with a mosque is at the head of the bay; it is fronted by a wide mud bank.

**Pulau Manuran** (0°02'N., 130°53'E.), 10 miles ENE of Teluk Fofak and 1.5 miles off the coast of Pulau Waigeo, has a flat central summit 298m high. A 4.9m reef is about 0.75 mile S of the S extremity of the island.

**Pulau Lawak** (0°01'S., 130°57'E.) is 3 miles SE of Pulau Manuran. A channel with depths of 12.8 to 16.4m and a navigable width of 0.2 mile between the reefs on either side separates Pulau Lawak from Pulau Waigeo. A 5m patch lies in the middle of the channel on its NE end.

Between Lawak and Tanjung Wariai, 5.5 miles E, anchorage may be obtained during the S monsoon in any required depth.

**Teluk Kabarei** (0°03'S., 130°58'E.), SE of Pulau Lawak, affords anchorage during the SE monsoon. A pier, which dries, projects from the shore abreast the village of Kabarai on the SE side of the bay.

**Directions.**—Approaching Teluk Kabarei from W proceed through the wide and safe passage between Pulau Waigeo and Pulau Manuran, avoiding the 4.9m reef S of the latter. Keep to the Pulau Waigeo shore in the narrow passage between Pulau Lawak and Pulau Waigeo. When passed the narrow elbow of this passage, bring the S point of Pulau Lawak astern bearing 253°. Proceed on this course, 073°, until the E point of Pulau Lawak is abeam, then alter course to starboard for the anchorage in Teluk Kabarei. A good anchorage for small vessels is in 5.8 to 7.3m E of the three islets at the head of the bay.

**Teluk Boni** (0°03'S., 131°03'E.), at Tanjung Wariai, 5.75 miles E of Pulau Lawak, the coast line turns sharply S for 2.5 miles and then, forming a right angle, turns again to the E. Fronting the bight thus formed is Teluk Boni, low, but covered with high trees. A wide drying reef projecting E 1.25 miles and NW 1.5 miles extends out from the E and N sides of the island. There is a village on the NW side of the island.

**Directions.**—Approaching Teluk Boni from NNW, keep to the Pulau Waigeo side of the fairway. When W of Pulau Boni keep in midchannel and proceed to the anchorage S of Pulau Boni. To leave to the E bring Bombadari Islet ahead bearing 113.5°. When the E side of Pulau Boni bears 349° turn to port and steer midway between the large drying reefs.

Vessels approaching from E should bring the S point of Pulau Boni ahead bearing 270°. Keep this course until the middle of Bombadari Islet bears 205°, then follow the reverse of the directions given above.

**Bombadari Islet** (0°04'S., 131°06'E.), with a drying reef extending N for about 0.5 mile, is nearly 1.5 miles SE of Pulau Boni. There is a wide channel on the W and S sides of Pulau Boni, but the latter, entered from the E, between Pulau Boni and Bombadari Islet, is the better channel. The channel between Pulau Boni and the coast of Waigeo W, affords good anchorage over a bottom of mud and sand. In the harbor, about 0.5 mile S of Pulau Boni, is an area with numerous reefs and rocks. A channel separates Bombadari Islet from the shore of Pulau Waigeo, but there are several dangerous boulders in it and a 0.9m patch NW of Bombadari.

A 5.5m shoal is reported about three miles NNW of Tanjung Wariai.

**5.12 South coast of Pulau Waigeo.**—This section of the coast between **Tanjung Imbikwan** (0°23'S., 131°15'E.), the SE extremity of the island and the SW extremity of Pulau Gam, is indented by two large bays, Teluk Mayalibit and Teluk Kabui. A chain of reefs, shoals, and small islets paralleling the coast at an average distance of a little over 2 miles, extends from the E end of Pulau Mansuar, S of Pulau Gam, to a position abreast of Tanjung Imbikwan and then NE to Tanjung Momfafa, 7.75 miles NE of Tanjung Imbikwan. Shoal patches of 5.9 to 9.1m are reported up to 7 miles E of Tanjung Momfafa, the E extremity of Pulau Waigeo. It has been reported that depths in the vicinity of the 5.9m shoal are less than charted. Between

this chain of dangers and the coast of Pulau Waigeo there is a deep channel which can be used when the reefs and shoals can be easily distinguished. The preferred course on this inside channel leads close along the shore. Off the entrance to Teluk Mayalibit there is an opening in the off-lying reefs. Close inside this opening is an unmarked 3.2m shoal which seldom discolors. Abreast the village of Kampung Wakre, 5.5 miles WNW of Tanjung Imbikwan, the off-lying dangers recede toward the shore to such an extent as to make it absolutely necessary for vessels to be able to see the reefs. A stone, which cannot always be seen, is 0.75 mile SW of the village.

**5.13 Memyai Islet** (0°22'S., 131°11'E.), 3.5 miles W of Tanjung Imbikwan, is a 134m wooded hill and is a good mark for entering the inner channel through the opening WSW of that islet. Pulau Wayam, 1 mile S of Tanjung Imbikwan, is quite low, but is made conspicuous by its high trees and is a good mark for vessels rounding the E side of Pulau Waigeo. Tanjung Imbikwan, backed by a 490m elevation, is also conspicuous. Directions for the inner channel are given later in this sector.

**Teluk Mayalibit** (0°21'S., 130°56'E.), entered from the S coast at a position 18 miles W of Tanjung Imbikwan, extends in a NW direction nearly across Pulau Waigeo and reaches to within 1.75 miles of Teluk Fofak on the N coast. Tidal currents and tide rips in the entrance are very strong and vessels over 91m long are advised not to enter. It is advisable to wait for the turning of the tide before entering. The tide turns 3 hours before or after HW at Saonek. The currents in the narrows attain a maximum rate of 5 knots, and in the wider, southern part, rates of 3 to 4 knots have been recorded. In the narrow parts eddies are formed and along the shores there are counter-currents. Vessels are advised to anchor before entering and then proceed after observation of the current.

Locally it is reported to rain often in August and September and during these months the mountains are often clouded.

**Directions.**—The following general directions should assist in passage of the channel through the strait.

A midchannel course of about 308° should be steered for the first mile through the strait, then the point on the W side of the channel, about 2 miles NW, should be brought into line with the point beyond it on the opposite side of the channel bearing 330°, and kept in line for another mile, after which the W shore should be followed at a distance of 0.13 mile until the point on the E shore is abeam. There is a 1.8m shoal just outside the strait entrance. A midchannel course should then be held to and through the narrows, which is less than 0.2 mile wide, and where the channel turns abruptly W. Past the narrows the channel is clear of shoals to **Pulau Manil** (0°18.3'S., 130°54.0'E.) which should be passed on the N side on entering, and on its S side when leaving the bay due to the tidal stream disturbances in this vicinity.

The depths in the bay gradually shoal toward its head and there are generally depths of 9.1 to 24m over most of the bay within the entrance. The entrance itself is less than 183m wide in the fairway in places and is quite tortuous, but depths are 10.9m or more over the recommended track. It is reported that a vessel drawing 5.9m can proceed to nearly all parts of the bay. The bottom is mainly soft mud. The chief off-lying dangers are a 1.8m shoal and a 6.4m shoal about 0.75 mile E

and 2 miles ESE, respectively, from the W entrance point to the bay. A reef, surrounded by shoal water, is about 2.25 miles inside the entrance on the E side of the channel.

A moderate speed should be maintained in the vicinity of Pulau Manil in order to overcome the effects of the current. In entering, after passing the narrows in the vicinity of the same islet give its NW point a wide berth when the tide is setting out.

There are small islets in the narrow channel about 1.5 and 2 miles NW of the NW extremity of Pulau Manil.

Small vessels intending to anchor in the vicinity of the village of Kampung Pitsjor should first pass N of Pulau Manil, then turn around that islet and pass between it and the E end of Pulau Waiwah, then proceed to anchorage.

The narrow Mulu Bayong, separating Pulau Waiwah from the coast SW is recommended only for shallow-draft vessels. A river discharging into the middle of the passage frequently carries debris into the passage, causing obstructions to navigation.

**5.14 Saonek Roads** (0°28'S., 130°47'E.) consists of Pulau Saonek-kecil and Pulau Saonek-besar, two islets off the S coast of Pulau Waigeo, about 11.5 miles SW of the entrance to Teluk Mayalibit. Pulau Saonek-kecil, the smaller NE islet, is wooded and is 71m high. Pulau Saonek-besar is well-wooded and is 45m high near its SE end. A village is on its NW side. The islet is fringed by a drying reef extending nearly 0.25 mile from its SW side. A reef with a depth of 3m is 1.5 miles NW of Pulau Saonek-besar. The reef and the fringing reef on the SW side are marked by discoloration. A shoal with a least depth of 3.6m is about 3 miles E of Pulau Saonek-besar.

**Tides—Currents.**—At Saonek Roads anchorage the maximum rise and fall of tide that can be expected are, respectively, 0.6m above and 0.6m below mean sea level. Strong currents may be encountered around the island.

**Anchorage.**—Anchorage can be taken in 29m, sand, NW of Pulau Saonek-besar, on the axis of the main pier of the village. Vessels may anchor closer to the island, but the tidal currents are strong and it is advisable to run a line to the shore if anchoring farther in shore.

**Kampung Saonek** (0°28'S., 130°47'E.) (World Port Index No. 53040), on the beach on the NW side of Pulau Saonek-besar, is the only place of commercial significance on Pulau Waigeo. Jungle products from this area are collected here for export. Two small boat piers and a larger pier for sailing craft front the village.

**Teluk Kabui** (0°22'S., 130°38'E.) is a wide inlet in the S coast of Pulau Waigeo NW of Saonek Road anchorage. Pulau Gam closes off the greater part of the otherwise open section of the inlet. East of Pulau Gam is an entrance channel 1.75 mile wide. Pulau Ura, an island 2 miles inside the entrance, is 126m high. The channel W of this island is safe and deep. Vessels may encounter strong currents in the entrance channel. Anchorage can be taken anywhere in the bay. Pulau Myanef, an islet in the NW part of the bay, fronts Teluk Sesil, a small comparatively shallow arm of Teluk Kabui. There are several small villages in Teluk Kabui, among them are Kampung Ura, on the islet of the same name, Kampung Warai, on the N side of Pulau Myanef, and Kampung Menyaiifun, on the N shore of Teluk Kabui.

**Selat Kabui** (0°26'S., 130°33'E.), a strait separating Pulau Gam and Pulau Waigeo, leads from Teluk Warparim into the SW part of Teluk Kabui. It is a very narrow channel with a least depth of 1.2m and can be used only by small craft with local knowledge. The tidal stream in the strait sometimes attains a rate of 4 knots, causing tide rips and eddies.

**5.15 Pulau Gam** (0°30'S., 130°35'E.) has high steep coasts. The highest point on the island, a hill 405m high, is 3 miles W of Tanjung Jenanas, the E extremity of the island. Another hill, 296m high with another peak on its S side, is 2.5 miles S of the highest point. These two hills are good landmarks when seen from E and SE. The island is not very conspicuous when seen from SW. Two inconspicuous islets, Friwin and Friwinbonda, each 10m high, are close off the E end of Pulau Gam. Pulau Camphuys, an islet 2 miles SE of Friwinbonda, is 42m high, rocky, and covered with vegetation. Pulau Kerupiar, a rock about 10m high, is close off the coast of Pulau Gam, 2.5 miles SW of Friwinbonda. Several reefs and shoal spots in the channel between Pulau Gam and Pulau Mansuar do not discolor well. The currents in this channel are strong. Only small vessels can use the small bays on the S and W sides of Pulau Gam.

Pulau Yanggelo is an islet off the SW extremity of Pulau Gam; a 3.2m shoal is 0.5 mile W of Tanjung Ngan, the W extremity of that islet.

## Selat Dampier

**5.16 Selat Dampier** (0°37'S., 130°45'E.), the strait between Pulau Waigeo and Pulau Batanta, has several channels. The main channel leads close S of Pulau Mansuar, Pulau Kri, and Pulau Koh and N of Pulau Augusta and Pulau Duiven. Another channel leads along the S side of the bank on which Pulau Augusta and Pulau Duiven lie, and a third channel is between the N side of Pulau Batanta and the chain of reefs and islets to the N. A bank of soundings which vary considerably and extending across Selat Dampier connects Pulau Batanta and Pulau Waigeo. A chain of reefs and shoals on which are Pulau Augusta, Pulau Duiven, Pulau Jerief, and Kepulauan Tapok (Mansfield Islands), and through which the two S channels lead, extends in an ESE direction from a position about 2 miles W of Pulau Augusta to Karang Batanta, a distance of more than 30 miles.

**Tides—Currents.**—The character of the tides and the rise and fall of tide in Selat Dampier are essentially the same as at Saonek Roads which has been discussed earlier in paragraph 5.14.

Vessels off the W entrance to Selat Dampier, between **Tanjung Soos** (1°10'S., 129°58'E.), marked by a light with racon at the E extremity of Pulau Kofiau and **Tanjung Mabo** (0°56'S., 130°23'E.), the SW extremity of Pulau Batanta, during the months between September and April, will usually encounter a S current which is considerably influenced by the direction and force of the wind. Between May and August the current in this vicinity sets in a N or NW direction. During the turning periods of the monsoons there is scarcely any current in this vicinity.

At the height of the NW monsoon, in the narrow part of the strait, between Pulau Duiuen and Pulau Jerief, the ebb current

sets ENE for 6 to 8 hours at a rate of 4 to 5 knots at springs, and 1 to 3 knots at neaps. The flood current sets SW for 3 or 4 hours but is weak. At the height of the SE monsoon the flood current here sets W for 8 to 10 hours, setting successively to the WSW, SW, and SW by S; it then attains its greatest rate, which at springs sometimes exceeds 5 knots, and at neaps, 4 knots. The ebb at this season sets ENE or NE, but it is neither strong nor long lasting. It has been observed, however, to attain a rate of 4 knots for periods of 1 to 2 hours.

At the E entrance to the strait the ebb current is generally stronger during both monsoons. During the NW monsoon an E current sometimes runs for two or three consecutive days.

**Directions.**—Vessels coming from W set an easterly course on the high NW point of Pulau Batanta, taking care not to approach the southW most island of the Kepulauan Fam group within 2 miles because of the detached reef lying S of that island. Close the NW point of Pulau Batanta to about 1.5 miles distant, then steer 036° toward the W point of Pulau Mansuar. When the 186m hill at the NW extremity of Pulau Batanta bears 203° astern, alter course to 023° in order to pass W of the 9.1m shoal W of Pulau Augusta. When the E points of Pulau Duiuen and Pulau Augusta come in range bearing 108°, change course to 070° and pass S of Pulau Mansuar, Pulau Kri, and Pulau Koh.

If proceeding to Saonek Roads anchorage take care to remain outside the line joining Pulau Koh and Pulau Sanoek-besar until the reef NE of Pulau Koh has been passed. Pulau Saonek-besar may be passed on either side, but in rounding that island to the W they must give a good berth to the reef extending out from the island. The highest point of Pulau Gam and Pulau Saonek-besar hill in range bearing 282°, leading well S of the SW extremity of the ridge of reefs E of Pulau Saonek-besar and is a good mark for vessels approaching Saonek Roads anchorage from E. There is a 3.7m shoal 3 miles E of Saonek Besar.

Vessels desiring to take the channel close along the Pulau Waigeo shore when leaving Saonek Roads anchorage should pass N or S of Pulau Saonek-kecil and parallel to the Pulau Waigeo shore about 0.5 mile off until E of Teluk Mayalbit at which point the distance offshore should be increased to 1 mile. The reefs are easily detected. Southeast of Tanjung Babula, SW of the entrance to Teluk Mayalbit, there is an opening in the ridge through which a vessel may pass, but there is no clearly defined range for navigating it. A 1.8m shoal is N of this entrance. At the E end of the ridge there is also a passage, but here, too, there are no marks, therefore, local knowledge is necessary. With good visibility it offers no difficulty, but the small reef under the shore, which is passed to the S, was barely discernable during a survey.

Vessels can pass close outside Pulau Memyai, which has practically no coastal reef. Small craft can pass between this islet and the shore, but this cannot be recommended because of strong currents. Beyond Pulau Memyai there is a convenient channel between the shore and Pulau Wayam. A midchannel course is recommended. Pass either E or W of Pulau Wayam having due caution for the reef extending NE of the E end of that islet.

Eastbound vessels using the channel that passes S of Pulau Augusta and Pulau Duiuen should bring Pulau Camphuys to bear 028°, midway between Pulau Kri and Pulau Koh, and

make good that course; it leads across the ridge E of Pulau Duiuen over depths of 10.9 to 11.9m. Vessels preferring deeper water should, when Pulau Duiuen is about on the port beam, turn two or three points to starboard until the NW side of Pulau Camphuys is just open of the SE side of Pulau Koh, bearing 028°; the small mountain N by W of Pulau Saonek-besar will come into range with the NW side of Pulau Camphuys. Vessels coming from E bring the last-named marks in range astern in good time to keep on that range line until Pulau Augusta and Pulau Duiuen are in range, when course may be set to pass N of the NW points of Pulau Batanta.

The channel along the N coast of Pulau Batantais easy to navigate. Between the NW point of Pulau Batanta to the N point of **Pulau Wruwarez** (0°47'S., 130°46'E.) it is advisable to remain N of the line that joins the N point of **Pulau Dajang** (0°47'S., 130°30'E.) to the N point of Pulau Wruwarez in order to clear the dangers lying off the coast. Subsequently the outermost points of Pulau Batanta can be passed close-to. There is a 4.6m shoal extending 0.8 mile off the coast from the point 5 miles E of Pulau Wruwarez. When **Tanjung Kandorwa** (0°50'S., 130°54'E.) is in range with the E side of **Pulau Ayemi** (0°48'S., 130°54'E.), just clear of Tanjung Evansas, the easternmost point of Pulau Batanta, course should be changed to bring this range astern; this course leads across the ridge W of Karang Batanta reef. Vessels bound to the S from Tanjung Evansas should round that point and then proceed in a southerly direction to the deep channel E of Teluk Sagewin.

### Off-lying Islands on the N Side of Selat Dampier

**5.17** The Yef Doif group of islands have been described in paragraph 2.67.

**Kepulauan Fam** (0°37'S., 130°14'E.), off the W entrance to Selat Dampier, consists of two groups of islands separated by a clear deep channel.

**Pulau Penemu** (0°35'S., 130°16'E.), the largest island of the NW group, and Pulau Keruo, about 1 mile E, are high and rocky. A rocky peak, 214m high, on the N end of Pulau Penemu, helps to identify the island. Pulau Penemu is the only island of the group that is inhabited. A bank of soundings with a least depth of 7.8m extends WSW 8.5 miles from the W side of Pulau Penemu. The passage N of Pulau Penemu NE to Pulau Yeben is clear.

A 5m patch lies about 4.25 miles E of the S point of Pulau Penemu.

**Pulau Fam** (0°39'S., 130°17'E.), the largest and northeasternmost of the SE group of islands, is about 2.5 miles S of the S end of Pulau Penemu. Near the E end of the island are two flat hills of about equal height and a conspicuous, flat-topped, 139m hill is in its W part. There is a village on the N tip of Fambemuk, a small islet to the S. The other islands SW of Pulau Fam are low, coral formations with high trees visible for 16 miles.

Pulau Mingiman, 55m high, and Pulau Jar, SW of Pulau Fam are coral islands with high trees. These islands are surrounded by deep water but there are many shoals, most of which are marked by discoloration around the island between these last two and Pulau Fam. A 2.1m shoal is about 1 mile S of Pulau

Mingiman. A conspicuous tree is on a reef about 8.5 miles E of Pulau Mingiman.

Anchorage may be obtained in a few places in this S group. Tidal currents may attain a rate of 2 to 3 knots.

**Karang Bata** (Woodford Reefs) (0°42'S., 130°25'E.), about midway between the S part of Kepulauan Fam group and Pulau Augusta, are three rocky patches with depths of 4.9 to 5.8m. These reefs have little discoloration.

**5.18 Pulau Mansuar** (0°36'S., 130°34'E.), about 3 miles S of Pulau Gam, has three inconspicuous peaks, the highest of which is 383m high at about the middle of the island and a lower but more conspicuous 281m hill at its E end. Airborei Islet is near the W end of an extensive drying reef, extending 3.5 miles NW of the W end of Pulau Mansuar. A 10.9m shoal is 1.5 miles SW of Pulau Mansuar.

**Pulau Kri** (0°34'S., 130°41'E.), 215m high, is close E of Pulau Mansuar and is connected to it by a drying reef on which is a small islet. The village of Yanbuba lies at the W end of the island. Pulau Koh, 41m high, is on a drying reef 0.5 mile NE of Pulau Kri. A detached 3m shoal is 1.5 mile NE of Pulau Koh. There is deep water SE of the islets.

Pulau Augusta and Pulau Duiven, 2.25 and 3 miles, respectively, S of the W end of Pulau Mansuar, are low and flat but are covered with high trees visible for 16 miles. They are near the W edge of a ridge extending across Selat Dampier. There is a detached 9.1m shoal about 1.75 miles W of Pulau Augusta and several 10.9m shoals in the area. Although there is deep water in the channel separating Pulau Augusta and Pulau Duiven, strong currents through the passage make its use inadvisable.

**Pulau Jerief** (0°42'S., 130°42'E.), at the SE end of an extensive reef 7.5 miles ESE of Pulau Duiven, is similar in appearance to Pulau Augusta and Pulau Duiven.

Kepulauan Tapok (Mansfield Islets), three in number are small, low, and flat, lying on separate drying reefs about 4 miles E of Pulau Jerief. The SW most is brush covered, the middle islet has higher growth, and the northeasternmost has trees visible for a considerable distance.

**Caution.**—Avoid the area between the reefs on which Pulau Jerief and Kepulauan Tapok lie between which there may be unknown dangers.

## Pulau Batanta

**5.19 Pulau Batanta** (0°51'S., 130°40'E.), on the S side of Selat Dampier and separated from Salawati by Selat Sagewin, is about 34 miles long E-W and 3.5 to 8 miles wide. It consists principally of a chain of moderately-high and densely-wooded mountains with a maximum elevation of 1,070m. It can be seen for a distance of 30 miles.

**5.20 North coast of Pulau Batanta.**—The N coast, very irregular in outline, consists of projecting spurs of mountain chain, between which are several deep bays. Several islands are along the coast. All of the bays, except the W most, afford good sheltered anchorage, but there are no good marks for entering them. There are a few small villages on the N coast.

**5.21 West coast of Pulau Batanta.**—The W coast is very steep and there are no off-lying dangers. Two bays on this coast are so deep and exposed that they afford no anchorage. **Tanjung Mabo** (0°55'S., 130°23'E.), the SW extremity of Pulau Batanta, has a 99m hill at the end of a long low neck of land which from a distance appears as an island. **Pulau Nelajan** (Vischers Island) (0°55'S., 130°22'E.), 65m high, W of Tanjung Mabo and separated from that point by a deep and clear 1.25 mile-wide channel, is wooded and can be approached closely from all sides. A 186m cone-shaped elevation is on the NW extremity of Pulau Batanta and is conspicuous when seen from NE and SW; from a distance it appears as an island.

**5.22 South coast of Pulau Batanta.**—The S coast of the island is very steep-to and consequently there are no good anchorages along this coast. Kampung Jodlo, the only village of any importance in this vicinity is on this S coast near the E entrance to Selat Sagewin.

**5.23 East coast of Pulau Batanta.**—**Teluk Marchesa** (0°49'S., 130°53'E.) occupies most of the E side of Pulau Batanta. Pulau Ayemi, 183m high, is about midway between the 2 mile wide entrance between Tanjung Makoi and Tanjung Kandorwa. A 0.6 mile, free of dangers, is N of Pulau Ayemi. The narrow channel S of the island can only be used by small craft with local knowledge and with the reefs showing. Vessels enter the N channel on a westerly course past the N side of Pulau Ayemi and steer for Maribio Islet, a small islet at the head of the bay.

Safe anchorage can be taken in the N part of the bay in 29 to 40m, mud and sand. In the S part of the bay, S of the N tangent of Pulau Ayemi extended to Maribio Islet, and in the coves on the N side of the bay, there are numerous reefs. Depths of 9.1m extend 0.5 mile off the NW and W shores of Ayemi, and there is a 9.1m shoal 0.7 mile NW of the W end. Rocks and a reef with depths between 0.5m and 5m extend 1 mile N of the coast into the bay NW of Tanjung Kandorwa. These reefs can be avoided by keeping the N side of Pulau Ayemi bearing more than 90° and Maribio Islet bearing more than 250°. A village is on Mesawai Islet, situated in the S part of the bay.

**5.24 Karang Batanta** (0°47'S., 131°00'E.), the SE extremity of the ridge extending across Selat Dampier from Pulau Augusta and Pulau Duiuen, ranges 3 to 8 miles E of Tanjung Evanas, the E extremity of Pulau Batanta. The least depth on the reef is 3.2m. The currents around the reef are very irregular.

Vessels bound from Selat Sagewin or Teluk Marchesa desiring to cross Karang Batanta should make good a course of 030° close along the E end of Pulau Batanta. This course leads across the reef with a least depth of 11.9m or 12.8m. Because currents set strongly across this course at a position N of Tanjung Evanas, it is advisable to keep Tanjung Kandorwa, on the S side of Teluk Marchesa, in range with Pulau Ayemi, just clear of Tanjung Evanas. There is a 9.1m patch 2.5 miles NNE of Tanjung Evanas.

**Selat Sagewin** (0°57'S., 130°44'E.), between Pulau Batanta and Pulau Salawati, is about 28 miles long from the NW

extremity of Pulau Salawati to the E extremity of Karang Batanta and varies from 1.75 to 3.75 miles wide. The S shore of the strait will be discussed under Pulau Salawati, beginning in paragraph 5.32.

**Pulau Sagewin** (0°57'S., 130°39'E.), Tanjung Dadi, and Tanjung Wasaget, all on the S side of the W entrance to Selat Sagewin, are conspicuous for a good distance and are good landmarks for that entrance. Heavy rains often obscure the entrances to the strait and makes navigation through it difficult at night.

A large white beacon was reported to stand on Tanjung Wasaget, 0.75 mile S of Tanjung Dadi.

### Northwest Coast of Irian Jaya (New Guinea)

**5.25** The NW coast of Irian Jaya from **Tanjung Yamursba** (Cape of Good Hope) (0°21'S., 132°25'E.) to **Tanjung Sorong** (0°49'S., 131°13'E.), 80 miles to the WSW, is generally high and closely backed by high mountains but in places there are tracts of level land near the shore. There are a number of scattered villages and several unimportant streams empty into the sea along this stretch of coast. Vessels coming from Selat Sagewin or Selat Sele usually proceed rather closely along the coast and are able to take bearings on the numerous hills between Teluk Dore Hum and Tanjung Yamursba. The most important of these are: a hill, 435m high, W of Teluk Dore Hum; Olifant, 470m high, 4.5 miles SW of Tanjung Sawasar; a round hill, 511m high, 2.5 miles E of Tanjung Sawasar; and **Tonggerap** (0°39'S., 132°03'E.), the most conspicuous peak along this coast, 8.75 miles E of Tanjung Sawasar.

The N part of this stretch of coast is backed at a distance of 10 miles to the S by the Tamrau Mountains, which are usually masked by clouds. Among the mountains are many peaks with elevations of 914 to 1,707m, but they are of little use for navigation.

**Tanjung Yamursba** (Cape of Good Hope) (0°21'S., 132°25'E.), the N extremity of Irian Jaya, can be identified by some yellow stripes; on nearer approach, a small lower cape will be seen projecting from it at right angles.

From Tanjung Yamursba, the coast trends WSW for 80 miles to Tanjung Sarong, at the N entrance to Selat Sele. Between Tanjung Yamursba and Tanjung Oparai, 10 miles to the WSW, there is a wide bank of soundings on which a vessel may anchor in depths of 9.1 to 18.3m during the SE monsoon. This anchorage, however, is untenable during the NW monsoon because of heavy swell.

Kampung Koor is a village 5 miles WSW of Tanjung Yamursba and 0.5 mile E of the mouth of the river Sungai Koor. This river is navigable for small boats for about 0.75 mile. A conspicuous stone, covered with vegetation, is off the village. As stated above, anchorage can be taken anywhere along this coast. Small boats can land on the E bank of the river just inside the entrance, or in the lee of some rocks close E of the mouth of the river.

From **Tanjung Oparai** (0°23'S., 132°16'E.), 5 miles W of Kampung Koor the coast trends SW for about 28 miles to Tanjung Sasawar. The first part of this coast is level at places,

especially at the mouth of the river, Sungai Wewe. From a point midway between Sungai Wewe and Tanjung Sansapor to Tanjung Sasawar the coast, except for a patch of level land close S of Tanjung Sansapor, where the river Sungai Wesan discharges, is steep. Between Tanjung Sansapor and Tanjung Kasbi, 10 miles to the SW, the coast recedes, forming an open bay.

A drying reef extends 0.13 mile W from the village of Kampung Sansapor and a coral reef with a depth of 0.9m is 1 mile SW of the village. The drying coastal reef extends about 0.25 mile offshore from a point 1.25 miles NE of Tanjung Kasbi. A group of three drying rocks is close offshore about 3 miles NW of Tanjung Kasbi and a 2.3m patch is about 2.5 miles NNW of the same point.

**5.26 Mios Su** (0°21'S., 132°10'E.) are two small coral islands, Middelburg and Mios Su (Amsterdam), which are, respectively, 2.5 and 4.5 miles offshore and 4 to 6 miles W of Tanjung Oparai. They are low, reef-fringed, and covered with high trees visible for a great distance. A light is shown from the N coast of Mios Su.

A very shallow reef about 0.5 mile wide extends 1 mile from the NW point of Mios Su. The NE point of Middelburg is low and a drying reef extends 0.5 mile N from that island.

The channel between Middelburg and the shore is about 2 miles wide and is navigable except for a 6.4m reef 1.5 miles E, and a 9.1m shoal about 0.5 mile farther N. A pier is on the S side of Middelburg. Both islands have coconut plantations.

The islands are difficult to make out at night from W unless the vessel is fairly close inshore because of the dark coast behind them, but they can always be seen from E because they are then open of the coast. The channel between these islands and the mainland can be used at night with good visibility.

**Anchorage.**—Anchorage is available in 46m, good holding ground coral and mud, S and W of Mios Su (Amsterdam Island). Anchorage is also available in 14.6m, good holding ground coral and sand, S of Middelburg close to the mainland shore. In this vicinity, however, heavy swells are caused by SW winds that usually blow during the night and in the early morning hours.

**Mega Road** (0°40'S., 131°51'E.) has the Sungai Mega discharging into the sea S of Tanjung Sawasar. A small village is on the S side of the mouth of this river. Three drying reefs are within 1.5 miles WNW of the river and a conspicuous above-water rock is about 0.25 mile outside the outermost reef. A detached 4.5m shoal is about 1 mile NW of the rock. Vessels can anchor in depths of 5.8 to 9.1m, mud and sand, in the small roadstead inside the reefs. Anchorage can also be taken outside the road in depths of 10.9 to 14.6m to the NE between Mega Road and Tanjung Sansapor.

Near Sungai Mega the mountains are back from the coast. For a distance to the W of the mouth of the river is a beach interrupted only in places where a projecting cliff rises directly from the sea. From Mega Roads the coast trends WSW to Teluk Dore Hum with no intervening bights. A 2.3m coral reef is about 5.5 miles W of the mouth of Sungai Mega and 1.25 miles offshore. A 6.4m shoal is 1.5 miles N of this reef. Tanjung Asi, 12.5 miles WSW of Mega Road, can be identified by a mountain spur 550m high, to the E.

**5.27 Kampung Asbakin** (0°45'S., 131°41'E.), on the banks of the river Sungai Asbakin, about 1.25 miles W of Tanjung Asi, is on a flat beach which has steep-to rocks on both ends. The coastal range in this vicinity is a reddish stone with a species of cajaput tree on it. A narrow reef with a least depth of 5.8m extends about 3 miles in an ENE-WSW direction 2.5 miles NW of the village and an 11.9m shoal is about 2 miles NW of the village. Kampung Sausut is about 5 miles W of Kampung Asbakin on the bank of a small stream with the same name.

Teluk Dore Hum, penetrating the coast for 2.5 miles in a W direction, is S of **Tanjung Dore** (0°44'S., 131°32'E.). It affords good anchorage in a depth of about 28m, sheltered from N swells. Pulau Hum, a small islet and covered with trees is off the E entrance to the bay. A wide reef extends W and NE from this islet and a shoal area with several drying reefs extends W nearly 1 mile and N 1.5 miles from the islet. A detached shoal with a least depth of 2.3m is about 1 mile E of Tanjung Dore.

The bay entrance channel, about midway between Tanjung Dore and Pulau Hum, is deep and about 0.15 mile wide. Two detached 3.9m shoals are in the middle of the bay, about 1.5 miles SW of Pulau Hum.

Kampung Makebon is at the N entrance point to the bay.

**Tides—Currents.**—In Teluk Dore Hum the lowest water that can be expected is 1m below mean sea level, and the highest HW, occurring at all semidiurnal spring tides, is about 0.6m above mean sea level.

The coast between Tanjung Dore and Tanjung Sorong is uninhabited and has no landmarks of value to navigation. This stretch for the most part is so steep-to that it affords no anchorage; however, vessels may anchor in fine weather in 46m 0.33 mile offshore off the mouth of Sungai Warsamson (Samson), about 9.25 miles WSW of Tanjung Dore. This stream is navigable by small boats for about 1 mile. Batu Lobang, about 1.75 miles NE of the mouth of Sungai Warsamson, is a rock about 24m high with an arched opening visible from close E.

## Selat Sele

**5.28 Selat Sele** (1°10'S., 131°10'E.) separates Salawati from Irian Jaya. The depths in the N part are irregular, but nearly any deep-draft vessel can pass through the strait without difficulty.

The oil facilities of Sorong and Sorong Doom are on the E side of the N part of the strait. Kasim and Salawati Oil Terminals, in the narrow S part of the strait, are approached from the N part of the strait through a swept channel which leads from a position 1°00'00"S, 131°10'48"E to the terminals. The minimum depth in the area of the mooring system is 16m. The approach channel has a minimum depth of 15m. Ships up to 305m long with drafts not exceeding 13m can make the passage.

The central part of Selat Sele is encumbered by many islands, islets, shoals, and other obstructions, and the S part of the strait becomes increasingly narrow. Passage through the strait is via a swept, sometimes tortuous channel marked by lighted ranges and other aids.

**Winds—Weather.**—During a survey of Selat Sele, S and SE winds of variable force were experienced during July and

August. In September, October, and November the force of wind decreased and periods of calm intervened. There were persistent light N and NW winds during February and March. West winds in February and March were occasionally accompanied by intermittent rain squalls, which were sometimes quite local and usually occurred at night or in the afternoon. The rainfall during the E monsoon is usually very slight.

More recently it is said that winds may attain hurricane force in local storms and vessels should carry enough ballast to insure maneuverability in the restricted waters of the strait.

**Tides—Currents.**—In the wide N section of Selat Sele, tidal currents are not perceptible. In the narrow section at the S end of the strait currents can attain a rate of 3 to 4 knots, but they cause no difficulty in navigating the strait.

**Pulau Unagimim** (1°12'S., 131°06'E.), an islet near the middle of the strait, the maximum rise and fall of tide that can be expected are, respectively, 0.4 above and 0.5m below mean sea level. At the S and N entrances to the strait HW occurs, respectively, 3 hours earlier and 0.5 hour later than at Pulau Unaginim.

A light is exhibited from a beacon on a drying reef close NW of Unaginim.

**5.29 Tanjung Sorong** (0°49'S., 131°14'E.), the NE entrance point to Selat Sele, is moderately high; reefs project almost 0.75 mile from this point.

**Pulau Ram** (0°50'S., 131°13'E.), 65m high, close SW of Tanjung Sorong, is covered with tall trees. Three islets covered with vegetation are on the drying reef N of Pulau Ram, and there are some low black rocks on the reef that extends almost 1.25 miles W from the island. A dangerous wreck is about 1 mile off the S coast of Pulau Ram. There is a light on Pulau Ram; a radiobeacon and racon transmit close E of the light. A light is also exhibited from the rocks W of it.

Sorong Roads is in the NE end of Selat Sele, about 4 miles S of Tanjung Sorong.

Tanjung Noejew (Nuyew) is about 3.5 miles S of Tanjung Sorong. Close E of the point are piers and offices and many shore structures. A light is shown from **Dopior Islet** (0°53'S., 131°14'E.), close off the point and another light is shown from the root of the oil pier at Sorong.

The passage between Tanjung Noejew and Dopior Islet is obstructed and should not be used.

**Sorong** (0°53'S., 131°14'E.) is built on the shore E of Tanjung Noejew. Sorong Doom is a native village on Pulau Doom, an island to the S. The water tanks and oil tanks at Sorong are good landmarks visible in daylight for a considerable distance seaward.

**Pulau Tsirof** (0°53'S., 131°12'E.), 53m high and marked on its SW point by a light, is the W most of the islands of Tanjung Noejew and is about 2.5 miles SSW of Pulau Ram. It is wooded and has some gardens on it. Some above-water rocks are off the SW side and shore reefs extend 0.25 mile offshore on the N side. Three detached reefs with depths of 0.9 to 3.3m and marked by discolored water are 0.5 to 0.3 mile off the N shore. The N most of these reefs is marked by a lighted buoy.

A small isolated 1.5m reef is 0.5 mile ENE of the NE end of Pulau Tsirof.

A stranded wreck with a beacon marks a reef with a least depth of 1.8m, 0.3 mile S of the SE end of Pulau Tsióf. A shoal, with a depth of 0.9m is S of the 1.8m reef.

A coral reef, about 91m in diameter and with a least depth of 3.9m, is 0.5 mile ESE of the SE point of Pulau Tsióf.

**5.30 Pulau Doom** (0°53'S., 131°14'E.), 38m high, is about 0.5 mile SW of Tanjung Noejew. A light-beacon (starboard hand) stands on the summit of Doom, and a light (starboard hand) stands on the foreshore on the N side of the island. The passage between Pulau Doom and the mainland was wire-dragged to a depth of 14m, however, a 6.1m shoal is 0.2 mile E of the NE extremity of Pulau Doom and a 5.5m is 0.25 mile N by W of the W extremity of the island. There is a sunken wreck, dangerous to surface navigation, along the coast close S of Tanjung Noejew.

The channels between Tsióf and Nanah, an island about 1.5 miles SE, and that between Nanah and Doom, are encumbered with scattered dangers and neither should be attempted without local knowledge.

**Caution.**—A beacon marks a drying reef 0.7 mile SSE of Pulau Nanah. A stranded wreck is on the SW side of the reef about 0.5 mile S of the beacon. Beacons 0.3 mile SW of the S end of Pulau Nanah mark a reef extending in that direction. Another beacon is about 0.25 mile WNW of the S end of Pulau Nanah.

A 1.4m shoal and a shoal swept to 7.6m are 0.2 mile SE and about 0.3 mile SSE, respectively, from the S end of Pulau Nanah, close W of the W edge of the swept channel. Foul ground extends from these dangers to Pulau Nanah.

A detached reef, 0.15 mile off the S end of Pulau Doom, is marked by a beacon. Two seaplane mooring buoys are NE of this reef, near the piers at Sorong Doom.

A drying reef, on which is a stranded wreck, about 0.5 mile S of the front range light structure at Sorong is marked by a beacon. A 3m shoal is about 0.4 mile W of the same structure. A wreck with a swept depth of 11.3m is about 0.7 mile WNW of the structure and off an oil pier at Sorong.

Several shoals and drying reefs are between Pulau Doom and Pulau Nanah, and between Pulau Nanah and Pulau Tsióf.

A large part of Sorong Roads off the shoals and dangers has been wire dragged to a depth of 14m. An area SE of Pulau Nanah in the center of the swept channel and on the range line of the S approach to Sorong inner roads has been swept to a depth of 6.5m over two shoal patches with depths of 6.5m and 10m, respectively, close SW of the range line. The NE side of the swept channel adjacent to this area has been swept to a depth of 12m.

Dangers not previously described and within the swept area of Sorong inner roads are a shoal with a swept depth of 6.5m about 1.25 miles SSW of the front range light structure; a shoal with a swept depth of 5.6m about 1.5 miles S by W of the structure; two patches, one with a swept depth of 9.7m and the other with a swept depth of 4.2m, about 0.5 mile and 0.75 mile, respectively, ENE of the NE end of Pulau Nanah.

The channels into Sorong inner roads, one from the W and the other from the SSW, are marked by range lights.

## Sorong (0°53'S., 131°14'E.)

World Port Index No. 53020

**5.31** Sorong is situated E of Tanjung Noejew; oil company facilities are located here. Sorong Doom is at about 0.5 mile S of Tanjung Noejew and situated on the E side of Pulau Doom. The town of Sorong is built on the N of Tanjung Noejew with a harbor on the S shores to facilitate shipping. The port imports foodstuffs, consumer goods, and oil field machinery; exports are mainly crude oil.

**Winds—Weather.**—At Sorong during the W monsoon (December to March) the wind has insufficient force to cause difficulty. A slight ocean swell reaches as far as the roads. There is heavy rainfall although it is less than during the E monsoon. During the E monsoon (May to October) the SE winds blow with a strength of 3 to 6 knots and care is necessary when docking or undocking a vessel.

**Tides—Currents.**—The tidal currents near Tanjung Noejew are strong.

At Tanjung Sorong, the maximum rise and fall of the tide that can be expected is, respectively, 1.5m above and 0.9m below mean sea level.

**Aspect.**—There are two commercial piers at Sorong. Beton Wharf is 120m long and the wooden wharf is 132m long; both have 11m alongside. Vessels up to 130m long can be accommodated.

The oil berth is a dolphin berth, which can accommodate vessels 175m in length, 10m draft and 21,000 dwt.

A jetty for coastal vessels, close E of the oil pier, is about 40m long with a depth of 7.6m alongside.

There are two small tugs of 1,500 hp. Motor launches and three steel lighters are available.

The harbor master's office is located at the root of the oil pier. A modern hospital is located close N of the port area.

At Sorong Doom, there is a government official headquarters, hospital, and a government landing stage with a depth of 3.9m alongside, suitable only for small craft. There are seaplane moorings areas situated close N and S of Doom. Another seaplane mooring area is at about 0.5 mile SE of the oil pier.

**Pilotage.**—Pilotage is compulsory and available 24 hours. The pilot boards in the anchorage area 1.4 miles NW of Tsióf Island Light.

**Anchorage.**—Anchorage can be taken in 20.1 to 31m, mud and clay, good holding ground, in the swept area S of a line between the NE corner of Pulau Doom and the beacon marking the stranded wreck about 0.5 mile S of the front range light structure. This anchorage is open to the S and SE.

Temporary anchorage to await the pilot is NW of Pulau Doom between the outer light buoy and Dopior Islet.

Anchorage can also be taken in 11.9m, hard bottom, 0.75 mile E of Bam Islet, with **Katapatjan Rock** (0°56'S., 131°06'E.) in range with the S point of Efman. There is always a NE swell in this anchorage causing vessels to roll heavily. Cargo can only be worked during HW.

To approach anchorage from N, steer a course of 180° for **Pulau Matan** (0°58'S., 131°09'E.) until Tanjung Sorong bears 090°, then steer for Yef Doif, bearing about 241°. When Bam Islet bears 170°, steer for it on that course until Katapatjan Rock is in range with the N point of **Pulau Rombombo**

(0°57'S., 131°06'E.), bearing 097°; then steer around gradually to the eastward to bring Katapatjan Rock in range with the S point of Efman bearing 086° and anchor on this range line.

**Directions.**—Vessels bound for Sorong from N should pass W of the low black rocks W of Pulau Ram. The light structure of the W extremity of Pulau Tsoif bearing less than 178° clears these rocks. Then steer to pass N of the lighted buoy marking the 3.3m shoal about 0.75 mile NW of the N end of Pulau Tsoif, then remain N of the 102.5° range line until E of the 3.3m shoal. A course of 108° with Dopior Islet light ahead leads in the middle of the swept channel until E of the 3.3m shoal.

When E of the 3.3m shoal alter course S to bring the 102.5° range into line which leads between Dopior Islet and Pulau Doom toward the Oil Pier. If bound for anchorage, alter to a southerly course when the E extremity of Pulau Doom bears 187°, passing E of the 6.1m shoal 0.2 mile off the NE side of Pulau Doom.

Approaching Sorong inner roads from S steer for the 03.5° range which leads close NW of the 6.5m shoal, previously mentioned, about 0.5 mile E by S of the S end of Pulau Nanah.

### Kasim Oil Terminal (1°18'S., 131°02'E.)

World Port Index No. 53045

**5.32** Kasim Oil Terminal is situated on the mainland of Irian Jaya, abreast the E side of Pulau Kasim, from which it is separated by a 0.25 mile wide channel.

**Winds—Weather.**—See paragraph 5.28.

**Tides—Currents.**—See paragraph 5.28. Currents of up to 7 knots have been reported.

**Aspect.**—The tanker berth at the terminal has four breasting and four mooring dolphins with a loading platform setback at the mid point. The mooring dolphins are spread along the length of the berth, near the shore, fitted with quick-release hooks and electric winches to handle light messenger lines.

Vessels up to 100,000 dwt, with a maximum length of 280m and a maximum draft of 15m, can be accommodated. The depth alongside the terminal is 15m at LW; the mean tidal range is 1.5m. The controlling depth at the entrances are 15.5m; and the depth at the anchorage is 36.5m.

A general cargo berth is situated close N of the oil berth. It is 113m long with an alongside depth of 6.1m and is fronted by a vertical steel face and rubber fenders. The Marine Office is located close N of this berth, on the S side of a stream. A detached reef lies S of the oil terminal.

Vessels usually dock during daylight hours; casting off the dock with a strong stern current is not unusual.

The terminal is approached from either NW or SW, depending on the direction of the tide.

Repairs can be undertaken at Sorong but not at Kasim Terminal.

Pulau Kasim is an islet about 8.5 miles NNE of Tanjung Sale, the S entrance to the strait. The islet is about 1.5 miles long in a N to S direction, and is about 0.75 mile wide. A light is shown from a village on the W side of the strait, about 0.75 mile NW of Pulau Kasim.

**Pilotage.**—Pilotage is compulsory and should be requested from Sorong 6 hours prior to arrival.

Vessels awaiting a pilot can anchor about 1.25 miles NW of the SW end of Pulau Tsoif, over a bottom of mud and coral. Vessels arriving after 1600 local time will wait at anchor until daylight to make the transit to the terminal.

**Regulations.**—Except for local fishing craft, the port limits area is a restricted area. Any vessel authorized to use the port must have a mooring master on board.

The vessel's ETA must be sent 72, 48, and 24 hours prior to arrival.

### Salawati Oil Terminal (1°21'S., 130°59'E.)

World Port Index No. 52695

**5.33** Salawati Oil Terminal is an offshore tanker mooring system positioned on the W side of Selat Sele about 3.75 miles SSW of Kasim Oil Terminal.

**Winds—Weather.**—See paragraph 5.28.

**Tides—Currents.**—At the berth, currents may attain a rate of 4.5 knots; engines should be ready on standby.

Also see paragraph 5.26.

**Aspect.**—The terminal is located in an area where minimum depth is 15.5m. The terminal, NE-SW oriented, has two mooring dolphins 0.2 mile apart and two breasting structures. The storage barge "Wampum" is permanently moored on the W side with a pipeline extending NNE to the shore. A tanker may berth starboard or port side-to, on the SE side of the dolphins, depending on the stage of tide. Two tugs and mooring boats assist in berthing operation directed by a mooring master who boards at the pilot station.

Tankers, with a maximum length of 275m and up to 100,000 dwt have berthed at Salawati oil terminal; however, the maximum draft permissible to load is 13m. The least depth on the passage through the strait is 15m.

**Pilotage.**—Pilotage is compulsory. See paragraph 5.32, Kasim Oil Terminal, for details.

**Directions.**—After passing between **Efman** (0°55'S., 131°07'E.) and Pulau Tsoif, bring leading lights on **Balbili** (1°06'S., 131°11'E.) and Wolo Genan, 3 miles S, in line bearing 180°. The course leads E of dangers extending 2 miles NE of **Kasiem** (1°00'S., 131°09'E.).

When the SE point (1°04.7'S., 131°10.3'E.) of Kabra Bemuk bears 297°, alter the course SW to 237°. This leads close N of a 4m shoal which extends a short distance N from the reef fringing the islet off the NW end of Balbili, however, vessels exceeding a draft of 4m must pass S of Balbili.

When **Mehil** (1°07'S., 131°10'E.) bears 100°, alter course SSW to bring the leading lights on Segarau Iter course SSW to bring the leading lights on **Segarau** (1°10.5'S., 131°06.6'E.) and Kamoomjel, which lies 3.5 miles farther SSW, in line on a bearing of 196°; this course should lead W of the buoy moored 0.5 mile ENE of the light column on Segarau. Avoid the 5.5m patch lying 0.25 mile W of the same buoy then pass E of the light column.

Maintain a heading of 196°. At about 1 mile off Kamoomjel Light alter course SW to pass SE of **Jef Nanas** (1°13'S., 131°05'E.), avoiding a depth of 8m 0.25 mile SE of this islet. Then pass N of **Tanjung Wafkalette** (1°15'S., 131°03'E.) and into the narrows at the S end of Selat Sele, keeping in midchannel through the narrows.

It was reported that the following route appears to provide the deepest passage through the N part of Selat Sele to be taken by large tankers. From a position about 0.8 mile W of Pulau Tsoif, steer a SSE course until in a position where Kasiem bears 237° at a distance of 2.75 miles. Then alter course to SSW to pass through a position 2 miles E of Kasiem. Then follow the buoyed channel (black can buoys on the W and red on the E side of the channel) through Sangolin Mon; which leads to about 0.5 mile E of Orama Tje, and Kafanji. After continuing on the above course to about 0.3 mile SSE of **Ome Toejef** (1°10'S., 131°04'E.), steer S to pass midway between **Yef Mo** (1°13'S., 131°13'E.) and the shoal extending W and SW from Yef Nanas.

A least depth of 14.9m was located about 0.4 mile E of Orama Tje. Another depth of 11.3m lies about 0.6 mile NNE of Yef Mo.

**Directions from S.**—The S entrance lies between **Tanjung Menonket** (1°21'S., 130°51'E.) and Tanjung Sele, 7 miles SE. The S approach can be made by keeping the W end of Membok and Pele in line on bearing about 011° until the S side of Tanjung Sele bears 090°. Then steer through the narrows by keeping in midchannel.

**Caution.**—Partially afloat heavy logs are normally seen drifting anywhere in the strait and a good lookout should be kept to avoid closing and fouling the propeller.

## Salawati

**5.34 Salawati** (1°06'S., 130°52'E.) is separated from the W end of Irian Jaya by Selat Sele. Its coasts are regular without any deep indentations. The greater part of the island is very low with impenetrable jungles; however, the NW part of the island is mountainous with several high peaks. The N coast is limestone hills about 396m high, rising to 610m in the W part, but it is considerably lower than Pulau Batanta, the island to the N. The W coast, except for the N portion, is low and marshy. The E coast, near **Kampung Samate** (0°58'S., 131°04'E.), is low and swampy, with extensive forests of sago palms. There are numerous coconut palms on the beach. There are some creeks, but no rivers. The only village of any importance on the island is Kampung Sailolof, on the SW coast of the island.

**5.35 North coast of Salawati.**—The N coast of Salawati between Pulau Sagawin on the W and Yef Doif on the E can be approached very closely. Pulau Sagawin, at the W entrance to Selat Sagawin and close NW of Tanjung Dadi, the fairly high NW extremity of Salawat, is hilly but not very high. On the NW end of Pulau Sagawin is a small village, conspicuous because of the coconut palms that surround it. Anchorage can be taken in a depth of 46m about 183m off the SE extremity of the island, but there is frequently a current of 3 to 4 knots here.

**Tipin Road** (0°56'S., 130°45'E.) is on the N coast of Salawati about 7 miles E of Pulau Sagawin. There is anchorage in about 46m, sand, 0.15 mile from the shore and to the W of the mouth of a stream. Less depths can be found closer inshore. Lelaa Islet is close inshore on the coastal reef about 8.5 miles E of Pulau Sagawin.

**Yef Doif** (0°53'S., 131°02'E.), an islet 169m high and 1 mile off the NW extremity of Salawati, has a round hill on its N side and is low and flat in its S part. The islet is joined to the Salawati coast by a shallow ridge.

**Tides—Currents.**—Near Yef Doif the highest and lowest water levels that can be expected are, respectively, 0.6m above and 0.75m below mean sea level.

**Anchorage.**—There is good anchorage during the SE monsoon in the SW corner of Teluk Waiyaar (Wajaar Bay), a bay 6.5 miles WSW of Yef Doif. The anchorage is in 48m with Pulau Ayemi, at the E end of Pulau Batanta, in range with Tanjung Yupleket (Ajmoeri), and the drying rocks on the reef about 1.75 miles W of the S end of Yef Doif clear to the N of that island.

**5.36 Islands and Dangers off Kampung Samate.**—Extensive banks and reefs, partly dry at LW, extend offshore.

**Bam Islet** (0°56'S., 131°04'E.), moderately high and wooded, is near the edge of a drying reef 1.75 miles N of the village. There are several bare rocks near the islet.

**Kepulauan Rombombo** (0°56'S., 131°06'E.), NE of Kampung Samate, are a group of islands surrounded by a drying reef. Pulau Man (Efman) is low with a beach and some houses on the E side. This beach can be approached closely by boats. There are coconut plantations on the island and a T-head pier with depths of 2.1 to 3.6m alongside is on the SE side. There is also an airfield on the island.

Anchorage may be obtained in a depth of 11.9m, hard bottom, about 0.7 mile E of Bam.

**Katapatjan Rock** (0°56'S., 131°06'E.), on the W edge of the drying reef surrounding Kepulauan Rombombo and S by W of the S end of Pulau Man, is a jagged mass of stone whitened with bird droppings; it somewhat appears as a crouching lion. A 4.5m detached reef which can be recognized by discoloration and slight breakers is about 0.7 mile WNW of the rock. A line of detached reefs extends across the approach to the roadstead NW of Katapatjan Rock.

**Kampung Samate** (0°58'S., 131°04'E.) lies 4.5 miles SE of Tanjung Mayasalava with the deserted village of Samatew, its houses built on piles, close W.

## Off-lying Islands—West Coast of Salawati

**5.37** The islands W of Salawati are low and thickly overgrown; they are on long narrow ridges running parallel to the coast. Kepulauan Kabu and Pulau Loslos are on the outer ridge with depths of 8.2 to 9.1m between them and 12.8 to 16.4m on either side of the ridge. A 1.8m shoal is about 0.25 mile S of Pulau Ifmun the W most island of the group. A 4.9m shoal is nearly 6 miles SSE of Pulau Loslos and 5 miles W of Pulau Denie. Reefs in this area are usually not marked by discoloration.

**Kepulauan Menon** (Gebroken Islands) (1°20'S., 130°42'E.), Pulau Danya (Jef Danja), and the Mokon Islands are on the next ridge to the E; the N part of this ridge is separated from Kepulauan Kabu by a channel with depths of more than 46m. Farther inshore there are several other ridges with islets on them; the chart is the best guide.

Strong tidal currents and muddy water N of Kampung Sailolof between the Salawati shore and the Loslos and Kepulauan Kabu ridge make it unnavigable.

**Sailolof Anchorage** (1°15'S., 130°46'E.) is off Kampung Sailolof, about 13.5 miles NW of Tanjung Kamjolo, the SE extremity of Salawati. The recommended anchorage is in 5.8 to 7.3m with the mosque at Kampung Sailolof bearing 054° and Pulau Bodo in range with the S side of Pulau Tun bearing about 292°.

Approaching Sailolof Anchorage bring Pulau Loslos astern on a westerly bearing, then steer for Pulau Umien giving the latter a wide berth and proceed to the roadstead on a course of 054° on the mosque at Kampung Sailolof. Another route is to pass close S of Pulau Denie and Pulau Umat and then steer for Pulau Tun until the mosque bears 054°.

At Sailolof Anchorage the maximum rise and fall of tide that can be expected are, respectively, about 0.45m above and below mean sea level.

**Kampung Sailolof** (1°15'S., 130°45'E.) (World Port Index No. 53050), a fairly large village on the SW coast of Salawati, consists of a double row of houses built on piles on the beach. There are many coconut palms around the village, and coconut oil is the chief export. Drinking water can be obtained from concrete wells.

### Selat Sele—South Approach

**5.38 Tanjung Sele** (1°26'S., 130°56'E.), at the S entrance point to Selat Sele, is a 10m high, rocky headland covered with high trees and affords a good mark for vessels approaching from S. Pulau Umpe, about 4.5 miles ESE of Tanjung Sele, as well as two low islands, Pulau Membok and Pulau Gelo, S of Salawati and W of the S entrance to Selat Sele, are seen shortly thereafter. These uninhabited islands are sand, mud, and coral and are covered with high trees. Pulau Umpe and Pulau Membok are each marked by a light.

Numerous shoals with depths of 0.9 to 9.1m are W, SW, and SE of Pulau Umpe; the chart is the best guide. Depths of 5.8 to 19.2m, also charted, are between 13.3 and 21 miles S of Pulau Umpe light. Some of the depths are swept.

A deep channel gives access to the narrow S part of the strait which is clear and deep and which ends near Tanjung Kanelmelmak, about 9 miles NNE of the SE end of Salawati. From that point the strait widens but is strewn with islets, particularly in its S part.

The W side of the S approach is bounded by a bank extending from Salawati and on which are Pulau Gelo, Pulau Membok, Pulau Kalilip, Pulau Omaki, Pulau Peli, Pulau Sabba, and Pulau Pan and other islets closer inshore near Kampung Saileen. The S coast of Salawati between Tanjung Menonket and Tanjung Kamjolo is low and covered with mangrove. Near Tanjung Kamjolo it rises a little and a red patch is seen, then farther N it is again low and covered with high trees.

During the W monsoon there is good anchorage E of Pulau Peli in 10.9 to 16.4m, hard bottom. In the E monsoon there is good anchorage E of Pulau Lugo near the Irian Jaya shore in 26m, sand and mud.

The coast of Irian Jaya making up the E side of the strait resembles the coast of Salawati. **Kampung Seget** (1°24'S.,

130°58'E.), E of Pulau Lugo, is inhabited by fishermen and is the headquarters of a government official. There is a small-boat pier with a depth of 1.5m at its head.

**Pulau Kasim** (Pulau Jef) (1°18'S., 131°01'E.), in the W part of Selat Sele 6.25 miles above Pulau Lugo, should be passed on its W side. A restricted area is between the SE side of Pulau Kasim and the Irian Jaya shore. Vessels are not permitted to enter this area without a mooring master from the Kasim Oil Terminal aboard.

### West Coast of Irian Jaya

**5.39** From Tanjung Sele the coast trends SE to Tanjung Sabra (2°17'S., 132°18'E.) and Teluk Berau (McCluer Gulf). There are few conspicuous points along this densely timbered and uniformly low coast. Tanjung Yamtup, 31 miles E of Tanjung Sele is clearly visible as far as Pulau Yus (Jef Joes), a strip of coral sand 15 miles offshore. Other prominent marks are Tanjung Wamonket, about 17 miles E of Tanjung Sele, and Pulau Kobalin, an islet just E of Tanjung Wamonket. A beacon is about 2 miles SE of the islet. The entrance points of the river **Sungai Karabra** (1°33'S., 131°41'E.) are excellent landmarks. Along the N part of this coast a low chain of hills are visible far inland, with higher mountains rising behind these hills. In the far distance the high peaks of the Tamrau Mountains, near the N coast of Irian Jaya, can be seen on a clear day, especially in the vicinity of Sungai Seremuk (1°36'S., 131°45'E.).

Several rivers enter the sea in this portion of the coast. A bar is across the mouths of most of these and the channels leading to them are constantly changing. The charts cannot be relied on.

In the N portion of this coast, where the shore recedes near the mouth of the rivers, the 10m curve extends about 10 miles from the shore and patches with as little as 2.1m on them are found outside the 20m curve.

From Tanjung Sele the coast trends E for nearly 18 miles to **Tanjung Wamonket** (1°32'S., 131°12'E.). This part of the coast is low, but at the latter point it rises and is somewhat higher for a considerable distance E. Pulau Umpe, marked on its NW end by a light, is about 1 mile off Tanjung Kaledoko. Yus (Joes) Genan islet, about 2 miles WNW of Tanjung Wamonket, is separated from the coast by depths of 2.1m. A rock that dries and several shoal patches with depths of 0.9 to 1.8m are inside the 10m curve between these islets.

**Tides—Currents.**—Off the mouths of the rivers along this stretch of coast the maximum fall of tide that can be expected is 1.3m below mean sea level occurring in May or June and November or December. The maximum rise that can be expected is 0.8m above mean sea level.

The offshore currents are a variable combination of tidal currents and monsoon drift, but closer along the coast the tidal currents predominate. They frequently are very strong in the rivers.

The islands between the Irian Jaya coast and Misool have been previously described in connection with the latter island, in paragraph 2.70.

**5.40 Pulau Yus** (Jef Joes) (1°45'S., 131°08'E.), 16 miles S of Tanjung Wamonket, is a strip of coral sand about 0.2 by 0.1 mile, covered with high trees and surrounded by a reef that does not discolor. The islet is visible for 12 miles. A light is

shown from the NE point of the islet from a white metal tower. It is obscured by the high trees between bearings of 018° and 060°. A stranded wreck is on the edge of a shoal about 0.3 mile SW of the light.

A 6.7m shoal is about 7.5 miles WSW of Pulau Yus and several shoal patches 2.7 to 10.9m are within the 20m curve WNW and NNW of the islet at distances of 4.75 to 14 miles.

A swept depth of 2.1m coral, and a 7.3m shoal patch are 10.75 and 6.5 miles, respectively WSW of Pulau Yus. A buoy marks the N side of the 2.1m shoal. A dangerous wreck lies 5 miles ESE of Pulau Yus.

**Teluk Segun** (1°27'S., 131°20'E.), E of Tanjung Wamonket, is entered over a 1.8m bar. A beacon marks the entrance.

**Tanjung Yamtup** (1°31'S., 131°26'E.) is conspicuous. Pulau Matel is a small islet on a drying bank 1.75 miles SE of the point.

**Pulau Yal** (Jef Jal) (1°40'S., 131°26'E.), about 9 miles S of Tanjung Yamtup, is covered with tall trees and is surrounded by a reef. Anchorage can be taken in 9.1m S of the islet, but caution is necessary because the turbid water prevents the reef from being seen.

Shoals are 3 and 2 miles NW and SW, respectively, from Pulau Yal and a rock with a depth less than 0.9m is 4.75 miles SSW of the islet.

**Caution.**—Shoals with depths of as little as 1.8m are 14 to 27 miles S of Pulau Yal and between these patches are detached shoals of 1.8 to 5.8m. The channels between Tanjung Sele and Tanjung Sabra are constantly changing and the charts cannot be relied on.

Sungai Beraur, Sungai Karabara, Sungai Seremuk, and Sungai Kaibus are rivers navigable by small craft only with local knowledge. The channel into Sungai Kaibus is marked by buoys in Teluk Kaibus.

**5.41 Sungai Waronge to Tanjung Sabra.**—Off-lying banks off the mouths of Sungai Waronge, Sungai Suaboor, Sungai Kamamunu, limit their use to small craft only.

Sungai Kais, Sungai Davur, and Sungai Metamani flow into Teluk Metamani and have formed a delta at the mouth of that bay. These rivers are all limited to small craft.

A light is exhibited on the coast about 10 miles S of the entrance to Sungai Kais near Tanjung Mesjateririvaim.

**Sungai Sigaroi** (Bira) (2°10'S., 132°10'E.) has a buoy at its entrance, but depths over the bar are limited to about 1.8m. There are several villages along the tributaries.

A light is shown from **Tanjung Sabra** (2°17'S., 132°18'E.) at the N entrance point to Teluk Berau (McCluer Gulf).

## Teluk Berau (McCluer Gulf)

**5.42 Teluk Berau** (2°30'S., 132°20'E.), an extensive body of water reaching to within about 16 miles of Teluk Sarera, thus almost isolating the NW part of Irian Jaya.

The gulf is about 23 miles wide between Tanjung Sabra and **Tanjung Salakiti** (2°40'S., 132°07'E.), narrowing to 12 miles wide at the entrance to Teluk Bintuni. The S shore is high and bold for 35 miles E of Tanjung Salakiti, but the rest of its shores are low and overgrown with mangroves. The region around the gulf is sparsely populated. **Kampung Kokas** (2°42'S., 132°26'E.), on the S shore of Teluk Sekar, is the

principal trading center. A light is shown from a lattice tower 0.35 mile NNW of Kokas village.

Several rivers, the entrance of which are blocked by mangrove-covered islands, empty into the gulf. The mountains on both sides of the gulf are so far inland that they are of no importance to navigation.

Close to the S side of the entrance to Teluk Bintuni soundings range from 18.3 to 92m, but farther N they vary between 18.3m and 46m. Care should be exercised in approaching the shoal part of Teluk Berau because mudbanks with depths of 3.6 to 5.5m extend from the shore in many places.

**Winds—Weather.**—The climate in the vicinity of Teluk Berau is very agreeable with moderate rainfall and temperature. The nights are cool and the sea is always calm, except for a few days during the W monsoon. Rain falls during the entire year, but the heaviest fall occurs in the change periods, April to May, and October to November.

During the E monsoon the land winds are somewhat stronger, with a haze, sometimes a heavy fog, hanging over the low coasts. The W monsoon is felt more, although it blows with only a moderate force, because it may be accompanied by heavy squalls and gales. These storms, together with the strong current, may be inconvenient for boats and small craft.

**Tides—Currents.**—Tidal currents set into the gulf until the time of HW and out until the time of LW. The maximum observed velocity of these currents, 2.5 knots, was in the deep channels between the banks along the S coast and in the vicinity of Pulau Ogar and Pulau Arguni. On the N side of the gulf, particularly at LW, the discharge from the rivers set up variable currents. This river water has a brownish-yellow color and, especially during the rainy season, can be seen for a great distance from the shore.

**5.43** The N shore of Teluk Berau consists mainly of low, marshy land, interrupted in places by patches of sand which have clusters of trees. There are a few conspicuous features. The headlands at the river mouths are low, but they project well and are useful marks for vessels coming from E or W.

There is a conspicuous wood near Kampung Tarof, about 8 miles NE of Tanjung Sabra. There is also a group of trees in the bight between this village and Sungai Kemudan, 14 miles ESE. There is constant traffic by native canoes with the S coast.

On the N coast there are several creeks and streams including Sungai Kemudan and Sungai Sebyar, the navigation of which is limited to small craft because of bars across their mouths.

A wide mud bank, outside of which the depths increase regularly, projects out all along this coast. Farther out the depths are quite variable, probably because of channels scoured out by tidal currents.

Close E of Tanjung Sabra, about 2 miles offshore, is a narrow drying bank steep to on its seaward side. A sunken rock is about 0.75 mile off the W end of this bank.

**Tanjung Fatagar** (2°46'S., 131°56'E.), the S entrance point to Teluk Berau, is the extremity of a thickly-wooded peninsula of irregular outline gradually rising to mountainous land with no conspicuous peaks.

A 3.9m reef is 1 mile W of Tanjung Fatagar. Strong rips set over the reef and for a considerable distance W.

The coast between Tanjung Fatagar and Teluk Tawar, 7 miles E, is rocky and broken. Was Island, close to the shore 3 miles NE of Tanjung Fatagar is an inhabited island, 88m high. A drying rock is just inside the line joining Tanjung Fatagar and Teluk Tawar. A rock awash is 0.5 mile offshore 1.5 miles NE of Tanjung Fatagar.

A mosque is at Kampung Rumbati, close W of Teluk Tawar. Vessels coming from the W do not sight the village until past it.

Teluk Tawar, entered 7 miles E of Tanjung Fatagar, affords anchorage to small vessels during the SE monsoon but is not safe during the NW monsoon.

**5.44 Teluk Salakiti** (2°44'S., 132°05'E.) affords safe anchorage for large vessels at all times. Some small rocks and islets on the N side of the entrance form a natural breakwater. Depths in the entrance and inside the bay range from 11.9 to 14.6m. In the S part of the bay some small islets are on a dry coast reef and behind them is a shallow basin surrounded by mangroves which also front the main shore. A few huts are on a rising hilly land forming the greater part of the shores of the bay.

**Patipi** (02°43'S., 132°04'E.) (World Port Index No. 53090) is in a basin which nearly dries at LW and is sheltered from wind and sea by the high rocky islands on the N side of Teluk Salakiti.

**Teluk Patipi** (2°42'S., 132°07'E.), penetrating the coast in an E direction for about 5 miles, has a maximum width of 2 miles and gradually narrows toward its head. It is easily recognized from seaward by the straight direction of its shores and by a round 127m hill on Tanjung Kramram, the S entrance point, which shows up dark against the land behind. Tanjung Osir, the N entrance point, is low and rocky. Off the entrance there are frequently strong tidal currents with swirls caused by the meeting of currents along the coast with those setting out of the bay.

The N shore of the bay is steep-to and can be approached closely. The S shore is irregular and is covered with mangroves behind which the land rises steeply. The inlets on this shore have broad coastal reefs on which there are some islets and rocks.

The bay is quite clear except for the shore reef and a single detached drying rock close to the S coast about 0.3 mile NE of Perwa Islet, 3.5 miles E of Tanjung Kramram. The depths at the entrance and within the bay range from 10.9 to 18.3m, decreasing gradually toward the head. The bay affords anchorage protected from all winds. Groups of farmers houses are along the shores of the bay.

From **Tanjung Wetin** (2°42'S., 132°05'E.), at the N end of Teluk Patipi, the coast trends NE 2.5 miles to Tanjung Salakiti and then turns to the E for 18.5 miles to Tanjung Sekar. The land rises gradually from the spit that forms the N side of Teluk Patipi to heights of more than 610m. The coast is rocky with a few shallow inlets obstructed by reefs.

**5.45 Teluk Sekar** (2°42'S., 132°27'E.) is afforded good protection from wind and sea by the islands off its entrance. Mud brought down by the Sungai Kaiunni has shoaled the entire bay to a degree, but this shoal area ends abruptly at the entrance. The depths outside the entrance increase rapidly from 5.5 to 7.3m to 55m. A large sandbank, with depths of less than

3.6m and subject to change when Sungai Kaiunni is in flood, is near the W side of the entrance. West of this bank there is a deep channel leading along Tanjung Sekar to Kampung Kokas, the W entrance point. The E part of the bay is so shallow that it is of no importance to navigation.

**Kokas Road** (2°42'S., 132°25'E.), comprising the greater part of the W arm of Teluk Sekar, is bounded by a line drawn in a 090° direction the point of the spit E of Kampung Kokas, and by the arc of a circle with a radius of 0.65 mile, centered on the head of a pier that projects out from the shore abreast of the village. A seaplane mooring buoy is 0.3 mile NW of the pierhead. Vessels can anchor in 4.9m 0.1 mile N of the pier. When making this anchorage a course of 182° on the jetty, or 185° on the charted flagstaff will lead through the channel between Tanjung Sekar and the 3.6m sandbank. Tanjung Sekar can be passed close-to.

**Tides—Currents.**—At Kampung Kokas the maximum rise and fall of tide that can be expected are, respectively, 0.8m above and 1.7m below mean sea level. Tidal currents, particularly in the inner part of the bay, are weak.

**Kampung Kokus** (2°42'S., 132°25'E.) (World Port Index No. 53080) is the headquarters of a governmental official whose residence is marked by a flagstaff. Provisions are scarce.

**5.46 Off-lying islands of Teluk Sekar.—Pulau Ogar** (2°39'S., 132°28'E.), 227m high, is the largest of high, steep, and densely-wooded islands extending nearly 11 miles E from Pulau Barat (West Island), the W most of the group along the coast of Teluk Sekar. A village on the S coast of Pulau Arguni is marked by a mosque.

South of Pulau Ogar and Pulau Arguni is a channel leading to Teluk Sekar. On the S side of this channel abreast Pulau Ogar are several high islets which greatly obstruct the channel, leaving only narrow passages. The widest of these passages, running along the steep shore of Pulau Ogar, has strong currents and overfalls.

Two reefs, one with a depth of 0.9m and another with a depth of 4.9m, are, respectively, 2.75 miles and 1 mile WNW of Pulau Barat. Neither of the reefs is marked by discoloration.

**Tides—Currents.**—In the channels and along the above islands the tidal currents are similar to the general currents in Teluk Berau. In the narrower parts of these channels currents sometimes attain a rate of 3 knots. The flood current moving up the gulf divides at Pulau Barat, causing heavy tide rips in that vicinity. One part of the current sets through the channel along the S side of Pulau Ogar and Pulau Arguni, the other part sets E along the N sides of these islands.

**Directions.**—Vessels proceeding to Kokas from E can easily recognize Pulau Arguni. Its E hill is very conspicuous, with a sugarloaf summit which stands up darkly against the surrounding land. Care should be taken to avoid the shoal extending 1 mile ESE from the E coast of Arguni. When the conspicuous summit of Pulau Ogar bears 280° steer for it on that course. Hold this course until 2.5 miles distant, then steer for the N islet of the group between Pulau Ogar and the mainland keeping close to Pulau Ogar side of the channel. Krok, a rock covered with vegetation, lies 0.25 mile SW of the S point of Ogar. Then pass close E of Tanjung Sekar. Then follow directions given above to Kokas Road.

**5.47 Teluk Segar to Tanjung Tanah Merah.**—East of Teluk Sekar the densely-wooded coasts consist of steep limestone cliffs that rise sheer from the sea. Several sugarloaf summits, many burned over leaving only charred trees, give the land a unique appearance. There are white cliffs in places with numerous caves used by the local inhabitants as burial places.

The mountainous land runs parallel to the coast, the highest point rising to an inconspicuous 467m summit. At the back of the coastal range there is a wide valley and beyond that is a central ridge rising to 1,450m, again an inconspicuous summit.

Rocky wooded islets are scattered along the coast, concealing small settlements behind them. **Kampung Goras** (2°47'S., 132°41'E.), 14 miles SE of Tanjung Taramnusa, is the principal village.

**Batu Layar** (2°44'S., 132°38'E.), a rock about 0.5 mile from the shore near Kampung Darembang, is very conspicuous from NW. Rising from the sea like an obelisk it resembles a native canoe under sail.

The depths gradually decrease to the E. Between Tanjung Goras and Tanjung Tanah Merah, 33 miles to the NE, access to the coast is limited by a wide mudbank. Outside of this bank there are many shoals ranging from 1.8 to 9.1m extending as much as 9 miles from shore. The chart is the best guide.

North of Tanjung Goras the mountainous aspect of the coast ceases abruptly. The mountains recede far inland and the intervening land consists of mangrove-covered marshes intersected by creeks and streams. The more important of these streams are Sungai Bedidi and Sungai Bomberai which discharge in the S part of a large bight between Teluk Sekar and Tanjung Tanah Merah. A bar restricts the use of these last-named streams to small craft. There are a few small villages along the coast between Tanjung Goras and Tanjung Tanah Merah.

A light is shown from **Tanjung Tanah Merah** (2°26'S., 133°07'E.).

## Teluk Bintuni

**5.48 Teluk Bintuni** (2°20'S., 133°25'E.), the E extension of Teluk Berau, is 12 miles wide at its entrance and fringed on both sides by low marshy land, above which a group of hills, 79m high, rises on the S side of Tanjung Tanah Merah. These hills, of reddish loam and bare on their seaward sides are a mark for vessels approaching from the W. Mountains are visible to the N and E.

Many small rivers flow into the N side of Teluk Bintuni. This part of the coast is fronted by a steep mud bank about 2 miles wide through which some of the rivers have cut moderately deep channels.

Inside the entrance the character of the S coast changes. The low marshy land continues, but it is intersected by wide saltwater creeks and scarcely any land is visible. Fronting the S shore are the mangrove-covered islands including **Pulau Asap** (2°28'S., 133°19'E.), Pulau Amutu Besar, and Pulau Amutu Kecil, all separated from the mainland by navigable channels.

The head of the gulf is hilly and fronted by a strip of mangroves.

There are no dangers in Teluk Bintuni and vessels can steer by bearings on the headlands and Gunung Steenkoolberg hills at the head of the gulf. **Gunung Steenkool** (Steenkoolberg) (2°04'S., 133°32'E.) and Gunung Sigemerai, on the N side of

the gulf, are conspicuous. The latter has slightly rounded summits, 537m and 522m high. At the head of the gulf, the Suwuri Range, 693m high, and Top Modan, 283m high, are conspicuous. Tawerei with a round summit, 657m high, Tantiri, with two sharp peaks, 634m high, and Maniai, 183m high, are also good marks. The more distant mountains are seldom visible.

**Winds—Weather.**—The weather is nearly always fine in Teluk Bintuni. Persistent rain does not occur in either monsoon. During an early survey the rainfall was heaviest at the beginning of the E monsoon, then diminished steadily. The W monsoon sets in suddenly at the beginning of November. The E monsoon brings clouds and rain squalls off the land and much lower temperatures. During the E monsoon the direction of the wind is between SE and SW and during the W monsoon it is between SW and NW.

**Tides—Currents.**—At the entrance to Teluk Bintuni the tide has a range of about 2.4m and at the head of the gulf about 6.7m. This great difference in range causes strong tidal currents that follow the direction of the coast. The maximum rate is about 3 knots. The direction of current changes at about the time of high and LW.

Close inside the mouth of **Sungi Muturi** (2°15'S., 133°38'E.) the ingoing and outgoing tidal currents set in 070° and 250° directions, respectively. The currents are equally strong, attaining a maximum rate of 1.75 knots at springs.

**5.49 North shore of Teluk Bintuni.**—Many rivers empty into the N side of the gulf. The most important of these are Sungai Kamarin, Sungai Rittowe, and Sungai Wasian. Since there are no landmarks at the mouths of these rivers entry must depend on bearings taken on the very conspicuous **Gunung Sigemerai** (2°02'S., 133°37'E.), the two-pointed summit of which is visible throughout the gulf.

**Sungi Wasian** (2°13'S., 133°33'E.), marked at its mouth by a lighted buoy, has a straight channel which has a depth of 3.6m over the bar. To enter the river a course of 020° should be set on the center of the mouth, passing the buoy on its W side. Depths increase rapidly within the mouth of the river which becomes tortuous about 3.5 miles within the entrance. Navigation of this area should not be attempted without local knowledge.

About 4.5 miles above the bar the river divides into N and E branches. About 8 miles above the N branch is Steenkool.

**Steenkool** (2°07'S., 133°33'E.) (World Port Index No. 53051) is a petroleum port. Approaching the port pass W of the aircraft buoys and N of the main jetty to avoid some wrecks.

**Sungi Muturi** (2°15'S., 133°37'E.), about 5.5 miles E of Sungi Wasian, is marked by buoys at its mouth and for a short distance above the mouth.

**Pilotage.**—Pilotage for the Muturi Oil Terminal is compulsory for vessels over 50 tons. ETA at the outer buoy should be given at least 24 hours in advance. Pilotage at night is only by special arrangement.

Vessels awaiting a pilot should anchor W of the outer buoy in a depth of 14.9m, hard mud. The Harbormaster at Steenkool is the official pilot.

**Kampung Muturi** (2°11'S., 133°41'E.) (World Port Index No. 53052) is a deepwater oil terminal about 3 miles above the entrance to Sungi Muturi. The terminal consists of a T-headed

pier 18.3m long with a depth of 13.7m alongside; it can accommodate vessels of up to 30,000 tons, with a maximum length of 200m and a maximum draft of 10.6m. Mooring launches and a small tug are available. All mooring ropes should be of manila; steel hawsers are not permitted. The current always sets on to the jetty; the maximum observed rate is 4.5 knots.

**5.50 South shore of Teluk Bituni.**—The main rivers along this coast from W to E are Sungai Kasuri, Sungai Kasira, and Sungai Kaitero. The headlands of these rivers are low and, because of the great range of tide, appear quite different at high and LW. The muddy points are in some cases covered with low mangrove and are difficult to identify.

**Sungai Kasira** (2°30'S., 133°26'E.).—After rounding Pulau Asap vessels bound for Sungai Kasira, the next inlet E of Sungai Kasuri, steer a course of 118° on the SW point of Pulau Amutu Besar and, when the W extremity of Sianiri Kecil is abeam to starboard, alter course gradually to S to bring the second point on the E bank of Sungai Kasira to bear 175°. Steer toward the point on this bearing until the channel between Sianiri Kecil and Sianiri Besar bears 270°, after which Sungai Kasiri may be entered on a S course. Leaving the river favor the E shore.

**Caution.**—A dangerous wreck, marked by a beacon, is near the E entrance point to Sungai Kasiri.

**Kampung Babo** (2°33'S., 133°26'E.) (World Port Index No. 53070) is on the W side of Sungai Kasir, about 3 miles above the mouth. This large village has two piers only suitable for boats.

Sungai Kaitero, E of Amutu Besar, is well populated in its upper reaches.

A wide bank extends across the head of the gulf between Pulau Amutu Kecil to abreast of the mouth of **Sungai Bakor** (2°17'S., 133°45'E.).

Selat Modan is entered over a bar with a least depth of 4.1m on a course of 095°. Anchorage can be taken in 20m in the strait abreast of Kampung Modan.

**Kampung Modan** (2°23'S., 133°55'E.) (World Port Index No. 53060) is on the N shore of Selat Modan.

**Tides—Currents.**—At Kampung Modan the highest water level occurs in February and March, the lowest water level in July, August and September. The maximum rise and fall of tide that can be expected are, respectively, 2.9m above and 3.9m below mean sea level.

## Kepulauan Pisang

**5.51 Kepulauan Pisang** (2°38'S., 131°35'E.) are a group of islands about 20 miles NW of Tanjung Fatagar. The group consists of the long, narrow Pulau Sabuda and two massive rocks, Pulau Tartaruga and Pulau Senchan (Sentjan), NW of Pulau Sabuda. The islands of the group, rising steeply from depths of 73 to 110m, are hilly, heavily-wooded, and uninhabited. The maximum elevation, in the middle of Pulau Sabuda, is 164m. A narrow reef extending off this island widens to 183m off the SW point. Pulau Senchan, the outermost of the rocks NW of Pulau Sabuda, is 47m high and Pulau Tartaruga is 60m high. Both are surrounded by coastal reefs. On the NW side of Pulau Tartaruga there is an entrance in

the reef through which vessels may proceed to the reef in depths of 12.8m. Several reefs are around these islets and caution is necessary when passing between Pulau Sabuda and Pulau Tartaruga. The channel between Pulau Sabuda and the islets to the S is quite clear as is the area between Kepulauan Pisang and the 3.6m reef off Tanjung Fatagar. A small 4.9m shoal is 2.75 miles NW of Pulau Sechan. A 5.5m shoal is 0.5 mile N of Pulau Tartaruga, a 7m shoal is 1 mile NW, and a 5.9m shoal is 1.2 miles E of this same island.

A light is shown from a metal framework tower at the NE end of Pulau Sabuda.

During the SE monsoon the best anchorage in this group is on the N side of Pulau Sabuda. During the NW monsoon the most sheltered anchorage is close to the S shore of that island. Vessels will also be fairly well protected in this latter anchorage during the SE monsoon.

## West Coast of Irian Jaya

**5.52 Tanjung Fatagar** (2°46'S., 131°56'E.) to **Tanjung Nassaulang** (Cape van den Bosch) (4°05'S., 132°54'E.) the coast is high, densely-wooded, mountainous land normally terminating in steep, rocky cliffs. The E coast of Teluk Sebakor is, however, considerably lower with an upward gradient, dipping at intervals, and forming a division between the mountainous Kumawa territory and that lying N of Teluk Sebakor.

There are few landmarks on this coast. Gunung Baik, 1,052m high, close S of Teluk Sebakor, is a good mark, and the rather sharply pointed peak, 1,006m high and 4 miles N of Tanjung Nassaulang, is also conspicuous. Almost all of the few streams along this coast dry at LW and are navigable only by small native craft. Near Kampung Fafak there is a fair amount of trade in forest products, but in the S portion between Tanjung Tongerai and Tanjung Nassaulang, there are no signs of habitation.

Because the SE monsoon blows mainly in the direction of the coast, there is little protection from the swell except inside deep bays or behind projecting headlands. In Teluk Sebakor, probably because of the influence of the lower land, the E monsoon is felt mainly in a direction N of E.

**Tides—Currents.**—The flood currents along this coast set to the N and the ebb to the S. Both are weak.

The coast between Tanjung Fatagar and Tanjung Kokraaf, about 9.5 miles to the S, is very irregular and forms two bays separated from each other by the very conspicuous Tanjung Tegin.

The N bay is Teluk Wirtopin and the S bay is Teluk Suweri. Both are of little importance.

**Pulau Batu Putih** (2°57'S., 131°58'E.), close S of Tanjung Kokraaf, is a rocky wooded islet about 2 miles long in an E-W direction and 155m high. It is a limestone formation with conspicuous white patches. The W point in particular, is a striking headland with steep white cliffs. A 4.9m coral shoal is N of the island and an 11.9m shoal is about 0.5 mile farther W. The least depth in the passage between Pulau Batu Putih and Tanjung Kokraaf is 11.9m.

**5.53 Teluk Togarwatan** (2°55'S., 131°59'E.) and Teluk Sipatnanam, immediately E of Tanjung Kokraaf, are separated by Tanjung Gangrurumur, which has a cascade of fresh water on its E side. They afford safe anchorage during the W monsoon but are of no importance otherwise.

During the E monsoon there is safe anchorage N of Pulau Batu Pitih.

A wide coral bank covered with fine sand extends out from the coast between Tanjung Ributtutin and Kampung Fakfak.

**Pulau Ega** (Eka) (2°59'S., 132°07'E.), SE of Tanjung Ributtutin, is a narrow, rocky, wooded island with a white beach and several remarkable white patches. A reef extends out about 0.5 mile from the island.

The Tipporra Islets are on an extensive reef between Pulau Ega and the mainland. The area is not navigable.

**Pulau Panjang** (2°59'S., 131°14'E.), about 1.5 miles E of Pulau Eka and separated from it by a deep channel, is narrow and 9.5 miles long in an E-W direction. A narrow ridge of hills whose slopes are under cultivation run along its entire length. A lighted buoy (port hand) marks the extremity of a spit extending SE from Pulau Eka at the channel entrance. Reefs extend 0.15 mile from the W end and 0.25 mile from the E end of the island. A light is shown from Tanjung Wamarusa, the E end of Pulau Panjang.

**Caution.**—Several charted reefs are S of the E part of Pulau Panjang. **Egeron Reef** (3°05'S., 132°18'E.) has a least depth of 1.2m and other reefs 2.1 to 6.7m are W of it. Between Pulau Panjang and Pulau Semai, about 10 miles farther SE there are two reefs, 1.8m and 2.7m deep which discolor well in a favorable light.

**5.54 Fakfak Road** (2°57'S., 132°17'E.), between Meti Meti Reef and Tubi Serang Islet, is sheltered by Pulau Panjang, but a heavy swell sets into it during the SE monsoon.

Tubi Serang Islet is on the E side of Fakfak Road near the SE end of a 0.8 mile projection of the coast reef. It is wooded, partly with nutmeg trees. It has been reported that the coastal reef in the vicinity of the islet is extending SW and W.

Meti Meti Reef, on the W side of Fakfak Road, partly uncovers at LW. A lighted buoy marks the SE side of the reef. A beacon marks a similar but smaller reef 1.75 miles WNW of Metimeteti. There is a deep passage between the reef and the coastal reef. A drying reef is 1.5 miles W of Meti Meti Reef.

**Kampung Fakfak** (2°56'S., 132°17'E.) (World Port Index No. 53100) is on the top of a hill 100m high. The town is the administrative and trading center of the region. A pier, which projects from the shore S of the town, can be used by vessels up to 600 tons with a draft not exceeding 3m, although the pier has been reported to be in a bad state of repair.

A buoy is moored at 0.2 mile SSW of the pier. A lighted buoy lies about 0.3 mile S of the inlet.

**Tides—Currents.**—At Fakfak Roads the highest water level occurs between February and April. The lowest in July, August, and September. The maximum rise and fall that can be expected are, respectively, about 0.75m above and 0.9m below mean sea level.

**Anchorage.**—Anchorage can be taken in 44m off the coast reef. Vessels approaching the anchorage steer a N course toward the pier at Kampung Fakfak and anchor when the channel

between Pulau Ega and Pulau Panjang becomes open, or when a steep point of land to the E is seen midway between the N point of Tubi Serang Islet and the S point of Keke Islet.

**Directions.**—The channel E of Pulau Panjang is clear of dangers, but two reefs with depths of 1.8 to 2.7m, respectively, 6.5 and 3.75miles ESE of Tanjung Wamarusa must be avoided. These reefs show up by discoloration with good light. Vessels approaching from W can pass to within 0.5 mile of Tanjung Wamarusa on an easterly course. Vessels approaching from the S should steer for the lighthouse on a course between 320° and 347°. The lighthouse point can be rounded at a distance of 0.5 mile. A good range is with the S point of Tubi Serang Islet in a line 327.5° with the flagstaff at Kampung Fakfak.

There are several villages on the coast SE of Fakfak Roads including Kampung Wambar, 13 miles to the SE.

Pulau Urat, a small islet is separated from the mainland by a very narrow unnavigable channel.

Pulau Semai, 482m high and close W of Pulau Urat, is separated from that island by Pinto Besar, a narrow channel limited to small craft only. Two villages, one of which is Kampung Krabutwiendi, are on the W part of the N coast of Pulau Semai near Tanjung Tubokmatan.

**Caution.**—Caution should be exercised because the coastal reef close SW of the pier is reported extending S.

**Tanjung Kirana** (3°14'S., 132°35'E.), 24.5 miles SE of Fakfak Roads, is high. There are several reefs with depths of 3.6 to 5.8m within a 3.5 mile radius of the point, and a drying reef is 6 miles W. The reefs are generally well marked by discoloration. It affords good anchorage during the SE monsoon in depths of about 45m.

Kawar Nuwa, an isolated high and very conspicuous islet, is 4 miles W of NW of Tanjung Kirana.

**5.55 Teluk Weru** (3°12'S., 132°35'E.) is a large bight on the N side of Tanjung Kirana formed by the coast bending to the E. This bay affords good anchorage in 40 to 50m during the SE monsoon, but during the NW monsoon anchorage is untenable. There are several settlements on the shores of the bay. Except for the dangerous charted reefs at the head of the bay the remainder is free from dangers.

**Teluk Sebakor** (3°26'S., 132°45'E.), between Tanjung Turkanggur, 5.5 miles SE of Tanjung Kirana, and Tanjung Tongerai, is divided into two parts by the islands, Pulau Karas, Pulau Faur, and Pulau Tuburuasa. The W part of the bay is clear except for a few reefs near the coast, but the E part is strewn with dangerous reefs, some of which may not be shown on the charts. With good visibility, all of the reefs are marked by discoloration. The part of the bay near the islands is safe and good anchorage can be found almost anywhere. There are few inhabitants except on the islands.

**Pulau Karas** (3°28'S., 132°40'E.), has two fairly high portions connected by a low narrow strip of land and from a distance appears as two hills. Kampung Mas and Kampung Tamisa are the two principal villages on the island. There is anchorage off Kampung Mas in 55 to 73m; closer inshore there is danger of fouling the anchor in coral.

Pulau Faur is almost entirely level, except for a 329m summit in its S part.

Pulau Tuburuasa is about the same height as the N part of Pulau Faur.

A 5.8m reef is 4 miles WNW of the NW point of Pulau Karas and a 18.3m bank (position approximate) was reported, about 4 miles WSW of the same point.

A drying reef is close off the NW and NE coast of Pulau Tuburuasa.

Between **Tanjung Tongerai** (3°38'S., 132°43'E.) and Teluk Sanggala, about 17 miles to the S, the coast is high, steep, and rocky with deep water close-to. There is limited anchorage during the E monsoon in the small inlet N of Tanjung Tongerai.

Gunung Baik, near the last-named point, rises gradually from the coast to a height of 1,052m.

There is safe anchorage in about 50m N or S, according to the monsoon, of the unnamed islet on the coastal reef about 12 miles S of Tanjung Tongerai. A 6.7m reef was reported, about 5 miles SW of the islet.

**5.56 Teluk Sanggala** (3°55'S., 132°49'E.) is formed by the Mommon Peninsula projecting in a NW direction from the coast 21 miles SSE of Tanjung Tongerai. This bay is easily recognized from a considerable distance seaward by a waterfall, close N of the entrance to the bay and which appears as a clear white patch. A detached 7.6m shoal is about 0.6 mile W of the waterfall. During the SE monsoon there is good anchorage in depths of 29 to 40m close N of the waterfall. The greater part of the shores of the bay are steep and high with occasional patches of sand between the rocks.

Two islets are on a reef close N of the waterfall. Other islets and reefs are off the N point of Mommon Peninsula. Three detached reefs are inside the bay.

Anchorage can be taken inside the bay, either N or S of the E of the two drying patches on the E side of Mommon. S of this reef a vessel can anchor in 33m. A reef with a depth less than 5m extends 0.5 mile from the NW point of Mommon Peninsula.

**Teluk Wap** (3°58'S., 132°49'E.) is partly obstructed by three islands on a large connecting reef across the entrance and there is room in the bay for only one vessel. A 1.8m shoal about 0.25 mile N of the NW island obstructs that entrance to the bay. Anchorage can be taken in 51m in the bay, but during the SE monsoon even the inner part of the bay is subject to swells. There are several islets near the head of the bay.

**Tanjung Nassaulang** (Cape van den Bosch) (Tanjung Katumin) (4°05'S., 132°54'E.) is steep and high and has been reported to be a good radar target at a distance of 30 miles. About 1 mile N of the cape is a low stretch of coast behind which the land rises steeply. Between this low land and Teluk Wap there is deep water right up to the shore. About 2 miles N of the cape, where the coast is less steep and is fronted by a drying reef, there is fairly good anchorage sheltered against the SE monsoon. A prominent rock, covered with vegetation, lies near the N end of this break.

### Southwest Coast of Irian Jaya—Tanjung Nassaulang to Tanjung Bohia

**5.57** Between Tanjung Nassaulang (Cape Van Den Bosch) and **Tanjung Bohia** (4°07'S., 134°37'E.), about 100 miles to the E, the coast forms a large bay the NW shore of which is

low, flat, marshy and bordered by shoals; the NE shore, however, is high and steep with considerable depths offshore.

Between Tanjung Nassaulang and Tanjung Usau, about 21 miles to the E, the coast consists of high densely-wooded land terminating in cliffs which descent sheer into the sea. East of Tanjung Usau the coast is low as far as Tanjung Simora, after which it again becomes high and rocky with densely-wooded mountains in the interior. The principal islands off the coast between Tanjung Nassaulang and Tanjung Bohia are Pulau Adi, Pulau Namatote, Pulau Aiduma (Alduna), and Pulau Kajumera (Kajoe Merah).

Because the highland in the interior has no conspicuous points, the principal landmarks along this coast are the headlands and the islands. Other conspicuous landmarks are the flat 247m hill on the S end of Pulau Namotote, the Lamansiere Mountain Range, the two pointed summits on Pulau Kajumerah, and Bohia Hill.

**Winds—Weather.**—Weather surveys made of this part of the coast showed:

Dense clouds and light winds from all quarters accompanied the change period at the beginning of April followed by sharp W squalls. East winds gradually prevailed and, at the end of April, the SE monsoon was established with generally ESE winds varied by W, SW, and S gales. In the middle of July the wind increased in force and veered more to the S. During September the SE monsoon gradually reached its strength and, at the end of that month very fine weather sets in with the change.

The W monsoon began at the end of November with much less force than the E monsoon and land and sea breezes succeeded each other regularly. The general direction of the wind was WNW, although considerably influenced by the contour of the land. The change set in about the middle of February with calms and fair weather.

The E monsoon brought cool weather and considerable rainfall. The W monsoon was warmer and drier.

**Tides—Currents.**—The flood current sets to the E between Cape Nassaulang and Tanjung Usau and to the WNW along the N and S sides of Pulau Adi. The direction of the ebb current is opposite to that of the flood. These currents, meeting in Selat Adi (Nautilus), set up strong confused currents with swirls and make the greater part of the strait appear to be filled with breakers.

There are no tidal currents of any importance elsewhere except in the N part of Teluk Kamrau and in the narrow entrance to **Teluk Arguni** (3°27'S., 133°36'E.), where a strong ebb current causes heavy tide rips.

**Anchorage.**—During the W monsoon there is good anchorage anywhere between Tanjung Nassaulang and **Tanjung Simora** (3°40'S., 133°41'E.). During the E monsoon the only safe anchorage is off the W coast of Pulau Adi or on the ridge connecting Nusa Wulan to the mainland. East of Teluk Bitsyara (Bitsaru) the only anchorage is close under the coast, but even there the depths are usually great.

**5.58 Nusa Wulan** (4°07'S., 132°57'E.) is a small inhabited island close to the shore between Cape Nassaulang and Tanjung Papisoi. It is connected to the coast by a ridge with depths of less than 18.3m. During the E monsoon there is safe anchorage in 13.7m between Nusa Wulan and the mainland.

During the W monsoon anchorage can be taken close under the E shore of Tanjung Papisoi, W of the Derdi Reefs.

The small Derdi Islets are on a drying reef immediately E of Tanjung Papisoi; there are two more unnamed islets NW of them.

Pulau Adi is a low island 23 miles long in a NW-SE direction. There are some hills in the W part of the island but they have no conspicuous summits. A light is exhibited from a white structure on the E tip of Adi. The island is only occasionally inhabited. In the E monsoon there is good anchorage off the W coast. The SW end of the island should be given a wide berth.

**Caution.**—Four dangerous reefs are N of Pulau Adi. Between the W most, which dries 1.5m, and Tanjung Lumatta there is a narrow passage which is obstructed by a 2.7m shoal. The other three reefs, the E most of which is 5.75 miles N of Tanjung Watukebo, have depths of 11.9 to 14.9m. A 10.5m depth is 12 miles NNW of Tanjung Watukebo.

Pulau Tumbu Tumbu, encircled by an extensive drying reef, is about 5 miles S of Pulau Adi. There are several charted reefs between this islet and Pulau Adi with depths of more than 5.5m.

**5.59 Selat Adi** (Selat Nautilus) (4°06'S., 133°16'E.), separating Pulau Adi from the mainland coast is 4 miles wide between Tanjung Kainara and Tanjung Usau and has depths of 12.8 to 50m. Pulau Urobi, a small rocky islet E of Tanjung Usau, Pulau Unoga, and Nustiga, N of this islet; are in the NE part of Selat Adi. Simla Reef is NW of Pulau Unoga. Farther E are Pulau Karawatu and Pulau Keliwala, uninhabited low islands surrounded by a fairly wide coral reef with depths of 0.9 to 6.4m between the islands. There are several shoals between the two islands and the mainland. A light is shown from the E extremity of Pulau Keliwala.

**Tides—Currents.**—Within Selat Adi and S of Pulau Adi the flood current sets E and the ebb WNW at a rate of up to 1.5 knots. At times the sea breaks over the entire length of the strait because of the confluence of three currents from different directions.

**Anchorage.**—During the NW monsoon there is good anchorage everywhere. During the E monsoon there is no safe anchorage until the direction of the wind shifts more to the S, then there is good anchorage close under the N coast of Pulau Karawatu or Pulau Keliwala.

**Directions.**—A vessel approaching Selat Adi from W should keep the SE point of Pulau Urobi in line with the NW point of Pulau Karawatu, bearing 067°, until Tanjung Usau is abaft the beam bearing 271°. Then bring this point astern on this bearing and pass between Pulau Urobi and the dangers N of Pulau Adi. Care should be taken not to deviate from this line because the current sets across the channel in the vicinity.

**Caution.**—After passing N through Selat Adi, there are numerous shoals to the W of Pulau Urobi, Pulau Karawata, and Pulau Keliwala and also to the NW of Pulau Keliwala; the chart is the best guide.

**Sungi Karufa** (Karup) (3°53'S., 133°23'E.) is entered over a bar which limits its use to small craft.

Anchorage can be taken in 6.7 to 7.9m anywhere on the mud flat extending over 5 miles offshore between the entrance to Sungi Karufa and Teluk Kamrau during the NW monsoon.

Teluk Kamrau is entered between Tanjung Taronmeta (3°34'S., 133°34'E.), a low point, and Tanjung Simora (Smora), 9 miles to the SE, also a low point.

**Caution.**—See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia, for danger areas in the vicinity of Tanjung Smora (Simora) and Telak Kamrau.

**5.60 Pulau Serotte** (3°34'S., 133°38'E.), a low islet covered with high trees is at the N end of a shoal ridge which divides the entrance to Teluk Kamrau into two channels. The W channel should not be used because it is encumbered with reefs and shoals. The E channel has fewer shoal spots; the chart is the best guide. A light is exhibited at the N end of Pulau Serotte.

It was reported that the depths of about 0.5 mile WNW of Pulau Serotte were considerably less than charted.

Sungi Umbwallar (Kumbwallar) and Sungi Irimawa, flowing into the NW part of Teluk Kamrau are more in the nature of arms of the sea and drain the marshy land. Sungi Umbwallar, as far as it has been surveyed, can be navigated, but Sungi Irimawa is difficult because the edges of the banks on either side are steep-to and the waters are muddy and sunken dangers cannot be seen.

Pulau Syirnusa is an island about 4 miles N of the joint entrance to the above rivers.

**Teluk Arguni** (3°23'S., 133°39'E.) is entered at the head of Teluk Kamrau close S of Pulau Syirnusa. The bay is difficult to navigate particularly in its S portion, unless it has been previously buoyed. It should not be entered on a full tide; the best time is about 1 hour after LW when the three most W reefs are still visible and the ebb current is weak.

**Teluk Kaimana** (3°40'S., 133°44'E.) is a wide bight between Tanjung Simora and the high tongue of land that terminates in Tanjung Bitsyaru. Kampung Simora on the W shore is fronted by a reef and also extends offshore S of Kampung Kaimana on the E side of the bay.

Safe anchorage in about 9.1m is about 1 mile W of the pierhead at Kampung Kaimana.

Several charted shoal spots with depths of as little as 0.9m are in the bay.

**Tides—Currents.**—In the bay the maximum rise and fall of tide that can be expected are, respectively, 0.75m above and 1.4m below mean sea level.

**Kampung Kaimana** (3°40'S., 133°44'E.) (World Port Index No. 53110) has a prominent mosque, flagstaff, and customhouse with a corrugated roof. A drying reef extends 0.5 mile offshore from Tanjung Poweri, which lies close S of the village.

It was reported the pier at the village was in bad state of repair. A light is exhibited near the pier.

Teluk Bitsyaru, immediately E of Teluk Kaimana, extends 10 miles to the N. Its shores consist of high rocky walls, but there is some low land in the NW part of the bay near the mouth of Sungi Sisiandang. Farther inland there is a cleft running in the direction of Kaimana, between Mount Lowai 757m high, and the mountains E of Teluk Kaimana.

There are three reefs in the middle of the bay with depths of 1.2 to 5.5m and several dangerous reefs in the SE part of the bay near the N entrance to Selat Namatote.

**5.61 Pulau Namatote** (3°47'S., 133°52'E.), paralleling the coast S of Teluk Bitsyara for about 10 miles in a NNW-SSE direction, is formed by a narrow mountain range which descends precipitously into the sea except near its N end, which terminates in a drying reef extending 0.15 mile farther N and E than charted. A small 247m hill in the S part of the island is a conspicuous landmark. The highest point of the island, 447m high, is about 2.25 miles N of this hill. Good anchorage may be obtained during the SE monsoon off Kampung Namatote, on a low part of the island to the S of the flat hill mentioned above. The island terminates in a single mountain to the S of the village. Pulau Sagin is off the S point of Pulau Namotote and the channel between the two has several islets and should not be used.

Java Bay, on the E side of Pulau Namatote, has a shoal at its head. There is anchorage in the bay in 18.3m for one vessel, but the anchorage is exposed to the tidal streams. Local knowledge is necessary. The small bay on the W side of the island opposite Java Bay is closed by a reef.

Selat Namatote, separating Pulau Namatote from the mainland, connects Teluk Bitsyaru to the N with Teluk Triton to the S. The coast on both sides is high and rocky and in many places rises almost perpendicularly from the sea. The N part of the strait is obstructed by reefs and should not be used. The drying coastal reef off the N end of Pulau Namatote is marked by discoloration and it has been reported that it extends about 0.2 mile farther N and E than charted.

South of Teluk Gagak (Raaf Bay) the strait is clear. Good holding ground can be found anywhere in the strait. The current sets it the direction of the strait, but numerous rocks in the N part cause swirls.

**Teluk Gagak** (Raaf Bay) (3°45'S., 133°54'E.), on the E side of Selat Namatote, penetrates a considerable distance inland in a SE direction and affords safe anchorage with local knowledge under all conditions. The entrance is narrow, but, with due caution for the reef on the N side, it is not difficult to enter. This reef dries 0.9m and is well marked by discoloration. About halfway across the bay the holding ground is good but in the inner part there are several reefs.

**5.62 Teluk Triton**, E of the S end of Selat Namatote, is 6.5 miles wide at its entrance between Tanjung Aiwa and the NW end of Pulau Aiduma, and is 11 miles long NE-SW. It is completely surrounded by high rocky shores except in the N corner where the river, Sungai Tombona flows out through a cleft. Mauwara Island and Semisarom Island are in the NW part of the bay. The channel between these islands and the area between Mauwara Island and the mainland are not navigable by large vessels nor is the small bay NE of Tanjung Aiwa.

Many islets and rocks are inside of and off the entrance to Teluk Triton. Nukurumi Islet, the largest of these and in the middle of the bay, has a reef extending from its E side, and a detached 1.8m reef is about 0.75 mile W of its N end. The other islets can be approached closely. Nukurumi Islet is

marked by a light. Ambasinsi Islet, on the S shore has a village on its SE side and is the only inhabited islet in the bay.

A 5.5m reef is 0.5 mile S of Pulau Lauzaro and 6.7m reef is about 1.75 miles NE of the NW corner of Pulau Aiduma.

The navigation of Teluk Triton presents no difficulties. Because the SW edge of the drying reef off the mouth of Sungai Tombona is very steep and the water muddy, vessels proceeding to anchor off Kampung Lobo should steer close in to the W shore after rounding Tanjung Kumura.

**Pulau Aiduma** (Aiduna) (3°58'S., 134°06'E.), on the E side of the entrance to Teluk Triton, is high and steep-to, especially on its SW side. There are two mountain peaks on the island the highest of which is 494m, but they are not easily recognized. Kampung Aiduma is on the NW end of the island. A dangerous 2.7m reef is close off the NW coast of the island.

Anchorage can be taken within the inlet about 3.75 miles E of Sarue Nus by vessels with local knowledge. Small vessels can anchor in the inlet about 4.5 miles SSE of the latter place. A 3m reef extending some distance offshore restricts the swinging room.

**5.63 Pulau Dramai** (4°01'S., 134°14'E.), off the SE end of Pulau Aiduma and in the S entrance to Selat Iris, is hilly and partly cultivated. There is fairly good anchorage in depths of 24m about 0.8 mile E of the NW point of the island which is much lower than the other parts of the island.

**Selat Iris** (3°58'S., 134°09'E.), separating Pulau Dramai from the mainland, has a general width of 2 miles except at the N entrance where the navigable channel is reduced to 0.5 mile, and in the S part where it is split in two by Pulau Dramai. The strait is deep and clear and offers no difficulty except for a strong current, especially in the N part near Sarue Nus, where whirlpools may be encountered.

The E shore, like the W, is steep-to. The inlet to the N of Pulau Dramai affords good anchorage.

Across the entrance to Teluk Kajumerah is **Pulau Kajumerah** (4°01'S., 132°23'E.), roughly triangular shaped and attaining a height of 555m on its S side. Another 381m summit is a little farther W. The S and W sides of the island are steep and rocky, but elsewhere the land slopes up gradually. Pulau Salakula is off the W end of Pulau Kajumerah leaving a channel about 0.3 mile wide, deep and clear, between it and Tanjung Wandala on the mainland. The passage between Pulau Salakula and Pulau Kajumerah is not navigable. Three small islets are off the E end of Pulau Kajumerah; the channel on either side of the islets is clear. Several small islets are off the N part of Pulau Kajumerah, the largest of which are Nasir, Marewa, and Mondan. The passage between these islets and Pulau Kajumera are suitable only for small boats.

The inlet on the W side of the bay between Tanjung Wandala and Tanjung Sawara Selai (Tanjung Soaka Sekai) is clear of dangers. The small bay S of Tanjung Wikrombus is almost closed by a 0.9m reef extending about 0.5 mile SSE and by a 1.4m reef fronting its entrance. The small cove at the head of Teluk Kajumerah is navigable at LW when the reefs can be seen.

**5.64** The E shore of Teluk Kajumerah between Sungai Airawoi and **Tanjong Ferai** (3°58'S., 134°26'E.) is for the most

part low, mangrove-covered and backed by steeply-rising mountains. An inlet is N of Tanjung Ferai; its SE part has several shoals that dry at LW. Between Tanjung Ferai and Tanjung Awura the coast is steep and rocky.

Two rocks with depths of 8.5m and 2.1m are about 2 and 2.75 miles, respectively, NW of Tanjung Ferai. The W extremity of the islet NW of Tanjung Awura in range with the E side of the N most of the islets farther to the NW leads W of these dangers.

Teluk Lakahia is 8.5 miles wide at its entrance between **Tanjung Awura** (4°02'S., 134°29'E.) and Tanjung Bohia and penetrates the land in a funnel shape for 11 miles to the NE, after which it turns around to the E and continues several miles inland. This latter portion, known as Teluk Etna, is only about 0.75 mile wide. A drying bank extends W from Tanjung Bohia and merges into a reef with depths of less than 5.5m extending about 2.5 miles SW. Shoal patches with depths of 4 to 5m are about 2.5 miles SW, and a reef awash is about 2.25 miles S, respectively, of Tanjung Bohia. A group of coral shoals with depths of 1 to 2.2m are about 1.25 miles W of the same point. Two small islets about 2.2m high are near the end of a drying bank extending W from Tanjung Bohia, and a reef which dries 0.9m is about 0.75 mile N of the point.

**5.65 Pulau Lakahia** (4°04'S., 134°36'E.), a low and wooded island surrounded by a reef, is in the entrance to Teluk Lakahia. The reef extends for 1 mile from the SW extremity of the island. The channel between Pulau Lakahia and Tanjung Bohia is very narrow at the N end and should not be used without local knowledge. The preferred entrance between Pulau Lakahia and Tanjung Awura is wide and deep and has an area that has been swept to 11.9m.

The NW shore of Teluk Lakahia is steep and mostly high and rocky except for an occasional sandy beach behind which the land rises. The E side is tree-covered and low except near Tanjung Bohia which has a hill of the same name, 110m high. Tanjung Tarella, 8.5 miles N of Tanjung Bohia, is a low, sandy, tree-covered point. A long, narrow, drying bank is 0.75 mile W of this latter point. The E side of Teluk Lakahia is mostly occupied by an extensive bank with depths of less than 5.5m. Teluk Terara is a shoal and unimportant.

Between the drying bank and the W shore there is an irregularly-shaped area swept to 4.5m.

There are two passages to Teluk Etna; each is narrow and hazardous. The W passage, close along the W shore, passes between a 0.6m rock off Tanjung Etaburi and Karang Japbari, a reef with a least depth of 1.8m. The E passage is between the drying bank W of Tanjung Tarella and Karang Japbari. The approach to the passages has been swept to 4.5m and leads on either side of a 1.9m bank. Local knowledge and alert piloting are essential for safe transit through this area. Numerous unmarked dangers within the area are shown on the chart.

**Tides—Currents.**—At Pulau Lakahia the highest water occurs in May and November. The maximum rise and fall of tide that can be expected are, respectively, about 1.1m above and 1.1m below mean sea level.

**Anchorage.**—There is good anchorage anywhere in Teluk Lakahia. During the E monsoon, because a heavy swell then

runs to the NNW of Pulau Lakahia, the best anchorage is off the mouth of the small Sungai Kambelangen, W of Tanjung Etaburi. During the W monsoon there is anchorage off the NW side of the bay, E of Tanjung Amanmawa.

**5.66 Teluk Etna** (3°55'S., 134°45'E.), narrow and landlocked, is entered between Tanjung Itewi and Tanjung Bawia, two steep projections of the coast. Tanjung Itewi, is steep-to but on its E side a row of drying rocks extends nearly 183m from the shore between Tanjung Ulupala and Tanjung Bawai. Immediately outside the outer rock the depth is 7.3m. A drying sandbank is off Tanjung Ulupala. The N side of the bay is mountainous; the highest point Pegunungan Bamana, about 3 miles NE of the entrance, is 1,371m high. The shore is not steep-to everywhere, but is broken by stretches of low mangrove-covered land. The S side is similar to the N except that the mountains are in detached groups. This more open coast has a perceptible effect on local weather conditions. A waterfall with a graduated drop of about 198m is in the W part of the bay N of the W entrance point.

Depths in the bay vary considerably, the narrowest parts being the deepest. The E part of the bay is shoal, but a channel with more than 9.1m extends to within 5.5 miles of the head, and depths of 5.5m extend still farther.

A settlement is on the N shore about 1 mile NNW of Tanjung Itewi and an oil storage farm is on the N shore abreast Tanjung Bawai. A pier at the latter has a depth of 3.9m at its head.

**Tides—Currents.**—In Teluk Etna the highest HW level occurs in April and May and October or November; the lowest in May and November. The maximum rise and fall that can be expected are, respectively, about 1.3m above and 1.3m below mean sea level.

The tidal currents in Teluk Etna turn four times daily. The strength depends on the range, the phase of the tide, and the breadth and depths of the part of the bay. Generally the current at springs has a rate of 3 to 4 knots in the narrow parts of the bay. The currents follow the direction of the channel. Whirlpools, necessitating careful steering, are formed at the drying reef in the middle of the bay and at various places where the turns are sharp. In the bight N of Tanjung Itewi in particular the water has a continuous turning motion.

**Anchorage.**—There is anchorage throughout the length of the bay in moderate depths. Current eddies and poor holding ground make anchorage inadvisable in the narrow parts of the bay or in the bight N of Tanjung Itewi.

**Directions.**—Approaching Teluk Lakahia from S, the mountain **Bukit Buru** (4°13'S., 134°56'E.) to the E is a good mark because it stands quite apart and close to the coast. Closer, Bohia Hill and Pulau Lakahia serve to point out the entrance to the bay. The S portion of the bay presents no difficulties. From W, the 487m mountain on Tanjung Awura is a good mark. Vessels approaching from E should give Tanjung Bohia and Pulau Lakahia a wide berth.

After passing between Tanjung Amanmawa and Pulau Lakahia bring Tanjung Tarella, which is conspicuous because of its trees, to bear 068° and cross the bank abreast Tanjung Etaburi on that course over a least depth of 5.9m. When in depths of 10.9m, alter course to 040° until Tanjung Wariwi bears 285°, after which steer straight for the center of the entrance to Teluk Etna. On the E side of the navigable channel

near Tanjung Tarella there are two drying reefs which at LW, assist in giving the direction of the channel.

In the entrance to Teluk Etna, a drying sandbank and shoal water between Tanjung Ulupala and **Tanjung Bawia** (3°56'S., 134°40'E.) considerably reduce the width of the navigable channel. The deep W side near **Tanjung Itewi** (3°56'S., 134°39'E.) should be held and the bay gradually steered into as Tanjung Saimba, the point on the N shore about 3.5 miles E of Tanjung Bawia, opens clear on Tanjung Bawia. Care should be taken to avoid the 7.3m patch NE of Tanjung Itewi. When about 2 miles E of Tanjung Bawia keep on the S side of the channel to avoid the bank to the W of Tanjung Saimba.

If the current is strong, give this point a good berth to avoid the eddies, and keep along its E side until the part of the bay E of Tanjung Yaramabonga comes open, then cross over and keep along the N side of that point and on the S side of the channel until the partly drying reef in the narrowest part of the channel abreast the Seriwi Mountains has been passed. The channel N of this reef is also clear. After passing the reef gradually steer over to the N shore until abreast of the steep headland 2.5 miles E of the reef, when a course of 116° on a conspicuous mountain spur on the S shore leads farther into the bay. The channel here narrows considerably and is steepest on the N side. The best plan is to keep on soundings on the S side of the channel and act accordingly.

### Southwest Coast of Irian Jaya (Continued)— Tanjung Bohia to Tanjung Kool

**5.67** From Tanjung Bohia the coast trends ESE for about 13 miles to **Tanjung Narika** (4°15'S., 134°49'E.), a spur of Bukit Buru, which can be recognized by several large yellow patches against the rocks. Several streams discharge into the sea along this stretch of coast.

East of Tanjung Narika, the land rises for about 7.5 miles to **Bukit Buru** (4°13'S., 134°56'E.), a ridge 14 miles long which slopes steeply on the E side. Between it and the Pegunungan Tiyo range to the E there is a valley with hilly ground.

Between Tanjung Narika and **Tanjung Namaripi** (4°28'S., 135°13'E.), about 29 miles ESE, several rivers discharge into the sea. Between Tanjung Narika and the mouth of Sungai Buru, 9 miles SE, the coast is high and rocky but beyond that it is lower and closely backed by hills. Breakers have been reported at a position 1.5 miles WSW of the river.

**Sungai Katera** (4°22'S., 135°03'E.), about 12 miles W of Tanjung Namaripi, has a large village on the E side of its entrance.

**Tanjung Namaripi** (4°28'S., 135°13'E.) is a steep foreland which appears as an island when seen from E and is visible for 30 miles. A stranded wreck is about 2 miles E of the point.

From a few miles E of Bukit Buru the Pegunungan Tiyo range of mountains extend in an E direction and join the Pegunungan Sudirman range. The highest summits are snow-covered and visible from S at a distance of 75 miles in clear weather, but are generally enveloped in clouds except in the early morning or at sunset. In general they appear to be gently undulating. **Puncak Jaya** (4°06'S., 136°50'E.) is a prominent landmark.

Between Tanjung Namaripi and **Pulau Naurio** (4°56'S., 136°48'E.), about 100 miles to the ESE, the coast is low and densely wooded, presenting a monotonously uniform appearance relieved only occasionally by the gaps at the mouths of the rivers. There are no known off-lying dangers along this coast except near Pulau Naurio.

A wooded point, conspicuous from E and W, is 30 miles E of Tanjung Namaripi. A remarkable flat summit is about 9 miles NW of the wooded point and 5 miles from the coast; it is a good mark when bearing between 045° and 315°.

**Sungai Uta** (4°35'S., 136°02'E.), discharging 45 miles E of Tanjung Namaripi, can be navigated by small craft for several miles above the mouth.

The entrance to Sungai Makemaw about 8 miles E of Sungai Uta, is distinctive. The W entrance point projects sharply and the E point appears as two islets. From the latter point a drying bank extends 2 miles SW and breakers have been seen 2.5 miles from shore. The river is not navigable.

**Anchorage.**—There is anchorage anywhere in 10.9 to 14.6m between Sungai Uta and Sungai Makemaw.

**5.68 Sungai Mimika** (4°41'S., 136°28'E.), 22 miles E of Sungai Makemaw is easily recognized by an isolated group of trees near Kampung Kokonao, just W of the mouth of the river. The river is navigable by small craft. The coast here is low and covered with mangrove. The banks at the river entrance are bordered by a strip of sand partly covered by trees among which are some dwellings. There is good anchorage in 20m with the W entrance point of the river bearing 014°. Local knowledge is necessary. The river is only suitable for small craft at HW.

There are numerous rivers between Sungai Mimika and Pulau Naurio, none of which are of navigational importance. A large white beacon board is at the W entrance point to Sungai Keakwa, 5 miles SE of Sungai Mimika. A light is exhibited from the entrance to Sungai Keakwa.

**Tanjung Steenboom** (4°56'S., 136°50'E.) is at the E extremity of two islands, now joined together, Pulau Apiripi and Pulau Amewtiri, on the E side of the entrance to Sungai Tipuka. Another small island, Pulau Naurio, is about 1 mile NE of the point. All three islands have sandy beaches and are covered by high trees. A light is exhibited from Tanjung Aika at an elevation of 31m in the approaches to Amamapare.

The E mouth of Sungai Tipuka, known as Sungai Aika, is 4 miles WNW of Tanjung Steenboom. Kampung Apiripi is near its E entrance point and Port Amamapare is 6 miles upstream. There is a depth of 5.2m over the bar, but in any wind or swell heavy breakers occur across the entrance.

**Caution.**—A dangerous wreck is reported about 25 miles SW of Tanjung Steenboom.

**Amamapare** (4°49'S., 136°58'E.) (World Port Index No. 53115) serves the copper mines at Erstberg in the Pegunungan Sudirman mountain range, about 80 miles up the river Sungai Tipuka. The port is approached by a well-marked channel about 12 miles long. Pilotage is not available, but local tug masters will board vessels entering and leaving the harbor to provide advice.

Vessels up to 20,000 dwt can be accommodated at the ore loading jetty. Vessels are loaded to a maximum draft of 6.7m at the jetty and then fully loaded at the outer anchorage.

**Pilotage.**—Pilotage is not available, but local tug and barge masters are available as guides; they board vessels about 0.5 mile NW of the fairway lighted buoy. Vessels should make contact via telex with their agent. Contact the port on VHF channel 16 for anchoring and pilotage information on approaching lighted buoy A.

The channel is 0.15 mile wide and its limits are marked by a range light and numerous lighted buoys and lighted beacons.

Good anchorage can be obtained in the river at Amamapare in depths of 24 to 30m.

A small hospital and a doctor are at the port, and an airfield is about 28 miles N.

Bright working lights are exhibited from copper mines about 53 miles NNE of Tanjung Steenboom and are visible for about 90 miles SW in clear weather.

A 10.3m shoal about 8 miles WSW of Tanjung Steenboom is marked by a buoy about 2.5 miles to its N.

The depths off this part of the coast decrease gradually from 55m at 10 miles off to 9.1m at about 1.5 miles offshore. About 5 miles S of the entrance to Sungai Aika there is a 6.7m reef. There is a 10.5m patch 8 miles SW of Tanjung Steenboom. Vessels should not anchor in less than 12.8m or 14.6m if there is any sea or swell.

The flood current sets ESE and the ebb WNW along the coast, but the currents are irregular and are influenced by the river discharges.

**5.69 Pulau Naurio** (4°56'S., 136°50'E.) and Pulau Wajeteri are connected to the shore by banks and are conspicuous by their high trees.

Shoal water extends SW and S from Pulau Wajeteri and Pulau Naurio. Five miles SW of these islets there is a depth of 7.3m. Breakers have been seen about 1.25 miles N of this depth. The edge of the bank passes 4 miles S of the islets and trends in a SE direction 5 to 12 miles offshore. The edge of the bank off the islets is steep-to. Sungai Kupera Pukwa (Sungai Mayiweta) discharges about 10 miles E of Pulau Naurio. Anchorage can be taken 8 miles SW of the E entrance point of the river. Heavy breakers are frequent along the coast between this river and Sungai Newerip.

Numerous rivers of little or no navigational importance discharge between Sungai Kupera Pukwa and DeJongs Banks.

**DeJongs Bank** (5°18'S., 137°21'E.), consists of two shoals of hard sand, 4 miles apart with depths of 2m or less over them. Sounding give no warning of approach to these banks. In bad weather they are marked by heavy breakers.

**Pulau Kasteel** (5°15'S., 137°39'E.) is near the shore abreast of Sungai Kasteel. The island is lower in the center than at the ends and appears as a castle with battlements.

Sungai Kasteel and Sungai Blumen are navigable by small vessels.

**5.70 Pulau Laag** (Low Islands) (5°23'S., 137°43'E.), about 5 miles SSW of the entrance to Sungai Blumen, is about 0.5

mile long N-S and 0.25 mile wide; it is low and covered with vegetation. A depth of 10.9m is 7 miles WSW of the island with lesser depths between that depth and the island. Small Island is about 4 miles E of Pulau Laag and about 1 mile offshore.

**Sungai Hellwig** (Sungai Barat) (5°23'S., 137°52'E.) is reached by a 4.9m channel and is navigable by small vessels. The area is well populated.

**Providential Bank** (5°40'S., 137°50'E.), with a least depth of 4m over it near its W side, extends about 13 miles W from the SE entrance point of Teluk Flamingo. A lighted buoy is moored about 183m N of the 4m depth. A detached 4.9m shoal is about 7 miles S of the bank.

**Teluk Flamingo** (5°31'S., 138°02'E.) receives the waters of Sungai Northwest, Sungai Lorentz, and Sungai Utumbuwe. The outer entrances to these rivers are marked by lights. Vessels should keep in the channel marked by buoys and beacons.

It was reported (1992) that all the channel buoys and beacons were missing and depths do not agree with the charted depths.

**Sungai Northwest** (Sungai Barat Laut) (5°27'S., 138°01'E.) is navigable with local knowledge by vessels with a draft of 3.4m and about 50m long for about 50 miles and farther by small craft.

**Sungai Lorentz** (Sungai Dumes) (5°25'S., 138°05'E.) can be navigated with local knowledge by vessels up to 50m long and 3.4m draft to about latitude 5°00'S.

Sungai Utumbuwe is navigable with local knowledge for about 50 miles by craft the same size as those that can navigate the above two rivers.

**5.71 Sungai Pulau** (Sungai Jugu) (5°35'S., 138°10'E.) has two mouths about 8 miles apart. The N entrance, about 12 miles S of Sungai Utumbuwe, has a least depth of 1.5m, hence the S arm is generally used. The S arm has been navigated on a favorable tide by vessels with a 3.6m draft as far as 5°21'S., 139°20'E. Smaller vessels have navigated further up river and into some of its tributaries.

**Directions.**—To enter the S entrance of Sungai Pulau steer 093° on the S entrance point, where a group of trees rise above other timber. This course leads just N of a sandbank that dries at LW and extends to Triton Bank. The group of trees shows up fairly well when the approaching vessel gets into soundings of 4.9m. Before this mark comes into sight, however, the conspicuous and steep S entrance point of the N river mouth serves as a good mark. There is a least depth of 4.5m, soft mud, in the navigable channel to the mouth. The left bank should be favored, even at the bends, up to the junction with the second branch, Sungai Kampung.

Near the mouth of the river the flood current sets to the N and the ebb to the S.

**Triton Bank** (5°58'S., 138°04'E.), which dries, is about 10 miles SW of the S entrance point of the S mouth of Sungai Pulau. The edge of this bank extends 2 miles farther seaward.

From Sungai Pulau the coast, low, wooded, and swampy, trends SSE for about 30 miles then SE. Sungai Kronkel and Sungai Cook are shallow unimportant rivers along this coast.

Odammun River, about 60 miles S of Sungai Pulau, has three mouths, from N to S, Mabur, Mayu, and Jar (Viarre). The river

is navigable with local knowledge to Sungai Digul. There is very little current in the river.

**Caution.**—A wreck is 43 miles NW of Tanjung DeJongs in 6°37'S, 137°53'E. A light is exhibited at Tanjung DeJongs.

A shoal with a least depth of 2.4m is off the mouth of Jar, 8 miles NNW of Tanjung DeJongs.

**5.72 Sungai Digul** (7°10'S., 138°42'E.), a river of some importance, is about 6 miles wide at its entrance abreast Tanjung Modder (Ujung Lumpur), but gradually narrows. Several charted banks and dangers that dry at LW are on the N side of the channel. Drying shoals extend about 5 miles W of Tanjung Modder. A lighted, black and white buoy is 11 miles WNW of Tanjung Modder. The channel is along Tanjung Modder, where the bank is not joined to the S shore. Over the bar, WNW of Tanjung Modder, there is a depth of only 1.8m, but the rise of tide is great enough to make the channel navigable.

**Caution.**—Mariners are warned that depths in the approach to Sungai Digul are reported to be extensively different from those shown on the chart. A 0.4m shoal is about 9 miles SW of Tanjung Modder. The land on either side of the lower Sungai Digul is low and swampy, but farther up the river it gradually becomes slightly hilly with elevations of 9.1 to 10.6m. Sungai Digul is navigable by vessels up to 50m long and 3.6m draft, and lesser depths can be carried farther into its tributaries.

**Tanah Merah** (6°05'S., 140°20'E.) (World Port Index No. 53120), on Sungai Uwamba about 50 miles above its junction with Sungai Digul, can be reached with local knowledge by small vessels up to 25m long with a draft of 1.9m.

**Tides—Currents.**—At the mouth of Sungai Digul the lowest water occurs in July and November. The highest rise and lowest fall of tide that can be expected are, respectively, 2.1m above and 4m below mean sea level.

**Directions.**—Approaching from NW be careful not to mistake one of the mouths of Sungai Odammun for Sungai Digul and steer for a position with Tanjung DeJongs bearing 011°, distant 8 miles, where there is a depth of 8.2m, then steer 125° to a position about 1.5 miles N of Tanjung Modder until Tanjung Gemeene (Gemeenehoek) on the N bank of the river about 10.5 miles ENE of Tanjung Modder, bears 084.5°, then steer for Tanjung Zondags (Zandagshoek), bearing 096°, taking care to avoid the 2.1m shoal ENE of Tanjung Modder, until Tanjung Gemeene bears 040°, then follow the channel passing N of the islet Amman Sileam, S of Habee Sillam, and W of Ora Sillam, 17, 28, and 34 miles, respectively, above Tanjung Modder.

**Caution.**—A tidal wave or bore, known locally as Kapala Arus, is experienced in Sungai Odammun and Sungai Digul. It occurs from 2 days before to 2 days after full or new moon. It is in the form of a wave about 1.8 to 4m high which moves up the river at a great speed. It is reported that several waves in succession can be experienced in Sungai Digul. Small vessels in the river when the bore is expected anchor in a branch of the river until the waves have passed. Larger vessels anchor with both anchors and steam ahead while the waves are passing.

**5.73 Gosong Kolepon** (Kolff Bank) (7°00'S., 136°50'E.), about 95 miles NNW of Tanjung Vals, the W extremity of

Pulau Dolak, is a relatively small sandbank with a least depth of 14m. A 20.1m bank was reported 60 miles WNW of Gosong Kolepon.

**La Cher Bank** (La Chur Bank) (8°29'S., 136°15'E.), with depths of 24 to 26m, is steep-to, 6 miles long WSW-ESE, and surrounded by depths of 66m.

A shoal area enclosed by a danger line on the chart is W of La Cher Bank. Several 9.1 to 18.3m shoals are within 7 miles of the danger line enclosing this area. The area has not been completely surveyed.

A charted reef area reported 110 miles W of La Cher Bank has not been examined.

**Pulak Dolak** (7°50'S., 138°30'E.), the southwesternmost point of Irian Jaya, is separated from the mainland by Selat Muli. The island is about 100 miles long NE-SW and 50 miles wide at its E part, then tapers to a narrow point at Tanjung Vals, its SW extremity. The land is low, covered with dense forest and so marshy as to be almost unaccessible. The NW coast is fronted by a mudbank extending out 7 to 12 miles with 5.5m at its outer edge, increasing very gradually to seaward. About 50 miles NE of Tanjung Vals the bank decreases in width. The seaward edge of the shore bank is much steeper there than on the NW side of the island. The island is fairly heavily populated.

**5.74 Tanjung Vals** (8°21'S., 137°35'E.), the SW extremity of Pulau Dolak, is dangerous to approach from W because a bank with depths of less than 18.3m extends about 65 miles offshore and it is possible to run aground before sighting land. Isolated 12.8 to 18.3m shoals are 40 to 57 miles W of the cape. S of the cape depths decrease rapidly from 18.3 to 9.1m. There is generally a heavy sea off it during the E monsoon and occasionally during the W monsoon.

The flood current has been observed to set toward Tanjung Vals at a rate of 1.5 knots and then divide and continue NE along the NW coast and E along the S coast of the island. The ebb current sets in the opposite direction at a maximum rate of 1 knot.

The N entrance to **Selat Muli** (Marianne Strait) (8°00'S., 138°53'E.) is 10 miles wide with depths of 10.9 to 18.3m, but the width and depth gradually decrease to the S. The S part of the strait is narrow and very shallow and subject to constant change; it should be attempted only with rising water. While the strait affords passage for large sailing proas, enabling them to avoid the heavy swell of Tanjung Vals, it is seldom used by larger vessels. The bottom varies between sand mud and clay. The banks generally are just above HW level and the land is flat, wooded, and swampy. The depths in the S entrance, between **Tanjung Kool** (8°23'S., 138°56'E.) and Tanjung Kombies, are not more than 1.8m, soft mud, but when the drying bank extending from the W side of Pulau Bumbel is covered, just inside the S end of the strait, there is a depth of 3.6m over the bar.

Detached 1.8m and 0.6m shoals are 6 miles SSW and 9 miles SW, respectively, of Tanjung Modder.

**Caution.**—Both the N and S entrances to Selat Muli are subject to change and the charts cannot be depended upon.

### South Coast of Irian Jaya—Tanjung Kool to Bensback River

**5.75** This section of the coast trends E for about 65 miles, then SE, forming a wide open bight. The shores of this bight are fronted by a wide mudbank. Between Tanjung Kool and Tanjung Kayakaya the coast is low and covered by mangroves; then between Tanjung Kayakaya and the mouth of Sungai Merauke a ridge of low sand dunes with abundant coconut palms rises behind a broad beach. Back of the ridge are low fertile valleys which are submerged during the rainy season and separated from each other by low sandy ridges. There are numerous villages along this coast. Bulaka River, Bian River, Kumbe River, and Sungai Merauke discharge into the sea along this part of the coast. The few landmarks along the coast are useful only for inshore navigation.

The **Bulaka River** (8°08'S., 139°14'E.) discharges into the sea about 22 miles NE of the S entrance to Selat Muli. Either side of its entrances are fronted by mud flats extending out 0.25 mile. Although there are depths of 7.3 to 10.9m in the river mouth and 5.5 to 7.3m, 8 miles upriver, the approach is over shallow flats 1.8 to 3.6m extending about 6 miles offshore. The river has been navigated by a 49m long vessel with a 3.3m draft as far as Kampung Apong, a village about 20 miles above the mouth. The least depth in the approach to the entrance was 1.8m with 1.3m over the bar, and 10.9m in the river.

A drying bank is 2 miles SW of the entrance and a small 0.6m coral reef with 3.6m around it is about 3.5 miles S of the E entrance point. Drying rocks lie 4.5 miles SSW and S of the W entrance point of Bulaka River.

Tanjung Kayakaya, about 25 miles E of the S entrance to Selat Muli, is at the W end of a more densely-wooded shore. From E it appears as a sharply defined point. About 1.5 miles W of the point is a small detached wood with low brush wood on either side of it. The coastal bank, extending 1.5 to 5 miles offshore, dries in some places for a distance of 1.5 miles offshore.

**Pulau Habeeke** (8°15'S., 139°28'E.), about 6 miles SE of Tanjung Kayakaya, is about 3m high and about 0.25 mile wide. It is covered with high trees visible for about 15 miles. A ledge of sand and stones with depths of 1.4 to 4.5m extends 2.25 miles S from the island. Karang Sametinke, a drying reef is 1 mile within the S edge of this bank. A light, from which a racon transmits, is shown from Pulau Habeeke. An 8.2m shoal and an 7.8m shoal are about 25.5 miles, 164° and 142°, respectively, from the islet. There is a 7.3m shoal 16 miles, bearing 241° from Pulau Habeeke also.

There are many boulders on the detached shallow flat extending far seaward from the E side of Pulau Habeeke. Along the N side of the island is a blind channel with a depth of 4.9 to 6.1m. It is approached from the W over a 5.5m bar. This channel provides the only access to the island and the water is almost always smooth; however, this channel should be marked before its use. On the N side of the channel the reef rises steeply and is more or less dry to the mainland. Dangers other than those charted may exist in the area of the island. There is a light on a white metal framework exhibited from Pulau Habeeke.

**Anchorage.**—There is good anchorage in about 5.8m, mud, about 2 miles WSW of Pulau Habeeke. To reach the anchorage the island should be steered for, bearing 055° until Tanjung Kayakaya bears 315°, then steer NNE and anchor N and anchor with Pulau Habeeke bearing 079°.

The section of the coast between Tanjung Kayakaya and the Bian River is low, sandy, and thickly overgrown with tall trees. The only perceptible break is at the mouth of the Bian River. Many coconut palms grow near the villages. Small woods and clumps of tall trees are along this stretch and some can be seen for a distance of 13 miles.

**5.76 Bian River** (8°08'S., 139°57'E.) is about 1 mile wide at its mouth. A light is exhibited at the E entrance. It has been ascended by a vessel 50m long with a draft of 3.1m as far as Kampung Kabtel, a village about 30 miles above the mouth. Above this point it narrows. The depths in the entrance vary from 1.8 to 2.4m. A large volume of muddy water brought down by the stream is noticeable as far as 10 miles offshore. Shoals, 5.8 to 9.1m, are outside the 10m curve. At high tide the mangrove-covered banks of the river are flooded for a considerable distance.

In the SW approach to Bian River two shallow spits extend SW from the coastal bank and two detached drying banks are about 4 miles SW of Tanjung Mawal, the E entrance point to the river.

**Tides—Currents.**—There is practically no period of slack water in the river; in fact, while the ebb current is still running in the outer bend the flood current may be flowing at a considerable rate into the inner bend. There may be a bore here because the water has been observed to rise 2.4m in 10 minutes, rushing in with a hissing sound. Caution should be exercised because of drifting timber in the tidal currents.

**Directions.**—Entering the river bring the E entrance point to bear 054° and steer in on that course.

The stretch of coast between the Bian River and the Kumbe River is fronted by a coastal bank with depths of less than 5.5m extending about 15 miles offshore. SW of the entrance to Kumbe River, the coastal bank with less than 18.3m extends about 50 miles offshore. There are several detached shoals with depths of 9.1 to 10.9m on this bank. A 4.5m shoal is about 14.5 miles SW of the S entrance point to Kumbe River and a wreck, in a depth of 0.9m, is 10 miles SSW of the entrance.

**Kumbe River** (8°22'S., 140°15'E.) is accessible only to small craft with local knowledge because of the shallow coastal bank. The entrance is marked by beacons. Several charted dangers are in the approach. The entrance points have broad sand beaches with coconut palms behind them. A village is on the N entrance point and a red-roofed house serves as a good landmark.

**Tides—Currents.**—During November and December the tidal currents were observed to set in the direction of the coast, averaging about 7 hours to the NW and 5 hours to the SE. During the SE monsoon the in-going tidal stream at the river mouth has a rate of about 1.5 knots and the outgoing stream from 2 to 3 knots; during the NW monsoon the rates are greater.

**5.77 The Merauke River** (Maro River) (8°29'S., 140°21'E.), about 10 miles SE of the Kumbe River, is deep and

tortuous, but has been ascended for a distance of 60 miles by a vessel about 61m long with a 3.1m draft and 90 miles farther by boat.

A wide drying bank extends out from the coast on either side of the entrance. Breakers have been reported about 8 miles SW of Tanjung Haram, the SE entrance point of the river. Depths of 3 to 4.5m are charted in this vicinity. A marked channel with a least depth of 0.9m across the bar leads NE through the above drying bank.

It was reported that the sandbank of Tanjung Haram had extended into the channel and it was necessary to keep to the W of the leading line when passing the point. The wreck of a large fishing vessel was observed on the river bank 0.75 mile E of a ruined jetty close SE of the front leading light.

It was further reported that the entrance to the river was difficult to distinguish against the uniform jungle background and that it was advisable to rely on celestial navigation fixing until the inner buoy and leading lights were identified. These leading marks, although difficult to distinguish against the dark background, and the aero radiobeacon tower 1.25 miles ESE of Tanjung Haram, were the only good fixing marks. Care was necessary, however, to avoid confusing this tower with others standing near them.

Numerous charted dangers are in the approach to Merauke River and, because the position of shoals may vary, care should be taken to adhere closely to the marked channel.

**Aspect.**—Aids are lighted only on request and even then are sometimes difficult to identify. Tanjung Mimiabe, on the S side of the entrance to Merauke River, is marked by a light; because the structure is difficult to see, a flag is sometimes flown from it to assist in identification. A radio mast, 52m high with red and white horizontal bands, is about 0.3 mile SE of the light.

**5.78 Merauke** (8°29'S., 140°23'E.) (World Port Index No. 53130), the principal town in the S part of Irian Jaya, is on a plain in the midst of the jungle on the S bank near the mouth of Sungai Merauke. The low land on which the town stands is protected by dikes. From a distance the town, covering a considerable area, looks like a mass of galvanized roofs. Copra is the principal export. There is a hospital at the town.

**Tides—Currents.**—At Merauke mean HW springs rise 5m, mean HW neaps rise almost 3.8m, and the mean sea level is 3m.

At the mouth of the river during March and April the ebb current reaches a rate of 2 knots and lasts about 7 hours, the flood current runs for about 5 hours at a rate of about 1 knot. It

is reported that the flood tide comes in three bores which makes pilotage extremely difficult. Abreast the town the current has attained a rate of 5 knots.

Semidiurnal tidal currents are felt along the coast, even by vessels out of sight of the land. A strong current runs up and down the coast following the tides; the flood setting SE and the ebb NW. The ebb current is stronger and of longer duration. The rate of current is about 2 knots.

**Aspect.**—There is an L-shaped pier at the town. A berth at its head is 40m long with a depth of 4m alongside. It was reported (1990) to be in poor condition.

**Pilotage.**—The harbormaster is the pilot at Merauke and pilotage is compulsory for large vessels. Request for pilot should be made in advance by radio. Vessels without local knowledge are strongly advised to take a pilot because of the constantly changing positions and the lack of prominent features.

**Anchorage.**—Anchorage can be taken in 6.7m in the middle of the river abreast of the town.

**Directions.**—It is not uncommon for vessels to ground on the bar approaching Merauke. Frequent fixes and constant soundings should be taken. In no case should the approximate 10m curve be crossed until the ship's position is definitely ascertained. Steer N until Tanjung Miambe light structure bears 066°, then alter course to this bearing and steer in toward the light structure. The bar is subject to change and the buoys are relocated accordingly.

Between Sungai Merauke and a rounded point 19 miles to the SSE, the slightly receding coast is fringed by a sandy beach which dries in places to near 2 miles offshore. There are several small villages with coconut palms around them near the shore along this coast. The Bensback River, at the boundary of Irian Jaya and Papua New Guinea, is 55 miles SE of Sungai Merauke. The sandy beach continues along this part of the coast and is backed by cultivated low land.

A shallow bank extends 4.5 to 8.5 miles offshore along the coast between Sungai Merauke and the Bensback River. A rock with a depth of less than 1.8m and a sandbank that dries 0.9m are about 8 miles SW and 6 miles SSW, respectively, from the rounded point in 8°39'S., 140°33'E. A sunken rock is NW of the same point and 1.5 miles offshore. Outside of the bank there are depths of more than 5.5m. Because the coast is low and shoal depths extend so far offshore, it is difficult to get close enough inshore to make out the coast or the mouths of the rivers along it.