



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.
SECTOR 10 — CHART INFORMATION

SECTOR 10

BORNEO—NORTHEAST COAST

Plan.—This sector describes the NE coast of Borneo from Tanjung Ahus to Sandakan Harbor, and then NW to Tanjung Sempang Mangayau and includes Pulau Banggi.

The geographical sequence is NE and NW.

General Remarks

10.1 Between **Tanjung Ahus** (3°48'N., 117°50'E.) and **Pulau Bum Bum** (4°28'N., 118°41'E.), about 65 miles NE and then 58 miles farther NE to **Dent Haven** (5°16'N., 119°16'E.), the coast is indented by **Teluk Sibuko** (4°00'N., 118°20'E.) and **Darvel Bay** (4°45'N., 118°35'E.), both containing some small ports of importance to shipping.

The land bordering both bays is high, rugged, and fronted by numerous islands, rocks, and other dangers. Near Dent Haven, the land on the NE side of Darvel Bay becomes low and densely wooded. Some hills of moderate height rise close W of Dent Haven.

The coast between Dent Haven and **Sandakan Harbor** (5°49'N., 118°08'E.), about 75 miles to the NW, continues very low and is covered with dense jungle and high trees. A few scattered hills of moderate height rise inland.

Sandakan (5°50'N., 118°07'E.), the chief port on the NE coast of Borneo, stands on the N shore and is available to ocean-going vessels. An extensive trade is carried out with other ports throughout the Far East. For further information, see [paragraph 10.55](#).

The coast between Sandakan and **Tanjung Narun-tong** (7°01'N., 117°09'E.), about 93 miles NW, is indented by several large bays and fronted by numerous above and below-water dangers that extend up to 21 miles and more offshore in places. Inland, some of the high peaks are conspicuous and serve as useful navigational landmarks. There are no ports of commercial importance for ocean-going vessels along this section of coast.

Winds—Weather.—For a description of the general weather conditions which may be encountered in the area described in this sector, refer to the weather in [paragraph 9.1](#).

Tides—Currents.—As a general rule, the currents encountered off the NE coast of Borneo are affected by the flow of water in the Celebes Sea which is initially directed towards Macassar Strait.

This flow divides as it approaches the strait. One branch continues into the strait, where it is joined on its W flank by a current which sets S along the N part of the E and NE coasts of Borneo; the other branch recurves to set E along the N coast of Sulawesi. The S current is replaced in April by a N current, which is a recurved branch from the main SW current of the Celebes Sea.

The constancy of the SW and E current is high, but that of the S current or N current off the E and NE coasts of Borneo is only moderate or even low.

The mean rates of the SW and E currents lie in the range of 1 to 1.5 knots, while that of the other currents is less than 1 knot.

For a detailed description of local currents which may be encountered, refer to the principal description of that part of the coast which they affect.

10.2 Sibuko Bay (4°00'N., 118°20'E.) comprises part of the E coast of Borneo between the E extremity of **Pulau Mandul** (3°42'N., 117°49'E.) and the E extremity of Pulau Bum Bum, about 71 miles NE. The bay covers a vast area and there are many channels leading through its reef obstructed waters. Numerous rivers discharge into this bay, but most of them are fronted by mudbanks and flats and are available only to small craft.

The mountain ranges on the N side of Sibuko Bay center in **Mount Magdalena** (4°30'N., 117°55'E.), 1,347m high, and densely wooded. It appears as a sharp peak from all directions.

A high range of peaks, forming a backbone, extends in a general SSE direction for 15 miles from Mount Magdalena, terminating in Chinaga Timor, 424m high, 1.75 miles NNW of **Batu Tinagat** (4°13'N., 117°59'E.).

Several very conspicuous peaks stand on this range, including Mount Lucia, 1,241m high; Maria Peak, 1,122m high; Mount Andrassy high, 671m; and Mount Putri, 311m high, which stands on a spur of this range about 1 mile S of Cinaga Timor and close to the coast.

A secondary range of lower elevations branches off from Mount Lucia and extends to the E, eventually terminating in Mount Wullerstorff, 13.5 miles ESE of Mount Magdalena. To the W, it forms a high ridge which curves to the S and terminates in Mount Kukusan, about 1.75 miles N of Tawau. Three other conspicuous elevations are found on this ridge.

The first of these elevations, which stands 3.5 miles SW of Mount Lucia, consists of a high saddle with two conspicuous peaks, 814m and 805m high. Table Mountain, 604m high, stands about midway between Mount Magdalena and Mount Kukusan and is perfectly flat-topped. A spur extends in a NW direction from Table Mountain for about 3.75 miles terminating in Tiger Hill, a prominent peak about 472m high. Mount Gemok, a large flat-topped peak about 428m high, stands 2 miles N of Mount Kukusan.

Lesser spurs also branch away from Mount Magdalena in a NW and NE direction.

10.3 Mount Wullerstorff (4°27'N., 118°09'E.), 762m high with a conical summit, is one of the most conspicuous peaks on the N side of Sibuko Bay. It slopes steeply on its E side to the plains below, but a range of mountains from 645 to 512m high, stretches NNW from it. The latter elevations stand 5.25 miles from Mount Wullerstorff and rise to a conspicuous, sharp cone. A densely wooded valley, 7 miles wide, lies between this range and the low spurs of the mountains to the E. The Sungai Kalumpang rises in this valley.

The principal landmarks on the N side of Sibuko Bay are easily identified. The summits of the highest peaks, such as Mount Magdalena, Mount Lucia, and Maria Peak, are often

obscured by clouds, but those of lower elevations are usually visible.

Quoin Hill (4°25'N., 118°01'E.), 600m high, stands 4.25 miles ESE of Maria Peak, and shows up conspicuously on the plain E of the main ridge running S from Mount Magdalena.

A range of hills, which reach a highest elevation of 424m, stands close N of Batu Tinagat. The N slope of these hills are steep and appears isolated from the E. Gunong Batu Chinaga, the northernmost and highest of this range, stands about 2 miles NNW of Batu Tinagat. Mount Andrassy, a rounded summit on the main range mentioned above, is the first prominent peak N of these hills.

Mount Putri, 311m high, is a spur of the Batu Tinagat range and stands close to the coast, about 1 mile NW of this point.

Mount Kukusan, 223m high, stands 1.75 miles N of Tawau and is a very conspicuous, pyramidal-shaped hill which is easily identified.

Pulau Ahus to Batu Tinagat

10.4 Pulau Ahus (3°50'N., 117°48'E.) is low and heavily wooded. Tanjung Ahus, the SE point of the island, has been previously described in [paragraph 9.80](#).

The coast between Pulau Ahus and Batu Tinagat, about 27 miles NNE, is indented by several rivers in its SW part and by Cowie Harbor in its NW part. Several large islands lie in the approaches to these rivers and Cowie Harbor. Vessels frequent this harbor to load lumber. Tawau stands on the N side of the entrance of this harbor.

Banda Reef (3°50'N., 118°01'E.), a coral formation with a least depth of 1.2m, does not show discoloration and lies 11 miles SE of Tanjung Ahus; it is marked close SE by a lighted beacon. A sunken rock, with a least depth of 4.9m, lies about 21 miles ENE of the same point. The existence of this rock is doubtful.

A depth of 22m was reported to lie 15.5 miles ESE of Tanjung Ahus. Less water than charted was reported to exist in this area between the 36.6m and 54.9m curves. A dangerous wreck lies about 6.25 miles WNW of Karang Banda.

10.5 Sibuko Bay Marine Tanker Terminal (3°51.0'N., 118°06.5'E.), which consists of an anchored storage tanker used to load oil on visiting tankers, lies about 5.75 miles ENE of Karang Banda.

The area within a 0.65 mile radius of this position is a restricted area and the anchoring of vessels other than the storage tanker is strictly prohibited. This area must not be entered without a mooring master on board.

Vessels required to anchor must do so in an area 3 miles long and 2 miles wide, in depths of 36 to 55m, which lies centered about 4.5 miles N of the storage tanker.

Incoming vessels are required to give Sibuko Bay Marine Terminal 72 hours advance notice of their ETA at the terminal. Additional notice should be given 24 hours and 12 hours prior to arrival.

Vessels are advised to use VHF channel 16 when within range of the terminal to receive berthing or anchoring instructions.

Vessels berthing alongside the storage tanker will then shift to walkie-talkies to communicate with the mooring master.

Sungai Sebuku (4°04'N., 117°29'E.), which is entered about 26 miles NW of Tanjung Ahus, leads to the village of Sebuku, about 46 miles above its entrance. Small craft with local knowledge can reach this village.

The approach to the Sungai Sebuku from the SE lies between Pulau Nunukan Timur on the N and Pulau Ahus, Pulau Bukat, and Pulau Itai on the S.

10.6 Pulau Nunukan Timur (4°03'N., 117°41'E.) is 266m high near its SE side and densely wooded. A dangerous wreck lies about 6.25 miles WNW of Karang Banda. Close W of the N extremity of the island is a rock above-water. Two rocks awash lie about 1.25 miles SW of this rock and a sunken rock lies about 0.5 mile farther SW.

Nunukan (4°05'N., 117°37'E.) is an anchorage port specializing in the export of cut lumber and logs. It also handles general imports, and a regular passenger service.

Tides—Currents.—The flood current sets SW at the anchorage and the ebb to the NE.

Depths—Limitations.—There is one quay, 60m in length and 12m in breadth, with a least depth of 6m alongside. This is connected to the land by a 50m bridge. Some buildings stand in the vicinity.

Pilotage.—Pilotage is compulsory for vessels over 250 dwt. A pilot can be obtained for Pulau Nunukan Timur from the harbormaster at Tarakan, provided 24 hours advance notice is given. The pilot boards at the outer buoy moored at the E end of the swept channel leading to Lingkas Road (Tarakan) (see [paragraph 9.75](#)).

Anchorage.—Good anchorages lie in the channel between Pulau Nunukan Timur and Pulau Sebatik, in depths of 10 to 16m, mud.

Directions.—The channel leading to the entrance of the Sungai Sebuku leads in a NW direction from its entrance between the N side of the tongue of water fronting the N and NE sides of Pulau Ahus, and the S side of the shoal spit which extends 13 miles E from the S point of Pulau Nunukan Timur. The entrance is about 4.5 miles wide between the fringing dangers and has a least depth of 6.7m. Between the S end of Pulau Nunukan Timur and Pulau Bukat to the S, the channel is 2.5 miles wide and has a least depth of 10m. Between Pulau Nunukan Timur and Pulau Itai, the channel is 2 miles wide and has a least depth of 5.5m. Elsewhere the depths range from 7.3 to 13m.

10.7 The mouth of Sungai Sebuku is fronted by Pulau Senelak, a narrow island with three hills which can be seen over the surrounding low islands; the N hill is 60m high and the S hill 105m high. Banks, which dry at LW, extend 0.25 mile SW and W from the island.

Sikapal and Pelanduk are steep-to, wooded rocks lying 0.75 mile NE and close S, respectively, of **Tanjung Tidung Salang** (4°05'N., 117°28'E.), the NW entrance point of the river. Tembalan, a similar rock, lies close S of Pulau Sinelak.

The channel lying to the SE of the island appears to be deep, while that to the NW has a least depth of 6.4m.

A tidal bore which occurs from about 3 days before to 3 days after spring tides, takes place above the village of Pangeran Anam, 32 miles upstream. The advance of the wave, which is about 0.9m high, is rapid and generally does considerable

damage to small craft. The flood and the ebb run at a rate of 3.5 knots at springs.

Sebuku Village stands about 46 miles from the entrance and is accessible to small craft with local knowledge.

The Sungai Itai and the Sungai Ahus join one another between the NW end of Pulau Ahus and the SE side of Pulau Bukat.

The Itai flows W and NW and connects with the Sungai Sebuku about 3.25 miles above Pulau Sinelak. A shallow bar, clear of rocks, lies at the junction of the Itai and Ahus. The land bordering these rivers is swampy and wooded.

The Sungai Simangaris and the Sungai Sebakis discharge through a common mouth, about 4 miles WNW of Tanjung Tidung Salang. Neither river is of any importance.

Sungai Serudong (4°13'N., 117°36'E.), a narrow, winding river used by small craft with local knowledge, is approached from the SE between the SW side of Pulau Sebatik and the NE side of Pulau Nunukan Timur. A channel about 1 to 2 miles wide, with a least depth reported to be 3.6m, separates the two islands.

10.8 Makassar Banks (3°59'N., 117°57'E.), lying 4.25 to 5.25 miles SSE of Stone Point (Steenenhoek), the SE extremity of Pulau Sebatik, are the main dangers on the N side of the SE approach to the Sungai Serudong.

The W end of this bank lies 4.25 miles S of Stone Point and consists of an elongated shoal with two parts awash.

Shoal depths of less than 11m extend 3.25 miles E from the E extremity of these shoals. The easternmost part of this shoal lies 9.25 miles SE of Stone Point.

Padang Bank (4°02'N., 117°56'E.), a shoal with a depth of 0.9m and on which the sea breaks, lies 2 miles SSE of Stone Point.

The channel between the Makassar Banks and Padang Bank has depths of 9.1 to 12.8m. The W part has not been examined and it would be imprudent to pass through it.

Unarang Rock (4°00'N., 118°04'E.), which dries 0.3m and is steep-to, lies 10 miles ESE of Stone Point.

A detached 4.6m patch lies 1.5 miles SSE of a red cliff on the S extremity of Pulau Sebatik.

A shoal spit, with depths of less than 5.5m, extends 13 miles E from the S point of Pulau Nunukan Timur, and 10.75 miles SE from the E point of the island. This spit constitutes the main danger on the S side of the approach to the Sungai Serudong.

The entrance to the main channel, which has a least depth of 11m, lies between Makassar Banks and the shoal spit extending E from the S point of Pulau Nunukan Timur. This channel extends 18.5 miles NW from its entrance to a point abreast the N point of Pulau Nunukan Timur. A least depth of 7.9m exists in the fairway.

The channel between the S end of Pulau Nunukan Timur and the mouth of the Sungai Serudong is intricate and has a least depth of 2.1m N of the N end of Pulau Nunukan Timur. The channel between Pulau Sebatik and Pulau Sedam, a small triangular islet close off the NW extremity of Pulau Sebatik, is only 0.15 mile wide but has a least depth of 7.6m.

A channel 2 miles wide, with a least depth of 3m at its S end, lies between the NW side of Pulau Nunukan Timur and Pulau Tinabasan, a small island on the NE side of the common entrance of the Sungai Sibakis and the Sungai Sebuku. This

small island is separated from the main coast by Trusan Tinabassan, a narrow channel 0.35 mile with a depth of 1.5m at its N and S ends.

10.9 Sungai Serudong, a narrow winding river, separates the S side of Pulau Simandalan from the mainland to the SW, and is connected to the Sungai Simandalan to the N by Trusan Merlin, a narrow, twisting passage which passes W of the island. The river is entered between Doris Point, the S extremity of Pulau Simandalan and Monk Point, 0.75 mile to the SW. It extends in a general NW direction for about 4 miles as far as the entrance of the Trusan Merlin, and then curves to the SW for almost 2 miles. Here, it resumes its NW direction for about 1 mile to Merlin Point, which lies on the S shore of the river. The river at this point is less than 0.15 mile wide and vessels of any size should not proceed upstream any further than this point.

The navigation of the river presents no difficulty as far as Merlin Point, and the currents seldom exceed a rate of 1 knot. There is a least depth of 6.7m on Entry Flat which fronts the entrance of the river between Doris and Monk Points. A least depth of 8.2m is found on Watson Ridge which crosses the river about 1 mile below Merlin Point. The mangrove-covered banks are generally steep-to.

Directions.—When entering the Sungai Serudong, Doris Point should be passed about 0.2 mile to the S in order to avoid Duke Bank, a shoal with depths of less than 0.5m, which extends about 0.3 mile ENE from Monk Point. The tangent of the land on the NE side of Harvey Reach, almost 2 miles WNW of Doris Point, in range, bearing 301° with Junction Point 3.5 miles NW of Monk Point, leads close NE of Duke Bank as defined by the 5.5m curve.

When Doris Point comes in range, bearing 054° with **Tanjong Agas** (4°15'N., 117°39'E.), Duke Point will have been safely passed. Course should now be altered a little to the W and a mid-channel course maintained as the vessel proceeds up river. Moderate size vessels should not proceed beyond Junction Point, about 3.5 miles NW of Monk Point, where swinging room will be found if anchored in a depth of 16.5m, about 0.35 mile E of that point.

A vessel has anchored in mid-channel about 0.2 mile NW of Merlin Point, where sufficient swinging room was found.

10.10 Trusan Merlin (4°16'N., 117°33'E.), a narrow, tortuous passage about 4 miles long, lies to the W of Pulau Simandalan and joins the Sungai Simandalan with the Sungai Serudong. This passage has a least depth of 9.6m in the fairway near its S end. Tidal currents do not exceed 1 knot.

Clarke Creek (4°19'N., 117°32'E.), of no commercial importance, discharges into the Trusan Merlin and the Sungai Simandalan close SW of Caution Point. Only launches can be accommodated because of its extreme narrowness.

Directions.—Vessels entering the Trusan Merlin from the Sungai Simandalan should pass Caution Point close offshore so as to avoid the flats extending from the opposite shore. The sharp turn at the point makes a rapid course change necessary. Vessels should then maintain a mid-channel course and after passing the narrowest part of the Trusan Merlin at Herald Point, about 2.25 miles below Caution Point, care should be taken not to mistake the entrance of Deceive Creek for the main channel.

Sungai Simandalan (4°16'N., 117°39'E.), a narrow river, extends about 7 miles in a general WNW direction to Caution Point at the NW end of Pulau Simandalan.

This river, which separates the N side of Pulau Simandalan from the mainland, is connected to the Sungai Serudong by a narrow passage known as the Trusan Merlin.

The shores of the river are bordered by mangroves and are generally steep-to. No difficulty will be experienced in proceeding as far as Rendezvous Point, on the N shore about 6.25 miles above the entrance. The least depth in this reach is 6.7m, on the S side of Reyne Reach, 0.75 mile WNW of Griffin Point. The tidal currents do not exceed a rate of 1 knot.

Directions.—To enter the river, steer 290° for the extremity of the land on the S bank, about 0.5 mile W of Griffith Point. This course leads about midway between the dangers off Llewellyn Bank, to the SE of Griffith Point, and those close off Adolphy Point. After passing Adolphy Point, alter course to the N as Griffith Point is approached, in order to maintain a mid-channel course which should be carried through the river. A vessel of moderate size will find just enough room to swing if anchored in a depth of 18m in the middle of Long Reach, where the river banks are 0.16 mile apart.

Care should be taken when rounding Adolphy Point, because the ebb at springs sets rapidly around it.

Coal Mine Reach (4°15'N., 117°39'E.) lies with its N entrance between Grassy Point and Adolphy Point, about 1 mile to the NW, and extends SW between the NW side of Pulau Sebatik and the E side of Pulau Simandalan. The reach has a least width of 0.5 mile at its N entrance, but narrows to a width of about 0.2 mile at its SW end. Lights are shown from Adolphy Point and in Coal Mine Reach, 1.5 miles SW of Agas Point.

10.11 Wallace Bay (4°15'N., 117°39'E.), a timber loading center, is a shallow indentation located on the NW side of Pulau Sebatik, about 1 mile SW of Grassy Point. A wooden, T-head jetty, with a depth of 6.1m alongside, extends from the shore in the vicinity of the powerhouse chimney. Lighters are available to work cargo.

Pilot Bank, a shoal with depths of less than 5.5m at its outer end, extends about 4.5 miles ENE from Adolphy Point. Shoal water, as defined by the 11m curve, extends about 1.25 miles farther E. Both this bank and the bank extending from Grassy Point are steep-to. Soundings give little warning, especially between Grassy Point and Adolphy Point, where the navigable channel is about 0.5 mile wide.

Llewellyn Bank (4°16'N., 117°39'E.), an extensive mud flat which dries in places, extends from the E end of Pulau Simandalan between Griffith Point and Tanjong Agas. The bank extends 1 mile NE from Tanjong Agas and the same distance ESE from Griffith Point, leaving a channel between its N edge and Adolphy Point about 0.15 mile wide. This channel leads through the entrance of the Sungai Simandalan. Coal Mine Reach Channel is about 0.62 mile wide between this bank and the NW shore of Pulau Sebatik.

The shoals which border Grassy, Adolphy, and Agas Points vary considerably during the year because of the silt brought down by the heavy rains.

10.12 Drake Bank (4°13'N., 117°36'E.), a hard, clay shoal with a least depth of 6m, lies mid-channel near the SW end of Coal Mine Reach. Depths of over 10m lie W of this bank.

An abandoned coal depot and disused pier are situated on the SE side of Coal Mine Reach, 3 miles SW of Grassy Point.

A beacon, 0.45 mile E of Adolphy Point, lies in range, bearing 264° with the light shown on Adolphy Point.

Tides—Currents.—In Coal Mine Reach, the ebb starts 1 hour after HW by the shore and attains a maximum rate of 2.5 knots at springs. The flood begins about 1 hour 15 minutes after LW by the shore and attains a maximum rate of 2.75 knots at springs. Both the ebb and the flood set at a rate of 3.5 knots off Grassy Point and over Drake Bank at times.

Anchorage.—Anchorage can be taken about 0.2 mile N of the pier and about 0.2 mile offshore, in a depth of 12.8m. Smaller vessels can anchor closer in.

Vessels loading timber in Wallace Bay usually anchor opposite the timber ponds, in depths of 14.6 to 16.5m, 0.15 mile offshore. The anchorage is sometimes subject to severe squalls blowing down Coal Mine Reach.

Directions.—Vessels approaching from the E should pass about 1.5 miles off the N shore of Pulau Sebatik. When the lighted beacons in the vicinity of Adolphy Point come in range, bearing 264°, course should be altered to that bearing until the conspicuous sawmill or its light at Wallace Bay bears 214°. Then steer WSW to bring the Coal Mine Reach light to bear 222°, and then steer that bearing until the anchorage.

10.13 Pulau Sebatik (4°10'N., 117°47'E.), a large island which lies on the S side of the channel leading to Tawau and Cowie Harbor, is about 20 miles in length and has a maximum width of 8 miles.

The channel separating this island from the mainland to the N is 3.5 to 5 miles wide; whereas, the channel to the W is only 0.5 mile wide.

A range of densely wooded hills traverses the island throughout its length. Mount Antoinette, the summit of this range, rises to a height of 472m near the center of the island. Cornelis Peak, 168m high, stands near the E end of the island and serves as a good landmark for vessels approaching Tawau and Cowie Harbor from the E and S.

The boundary line between the Malaysian and Indonesian territories passes through the middle of the island on the parallel of 4°10'N. Boundary beacons mark the E and W coasts of the island where the line cuts the coasts.

The E side of Pulau Sebatik, between **Stone Point** (4°04'N., 117°55'E.) and East Point, about 3.75 miles to the N, is bordered by a sandy beach backed by conspicuous red cliffs. The country inland is low and densely wooded.

A reef of sand and coral, which dries 0.3m, lies 1.75 miles SE of Stone Point. Padang Bank, Makassar Banks, and Unarang Rock, which lie SE and ESE of Stone Point, have been previously described in [paragraph 10.8](#).

Dutch Spit (4°04'N., 118°01'E.) is the E extremity of a shoal which extends about 5.75 miles E from Stone Point and the coast to the N of it. A detached shoal, with depths of less than 5.5m, lies at the E end of Dutch Spit. Another detached shoal, with a depth of 4.9m, lies 1.5 miles NNW of the extremity of the spit.

East Point (4°08'N., 117°55'E.) is backed by high casuarina trees and fronted by a drying sand and mud flat which extends 1.5 miles E from the point. A drying sandbank lies about 1.75 miles N of East Point and is steep-on its outer edge.

Tanjong Saima (4°11'N., 117°53'E.), low and bordered by mangroves, lies about 4.25 miles NW of East Point and is not easily identified. A detached sandbank lies about 0.5 mile N of the point and dries 1.2m. A 6.1m patch lies close W of the sandbank.

A shoal bank, as defined by the 11m curve, extends irregularly SE from Tanjong Saima to a position about 2.5 miles N of Unarang Rock, and then in a general WSW direction to a position about 4 miles SW of Stone Point.

Caution.—Vessels approaching Tawau or Cowie Harbor from the S should be careful in passing Unarang Rock and the E end of the 11m curve off Dutch Spit, especially when the tide is flooding.

The tidal currents off the E end of Palau Sebatik set NW at 1.25 knots and SE at 1.5 knots.

The coast between Tanjong Saima and Prescott Point, about 7 miles to the WNW, is bordered by a slight indentation with shallow depths.

The coast then extends 6.5 miles W to Grassy Point, the NW tip of the island.

10.14 Grassy Point (4°16'N., 117°40'E.), the NW extremity of Pulau Sebatik located 13.5 miles WNW of Tanjong Saima, is fairly conspicuous being the only solid ground on the N coast of Pulau Sebatik, and appears as a grassy opening of flat land bordered by low clay cliffs.

A shoal, with shallow depths, lies off this point and then extends about 1 mile to the E as a narrow spit.

A channel, with a least depth of 10.3m, passes to the N of this spit and connects Cowie Harbor with Coal Mine Reach to the South.

The channel leading to Tawau and Cowie Harbor to the W is entered between Unarang Rock and Hand Rock, about 9.75 miles to the NE.

The NE side of the channel is bordered by an area of shoal ground which extends about 8.5 miles SE from Batu Tinagat.

The SW side of the channel is bordered by a similar shoal that extends 9.25 miles E and 5.75 miles NE from Stone Point. The channel has a least width of about 5 miles at its outer end and narrows to a width of about 2.75 miles between Tawau and Tanjong Saima, the NE extremity of Pulau Sebatik.

The channel has a least depth of 11.9m and is generally free from dangers, except for a 11m patch lying 7.75 miles WNW of Hand Rock.

Hand Rock (4°08'N., 118°10'E.), just awash, consists of rock on a small coral bank about 0.1 mile long and 91m wide.

The beacon which marks it is difficult to make out when bearing between N and W because of the dark coastal background. The beacon is equipped with a radar reflector.

The beacon was reported destroyed and replaced by a lighted buoy. This rock marks the turning point between the SW approach to Friedrich Haven and the channel leading to Tawau and Cowie Harbor.

Batu Tinagat (4°13'N., 117°59'E.), a small mushroom-shaped rock, 4.6m high, stands close to the coast off a point formed by a spur of the Batu Tinagat Hills.

Swirl Patch (4°12'N., 117°57'E.), with a depth of 3.6m, lies 2 miles WSW of Batu Tinagat, and almost 0.5 mile outside the 10m curve fronting the shore. It is easily made out because of the swirls and eddies.

Between the point 1 mile W of Batu Tinagat and the entrance of the Sungai Tawau 4.75 miles to the W, the coast is bordered by a shallow bay which is fringed by mud flats which extend from 0.25 to 0.75 mile offshore.

The coast between the entrance of the Sungai Tawau and the port of Tawau, about 1.25 miles to the W, is bordered by plantations and fronted by a drying bank of mud and sand which extends from 0.1 to 0.4 mile offshore.

10.15 Tawau (4°15'N., 117°53'E.) ([World Port Index No. 51750](#)) an export center of some importance, extends along the shore from Tawau Point for about 1 mile on the N side of the entrance of Cowie Harbor. Tawau is a first port of entry.



Courtesy of Sabah Ports Authority

Tawau Port

Tides—Currents.—The spring range of the tide off Tawau government pier is about 2.1m. At springs, the flood may attain a maximum rate of 1.75 knots about 45 minutes after low-water. The ebb starts 30 minutes after high-water, with a maximum rate of 2.75 knots. The direction and speed of tidal currents may be affected by freshets.

The average direction of the flood is 308°, which is 9° different from the 119° to 229° alignment of the government pier. A vessel stemming the flood and berthing 1 hour 30 minutes after LWS will be likely to find a component of the current equal to almost 0.5 knot setting on to the pier.

The average direction of the ebb is 131°, which is 12° different from the pier alignment. A vessel stemming the ebb and berthing 2 hours after HW will be likely to find a component of the current equal to more than 0.5 knot setting off the pier, though eddies may occur in this area. Maximum current conditions, such as those described in the above examples, are comparatively rare. A neap range as little as 0.9m may occur; at which time the current may be barely appreciable. With a neap range of 1.5m, a maximum flood rate of 1 knot and an ebb rate of 1.25 knots may be expected.

South of English Spit, the flood sets WNW at a rate of 0.5 knot and the ebb sets ESE at a rate of 0.75 knot.

Depths—Limitations.—With the exception of the dangers mentioned below, depths in the approach to Tawau range from 36.6m in the channel, to depths of less than 18.3m in the approach to the principal berthing facility.

Moysey Shoals (4°14'N., 117°54'E.), with a least swept depth of 2.7m, lies about 0.75 mile SSW of the S entrance point of the Sungai Tawau and about 0.25 mile off the 11m curve fronting the shore.

Harbor Shoals (4°14'N., 117°53'E.) consists of several patches with depths of 6.7 to 10.1m which lie about 0.75 mile NW of Moysey Shoals.

Wicks Rock (4°15'N., 117°52'E.), awash and marked by a light, lies about 0.7 mile NW of Tawau Point. A 9.7m shoal lies 0.45 mile SSE of Wicks Rock. There have been reports that material from the reclamation works at the oil jetty off Tanjung Batu was being dumped in an area about 3.5 miles SW of Wicks Rock.

Two general cargo wharfs project approximately 100m SW from the shore at Tanjung Tawau. The NW wharf, with two access piers, is 0.15 mile in length. The SE wharf is 0.1 mile in length and has a single access pier. Mooring dolphins stand off each end of the SE wharf.

There is a least depth of 6.1m alongside the SE wharf and 9.1m alongside the outside of the NW wharf. On the inner side of the latter wharf there is a depth of 6.1m. Vessels up to 10,000 dwt can be accepted. Anchorage is prohibited within 0.3 mile of the wharfs.

There is a area of land, reclaimed for industrial use, which extends 0.3 to 0.8 mile E from Tanjung Tawau. Further land has been reclaimed close W of Kuala Tawau. A jetty extends 0.15 mile W from the Malaysian Naval Base, about 0.65 mile NNW of Tawau Point.

SPA Jetty, used for handling bulk palm oil, situated about 1.65 miles NW of Tawau Point, is 73m long with a breasting dolphin 7.6m off each end. Two mooring dolphins stand about 61m off each end of the jetty.

A controlling depth of 9.75m was reported alongside, and vessels up to 20,000 dwt can be accepted.

Aspect.—Vessels approaching from the E or SE and bound for Tawau or Cowie Harbor, should have no trouble identifying Cornelis Peak and Mount Antoinette on Pulau Sebatik. Both of these peaks are good landmarks. On the N side of the approach, Mount Putri, 311m high about 1 mile WNW of Batu Tinagat, and Mount Kukusan, 222m high about 2 miles NNW of Tawau, are useful marks.

Upon closer approach, the buildings in the town and the numerous plantations will be made out.

Kuala Tawau enters the sea about 4.75 miles W of Batu Tinagat. A number of high buildings stand within the port area on the reclaimed land W of Kuala Tawau. A conspicuous building stands 0.8 mile W of Kuala Tawau.

A conspicuous domed building stands 0.75 mile NNW of Harbor Shoals.

Conspicuous radio towers are situated 2.5 miles ESE and 1.5 miles NW of Mount Kukusan, and 4.5 miles WNW of the lighthouse of Batu Tinagat.

A shoal with a depth of 10.3m was reported 2 miles S of the Government Wharf at Tawau.

Pilotage.—A pilot is available to assist in berthing vessels between 0600 and 1800; 48 hours notice should be given.

Regulations.—Vessels entering Cowie Harbor for the purpose of proceeding to Wallace Bay must anchor 0.5 to 1 mile S of Tawau, in 27.4 to 34.7m for clearance by customs and immigration authorities. Vessels will be cleared between 0600 and 2200, provided advance notice of arrival is given.

Anchorage.—The immediate approaches to Tawau and Cowie Harbor offer spacious anchorage areas for large, deep-draft vessels. There are depths of 12.8m and greater in the approaches, and depths of 7.3 to 33m in Cowie Harbor.

The positions of the quarantine anchorage (2 miles SE of Tawau), the explosives anchorage (2 miles SW of Tawau), and the petroleum anchorage (1.5 miles NW of Tawau) may best be seen on the area chart.

Directions.—Vessels approaching Tawau or Cowie Harbor from the SE should give Unarang Rock and the outer tip of the shoal area, about 2.5 miles N, a wide berth when passing. When Mount Kukusan, bearing 297°, is well clear SW of Mount Putri, steer 287°. To avoid Swirl Patch care should be taken to bring Mount Kukusan to bear more than 312° by the time Mount Putri is abeam.

The danger will be passed when **Saddle Hill** (4°18'N., 118°11'E.) is lost behind Batu Tinagat.

When Mount Kukusan bears 357° W of Tawau Point, course should then be altered to this bearing, which leads to the anchorage and clear of Moysey Shoals and Harbor Shoals.

10.16 Cowie Harbor (4°17'N., 117°46'E.), a broad expanse of water, lies W of an imaginary line extending between Tawau and Tanjung Saima. Mangroves line the shores of the numerous creeks and rivers which intersect the shallow delta at its head, with Kalabakang being the principal river.

The harbor has been surveyed as far as the limits of navigation, about 12 miles above Tawau; above this limit the harbor is fouled by numerous mud flats intersected by deep but intricate channels leading to the various rivers. Both shores of the harbor are lined by mangroves fronted by extensive mud flats and present no distinguishing features.

The depths within the harbor are regular over a bottom of soft mud. Depths in the central part of the harbor range from 12.8 to 14.6m.

From Tawau, the N coast of the harbor extends in a general WNW direction for 12 miles (the limits of the survey) and is broken by numerous small creeks and rivers.

The principal river is the Sungai Merutai, which discharges about 7 miles WNW of Tawau. Only small local craft can be accommodated.

Anchorage.—Anchorage can be taken in depths of 12.8 to 14.6m, about 0.5 mile SW of Heherr Point. Vessels use this anchorage to load timber.

It was reported that the coast between Morrell Bluff and Heherr Point had extended seaward about 0.4 mile.

Batu Tinagat to Friedrich Haven

10.17 The coast between Batu Tinagat, previously described in [paragraph 10.14](#), and Friedrich Haven, about 24.5 miles to the E, is backed by dense jungle growth with some high mountain ranges and peaks rising inland. The Sungai Balung and Sungai Kalumpang, two small rivers of little or no commercial importance, discharge along this section of coast.

A large area of shoal ground extends about 8.5 miles SE from Batu Tinagat, turns abruptly to the N, and then E to a position about 4.5 miles SE of the entrance of the Sungai Kalumpang and borders the N side of Friedrich Haven. Seaward of this shoal and parallel to it, a chain of off-lying dangers extends NE and borders the S side of the SW approach to Friedrich Haven.

Depths—Limitations.—The shoal bank, defined by the 11m curve, which extends 8.5 miles SE from Batu Tinagat and then extends N to a position about 3 miles S of the entrance of the Sungai Balung, has depths of less than 11m and in many places has depths of 5.5m and less.

English Spit (4°12'N., 118°08'E.), with depths of less than 5.5m, lies on this shoal bank with its SE end about 5.5 miles SSW of the entrance of the Sungai Balung. Its inner part fringes the coast between the Sungai Balung and Batu Tinagat. The shoal water to the N of English Spit has been reported to be extending to the E. A patch 2.7m lies 2 miles SW of English Spit.

Hand Rock, which lies about 12 miles SE of Batu Tinagat, has been previously described in [paragraph 10.14](#). A detached shoal, with a least depth of 0.3m, sand and coral, lies 3 miles NNE of Hand Rock.

10.18 Darby Bank (4°07'N., 118°13'E.), a coral bank with a least depth of 11m, lies about 3.25 miles SE of Hand Rock and is the outermost danger in the SW approach to Friedrich Haven. Mount Kukusan, bearing 300° and kept well open SW of Mount Putri, leads SW of Hand Rock and Darby Bank.

Alert Patches (4°09'N., 118°15'E.), which consist of three coral patches with a least depth of 7m over each one, extend 1.5 to 4.5 miles NNE of Darby Bank. Vessels are cautioned not to cross Darby Bank or Alert Patches because depths less than charted may exist.

Roach Reefs (4°10'N., 118°18'E.), two detached reefs 0.25 mile apart, lie within the limits of a narrow shoal located about 1 mile ENE of the N Alert Patch. The NE reef dries 0.9m. A detached coral patch, with a least depth of 7m, lies about 1.25 miles NE of the larger reef.

Egeria Shoal (4°12'N., 118°15'E.), a small coral patch with a least depth of 3.5m, lies 3.25 miles NW of Roach Reef. It lies on the NW side of the fairway to Friedrich Haven, and has a clear passage 3 miles wide between it and the Roach Reefs.

A small narrow reef, almost awash, lies 0.75 mile NNE of Egeria Shoal.

Heel Reef (4°14'N., 118°14'E.), a small coral and mud patch which dries 0.6m, lies about 0.5 mile NNW of Egeria Shoal. The reef is marked by a light shown from a 6m metal tower.

It was reported that the beacon was destroyed and had been replaced by a lighted buoy.

10.19 Lehnert Reef (4°15'N., 118°15'E.), a sand and coral patch which dries 0.6m near its S end, lies 3 miles N of Egeria Shoal. Discolored water exists in the vicinity of the drying part of this reef.

Chance Rock (4°14'N., 118°18'E.), a steep-to detached coral head with a least depth of 2.5m, lies 2.75 miles ENE of Egeria Shoal.

Caution.—Egeria Shoal, Heel Reef, Chance Rock, and Lehnert Reef are all difficult to make out because of the muddy water in their vicinity.

Friedrich Reef (4°14'N., 118°21'E.), a small detached coral reef with a sand cay on its N side which dries 2m, lies about 0.65 mile ENE of Chance Rock.

Erzherzog Reef (4°15'N., 118°23'E.), a detached reef with a sand cay that dries 1.8m on its N side, lies 2 miles E of Friedrich Reef. The coast between Batu Tinagat and the entrance of the Sungai Balung, about 12 miles ENE, is low and fronted by a mud flat which extends up to 0.5 mile offshore.

The Sungai Apas, a small shallow river, discharges about 5 miles ENE of Batu Tinagat.

Sungai Balung (4°18'N., 118°10'E.), a narrow, winding river fronted by a drying mud flat, is available only to small craft with local knowledge. Saddle Hill, which rises to a height of 101m on its E side and 137m on its W side, stands on the E side of the entrance of this river. The two summits of this hill are about 1.25 miles apart.

The coast between the Sungai Balung and the Sungai Kalumpang, about 10 miles to the ENE, continues low and is bordered by mangroves. Shoal ground, as defined by about the 10m curve, extends from 2.5 to 5 miles offshore along this section of coast.

10.20 Sungai Kalumpang (4°20'N., 118°20'E.) is obstructed by a bar with depths of not more than 0.9 to 1.2m. Within the river, the depths range from 2.7 to 11m. On entering, it appears as a fine broad river with two branches passing on either side of a long narrow island. Only small craft with local knowledge can be accommodated.

Pulau Kalumpang, 85m high and densely wooded, stands at the mouth of the river and is bordered by two channels with the E channel of the two being the preferred entrance. The W channel almost dries. A small village stands on the N side of the island.

Friedrich Haven (4°16'N., 118°24'E.) lies between the shore bank to the N and Friedrich, Erzherzog, and Horn Reefs to the S and E. The least width of almost 1 mile lies between the 10m curve fronting the W horn of the Ligitan Reefs. This horn can generally be made out. Depths in the haven range from 11 to 33m.

Anchorage.—Anchorage can be taken in a depth of about 11m, mud, with the NW extremity of Pulau Silungan, about 5.75 miles E of the SE end of Pulau Kalumpang, in range, bearing 055°, with **Mount Conner** (4°24'N., 118°34'E.), and Pulau Kalumpang, bearing 324°.

The flood sets S and W through Friedrich Haven and the ebb to the N and E at a rate of 0.75 knot.

Directions.—The outer route from Friedrich Haven passes SE of Chance Rock and Egeria Shoal, and between Alert Patches and Hand Rock. After passing close NW of Friedrich Reef vessels should keep the N extremity of Pulau Silungan in range, bearing 055° with Mount Conner astern. This course leads between the above dangers, and 0.75 mile SE of the lighted beacon on Hand Rock, which marks the turning point for Tawau.

From a position about 0.5 mile N of Friedrich Reef, after the sand cay on it has been sighted, steer 265° which will lead about 0.6 mile S of the beacon on Lehnert Reef, and the same distance N of the light structure on Heel Reef. When the W summit of Saddle Hill bears 345°, alter course to 210° which will lead 1 mile NW of the 0.3m shoal lying 3 miles NNE of

the light structure on Hand Rock, then about 0.25 mile SE of the elbow of the 11m curve off English Spit, and 1.25 miles NW of the light structure on Hand Rock.

Hand Rock and the 0.3m shoal are considered dangerous along this route and great caution should be observed when passing them. Soundings should give warning if the SE edge of English Spit is being approached too closely. If depths of 12.8 to 14.6m are maintained, a vessel will pass a safe distance off this spit.

Directions for entering the main channel leading to Tawau are given under the principal description of that port.

Friedrich Haven to Pulau Bum Bum

10.21 The coast between Friedrich Haven and Pulau Bum Bum, about 17 miles NE, is bordered by densely wooded hills, ranges, and indented by a few shallow inlets.

Terusan Tando Bulong, the passage entered about 9.5 miles NE of Friedrich Haven, leads between the mainland and the large reefs and shoals which lie to the S and SW of the S side of Pulau Bum Bum. Semporna, the only port of any importance, is situated on the W side of this passage to the W of the NW extremity of Pulau Bum Bum.

The Ligitan Reefs and the Ligitan Group of reefs and shoals extend up to 30 miles E from Friedrich Haven. Narrow passages separate some of the dangers. Ligitan Channel, wide, deep, and clear of dangers in the fairway separates these two groups from Creagh Reef and Beaufort Reef to the N. These latter two dangers are separated by a narrow channel known as Silapag Passage.

Ligitan Reefs (4°15'N., 118°30'E.) consist of a group of reefs, some of which dry or are awash at LW, which extend about 6.5 miles E from Horn Reef, the westernmost danger. The N side of these reefs are fringed by moderate depths whereas their S sides are steep-to close offshore.

Horn Reef (4°15'N., 118°26'E.), L-shaped and the westernmost danger of the Ligitan Reefs, is separated from Erzherzog Reef to the W by a deep channel about 0.5 mile wide. A detached reef lies on the W side of this channel about 0.5 mile NNE of the E end of Erzherzog Reef. A detached 6m patch lies almost 1 mile ESE of the light on the NW end of Horn Reef.

A narrow channel, with a least depth of 12.8m in mid-channel, separates the E part of Horn Reef from the dangers to the E.

The two E reefs lie on a shoal bank which extends from the above channel to Mabul Passage about 8.25 miles to the E.

Mabul Passage is about 3.5 miles wide between the easternmost reef of the Ligitan Reefs and Mabul Reef to the E. A shoal, with a least depth of 5.5m, obstructs the central part of this passage. A detached shoal, with a least depth of 7.9m, lies on the E side of this passage. The deepest part of the passage, which is a little more than 0.5 mile wide, lies between these two shoals and carries a depth of 12 to 14m.

Collins Patch (4°16'N., 118°36'E.), a detached shoal with a least depth of 4.9m on its S part, lies about 1.5 miles N of the center of Mabul Passage. A small 11m patch lies about 0.5 mile E of the S end of Collins Patch, and a similar patch, with a least depth of 8m, lies about the same distance SE of the same end. Vessels should not cross these shoals because the depths are uneven and it is possible that other shallow patches may exist.

Mount Sedungal (4°38'N., 118°34'E.) in range 356° with the W extremity of Pulau Sipanggau on the W side of Creagh Reef, leads to the W of Collins Patch and through Mabul Passage.

10.22 Ligitan Group (4°14'N., 118°45'E.) consists of a group of islets and reefs which extend 18 miles E from Mabul Passage and form part of the S side of Ligitan Channel. The E part of the Ligitan Reefs also borders the S side of this channel.

Mabul Reef (4°14'N., 118°38'E.), the W reef of the Ligitan Group, borders the E side of Mabul Passage.

Pulau Mabul, a small and densely wooded islet, 49m high, stands on the N side of this reef.

Three detached patches, with depths of 10.9m and less, lie within 0.75 mile NE through N to NNW of the SE end of the island.

Pulau Kapalai (4°13'N., 118°41'E.), a small, narrow bush covered islet 12m high, on the NE side of a detached reef which lies with its NW end about 2.5 miles SE of Pulau Mabul. A narrow channel about 0.25 mile wide, with a least depth of 11m in the fairway, lies between the shoals extending SE from Mabul Reef and NW from Pulau Kapalai.

Vessels are advised not to use this channel because of the shallow depths which fringe its sides. Mabul Passage should be used instead.

Cust Reef (4°17'N., 118°43'E.), awash at LW, lies on the NW part of a shoal bank 3 miles long and 1.5 miles wide which lies centered 4 miles NE of Pulau Kapalai. A larger reef lies to the SE of Cust Reef and is separated from it by a narrow shallow channel. The channel E of this reef, between it and a projecting spur of the main reef about 2 miles to the E, has been examined in a very general way and although no shoal patches were found, vessels are advised not to use it. A light is shown on the N edge of the N reef.

Pulau Danawan (4°18'N., 118°51'E.), a high, wooded, and flat-topped island, stands at the N end of the largest reef in the Ligitan Group about 11.5 miles NE of Pulau Kapalai. A cliff, 17m high, stands on its E point and its N point is of the same height. A village is situated on the W side of the island.

10.23 Pulau Si Amil (4°19'N., 118°52'E.), densely wooded and high, stands 0.5 miles NE of Pulau Danawan and is the site of a canning factory. A bay lies between the two islands. A deep passage, about 0.2 mile wide, enters this bay from the N and a similar passage enters from the SE.

A light is shown from an 11m high metal framework tower.

Protected anchorage can be taken within this bay in a depth of 29m, about 0.15 mile off the shore of Pulau Danawan.

The main body of the large reef extends 10.5 miles SSE from Pulau Danawan, then extends in a gentle curve for 8.5 miles to the W to the SW extremity, and then irregularly NNE back to the point of origin.

In coasting along the E side of this reef, care should be taken not to approach too closely because considerably less water than charted has been reported to exist about midway along this side within the 200m curve which extends up to 2 miles offshore.

Heavy overfalls and tide rips are usually encountered off this side of the reef. The water in this area is also considerably discolored.

Pulau Ligitan (4°10'N., 118°53'E.), 9.1m high and partially bush-covered, stands on the S part of the main reef about 8.5 miles S of Pulau Danawan. A detached 4.9m patch lies about 2.25 miles S of Pulau Ligitan and 0.5 mile S of the 11m curve fronting the main reef.

Great care should be taken when approaching this end of the reef to be certain of the position because the currents run at a rate of 2 to 3 knots raising heavy overfalls and whirlpools.

Foul ground with shallow depths extends 2.5 miles W from the SW end of the main reef. The channel between this foul ground and the reef extending 1.25 miles SSE from Pulau Kapalai is almost 1.5 miles wide, but is obstructed in its middle part by a detached 9m patch.

This channel has not been closely examined and less water than charted may exist.

10.24 Pulau Sipadan (4°07'N., 118°38'E.), a small wooded islet 50m high to the tops of the trees, stands on the NW side of a steep-to reef that lies 7.5 miles S of Pulau Mabul. The islet has been reported to be a good radar target up to 18 miles.

A light, with a racon, is shown from a 22m high metal framework tower situated on the fringing reef close S of the island.

Ligitan Channel (4°18'N., 118°40'E.), which lies between the Ligitan Group and the Ligitan Reefs to the S and Beaufort Reef and Creagh Reef to the N, is 18 miles long in an E and W direction and varies in width from 6 miles abreast of Pulau Si Amil to 1.5 miles at its W entrance between Pulau Gusungan, and the E reef for the Ligitan Reefs.

The general depths in the E part range from 20 to 25.6m, with patches of 11 to 18.3m. Farther to the W are depths of 33 to 36.6m. With the exception of Collins Patch, no other dangers are known to exist in the channel seaward of the fringing dangers along the edges of the reefs. However, the depths N and NW of Pulau Mabul are very uneven up to 2.5 miles offshore. Vessels should keep N of this uneven ground when passing Pulau Mabul.

The flood current in Ligitan Channel sets to the S and W and the ebb to the N and E at a rate of 1 knot at springs.

Webb Shoal (4°24'N., 118°52'E.), lying off the NE side of the approach to Ligitan Channel about 5.5 miles N of Pulau Si Amil, has a least depth of 9m. The shoal has not been closely examined and vessels are advised not to pass over this shoal because lesser depths may exist.

A detached 11m patch lies about 6 miles SW of Webb Shoal.

Beaufort Reef (4°23'N., 118°44'E.), sand and coral and drying in patches, lies S of the E part of Pulau Bum Bum and is separated from it by the NE part of Silapag Passage. The reef is about 6 miles long and has a greatest width of 4 miles.

Pulau Omadel (4°25'N., 118°45'E.), low, wooded, and 46m high to the tops of the trees, stands on the NE side of this reef. A village stands on the NW side of the islet.

Three shoals lie off the NE side of Beaufort Reef. The N patch, with a least depth of 5.5m, lies 2 miles E of the E extremity of Pulau Omadel. The S patch, with a least depth of 6m, lies 1.75 miles SE of the same point. A 9m patch lies close N of this latter patch.

10.25 Creagh Reef (4°20'N., 118°37'E.), an extensive flat of sand and coral which dries in patches, extends about 5.5 miles

S and 7.5 miles SW from the SW point of Pulau Bum Bum. Pulau Menampilik, 105m high, lies SW of the SW point of Pulau Bum Bum. Pulau Nusatonga, with two hills 126m and 111m high, stands 1 mile NE of the above islet, and Pulau Sipanggau, 119m high, stands almost 0.5 mile NE of the latter islet.

A wooded islet, 24m high, stands near the center of the reef about 1.75 miles SSE of the SW point of Pulau Bum Bum.

Silapag Passage (4°20'N., 118°41'E.), a narrow winding passage, with a least depth of 12m, lies between Creagh Reef on the W, Beaufort Reef on the E, and Pulau Bum Bum to the N. The passage in its S part has a navigable width of about 0.25 mile up to a distance of 4 miles above the entrance, and widens out to a width of about 0.6 mile for the remaining distance until the NE entrance is cleared. Within the passage, the flood sets to the S and W and the ebb to the N and E. During springs the currents run at a considerable rate.

Anchorage.—Anchorage has been taken in the N part of this passage about 0.15 mile N of the village on Pulau Omadel, but this anchorage is not recommended because the currents are strong and the swinging room is restricted.

The low coast, between Tanjong Nagos on the mainland to the N of Friedrich Haven, and Tanjong Tutup about 8.5 miles ENE, is fringed by a shoal bank with depths of 11m and less. The bank extends about 2.5 miles offshore from Tanjong Nagos, but closes the coast in the vicinity of Tanjong Tutup.

Pulau Gusungan (4°18'N., 118°33'E.), a small, low sand cay 1m high and partially bush covered, stands on the NW extremity of a drying reef which lies about 1.75 miles SW of the SW extremity of Pulau Menampilik.

10.26 Pulau Silungan (4°19'N., 118°27'E.), a small wooded islet 52m high, stands 2.5 miles ESE of Tanjong Nagos. Immediately N of Tanjong Nagos there is a wooded range of hills from 256 to 366m high, and 6.25 miles NNW of the point is Mount Pock, 567m high, the W peak of a range extending to the NE.

This range is separated from the wooded range to the S by a deep valley. Mount Pock is the summit of the ranges on the E side of the valley of the Sungai Kalumpang. Double Hill, with two summits of almost equal height, rises about 5.5 miles NNE of Tanjong Nagos. Mount Conner, a densely wooded peak 390m high, stands about 3.5 miles NNE of Tanjong Tutup and is a good mark for vessels approaching from the SW.

10.27 Trusan Tando Bulong (Treacher) (4°20'N., 118°33'E.), a narrow winding strait, is entered between Tanjong Tutup and the SW side of Creagh Reef to the E, and extends about 8.5 miles NE and then extends 5 miles NNW to the N entrance off the NW extremity of Pulau Bum Bum. The strait is about 0.5 mile wide in its S part, but contracts to a width of less than 0.25 mile in its N part.

The least depth in the fairway near the S entrance is 12m increasing gradually to a depth of 14.3m in the N entrance. A shallow bank, with depths of 9.1m and less, extends more than half way across the fairway from the E side of the N entrance.

The tidal current sets through this strait with considerable strength at times and the edges of the reefs are difficult to make out. Numerous small fishing stakes are placed along the

channel edges, but they are frequently moved and do not always mark the outer limits of the reefs.

A detached 4.9m depth lies on the E side of the N entrance about 1.5 miles NNW of the NW extremity of Pulau Bum Bum.

Pulau Sipanggua, Pulau Nusatongga, and Pulau Menampilik, which are the islands standing along the outer edge of the SW part of Creagh Reef, have been previously described in [paragraph 10.25](#). The W side of Pulau Bum Bum, which forms the E side of the N part of the strait, is densely wooded and cliffy and is fringed by a shore bank about 0.25 mile wide. Daisy Islet stands near the edge of this bank about 2.25 miles S of the NW extremity of Pulau Bum Bum.

The W side of the strait N of Tanjong Tutup is indented by four shallow inlets of no importance and backed by high hills up to 8.5 miles NE, and then backed by low coastal plains for the remaining distance. Mount Conner, which has been previously described in [paragraph 10.20](#), stands along this stretch of coast about 3.5 miles NNE of Tanjon Tutup and Hood Hill, 160m high, stands 3 miles farther NE.

Lighted and unlighted beacons are placed on the reefs on both sides of the strait to mark the channel sides.

Tides—Currents.—The mean range of the tide is 1.1m and the spring range is 1.6m.

In Trusan Tando Bulong, the flood sets to the S and the ebb to the N at a rate of 3 to 4 knots at springs. The currents are strongest in the narrow N part of the strait between Pulau Bum Bum and the coast to the W. These rates are subject to change at various seasons of the year.

Directions.—Vessels approaching from the S and entering the S end of the strait from Ligitan Channel may pass between Pulau Gusungan Reef and the SW extremity of Creagh Reef. The channel is about 0.5 mile wide but the edges of the reefs are not always visible. Vessels using this channel should bring the N summit of Double Hill in range, bearing 309° with the W extremity of Tanjong Tutup which leads between Gusungan and Creagh Reefs.

Vessels approaching from the SW should keep the NW extremity of Pulau Menampilik in range, bearing 066° with the SE extremity of Pulau Nusatongga which leads NW of Pulau Gusungan Reef and into the S entrance of the strait.

The S part of the strait, being wider and well marked by beacons on the reefs, a mid-channel course should be followed for about 8 miles to the NE at which place the channel then turns to the NNW.

The only known dangers outside the reefs on either side of the channel are two small coral patches.

The E side patch lies NW of Pulau Sipanggau and 0.2 mile beyond the edge of the reef.

The other lies W of the S part of Pulau Nusatongga and 0.15 mile beyond the edge of that part of the reef.

Having passed the bend, course should be altered to the NNW and a mid-channel course maintained, passing about 0.2 mile SW of Daisy Islet, and 91m off the head of the pier at Semporna.

Having cleared the pier, course should be altered to 350° with the outer end of the pier bearing 170° astern.

This course will clear the 9.1m shoal bank extending into the channel NW of the NW extremity of Pulau Bum Bum.

When the N extremity of Pulau Bum Bum bears 104°, course should be altered to 012° with **Lok Bakong Hill** (4°26'N., 118°36'E.) kept bearing 192° astern.

This course clears the 4.9m depth which lies about 1.5 miles NNW of the NW extremity of Pulau Bum Bum.

Having cleared this danger, course should then be altered as necessary in order to pass between **Pulau Larapan** (4°34'N., 118°36'E.) and the reef extending N from Pulau Sabangkat to the E and proceed to the N into Darvel Bay.

10.28 Semporna (4°29'N., 118°37'E.), a small fish and timber-exporting center, stands on the W bank of the strait about 1.5 miles within the N entrance.

About 0.25 mile SE of the settlement, a coral causeway extends in a NE direction across the reef to deep water.

A concrete pier, 46m in length and 12m wide, with a least depth of 9m alongside, stands at the head of the causeway.

Pilotage.—Pilots are not available.

Anchorage.—Anchorage can be taken about 0.2 mile off the reefs off Semporna. The holding ground is mud and sand over coral.

Vessels loading timber usually anchor SW of Pulau Harapin.

Vessels having explosives on board must not anchor in Trusan Tando Bulong S of 4°30'N. Also, vessels must not anchor in the approach fairway.

Vessels with dangerous petroleum on board must not anchor within 305m of the piers.

Pulau Bum Bum (4°28'N., 118°41'E.), roughly triangular in shape, densely wooded and 46 to 52m high to the tree tops, forms the E side of Terusan Tando Bulong and the N side of Silapag Passage.

The N coast of the island extends about 8.5 miles ESE to Tanjong Pantau Pantau and is fringed by a drying sand and coral reef which extends about 1.35 miles offshore.

Some small islets lie within the limits of this reef.

Several small villages line the shore along this section of coast.

The S coast between Tanjong Pantau Pantau and the SW extremity of the island about 7 miles WSW, is fringed by a reef which forms the N and W sides of Silapag Passage.

Islands and Dangers East and North of Pulau Bum Bum

10.29 Pasalat Reef (4°30'N., 118°44'E.), awash, lies near the middle of a long narrow shoal 3 miles long, which lies with its E end 2.75 miles N of Tanjong Pantau Pantau. A deep 0.75 mile wide channel lies between this reef and the reef fringing Pulau Bum Bum.

Bulipatuid Shoal (4°29'N., 118°47'E.), with a least depth of 7.9m in its central part, lies about 2.75 miles NE of Tanjong Pantau Pantau. Vessels should not attempt to cross this shoal because less water than charted may exist.

Baturua Reef (4°31'N., 118°49'E.), which dries, lies within the limits of a shoal about 4 miles long which lies with its S end about 5.5 miles ENE of Tanjong Pantau Pantau. Tidal currents run strongly round the reef. A deep channel separates this reef from Bulipatuid Shoal.

Pulau Kulapuan (4°32'N., 118°51'E.), a flat-topped island, 39m high to the tops of the trees, stands 7 miles NE of Tanjong

Pantau Pantau and on the N part of a reef that extends about 2.5 miles SSE from the island. This reef uncovers in patches. A small drying sand cay lies near the S end of the reef. The reef is steep-to on all except its S side from which depths of less than 18.3m extend about 0.75 mile. Clear deep channels pass on either side of this reef.

Pulau Gaya and Pulau Bahadulong, two high, densely wooded islands standing on the same reef and almost joined, are the most conspicuous landmarks seen when approaching Darvel Bay from the S. Together they form a crescent 4 miles wide between the horns. These islands together with Pulau Timbun Mata, which lies close off the coast about 8 miles to the W, are visible from the N part of Sibuku Bay over the low islands to the S.

Pulau Bohaydulong (4°36'N., 118°47'E.), which stands 8 miles N of Tanjong Pantau Pantau, forms the E horn of the crescent and rises to a height of 366m. A radio mast and a single tree stand on this conspicuous peak.

Pulau Gaya (4°37'N., 118°45'E.), lying with its E extremity close W of the NW point of Pulau Bohaydulong, extends 2.25 miles WNW and then 2.25 miles SW. The SW part of this island rises to a height of 469m with two slightly lower peaks close to it. From the N and E these peaks present a remarkable outline. The E part of Pulau Gaya terminates in a conspicuous peak, 378m high. The low land between the E and W parts of the island makes the island appear as two from some directions. A shoal, foul lagoon, enclosed by the island reef, lies close off the NW part of the island.

10.30 Pulau Tatagan (4°36'N., 118°43'E.), 97m high and partially cleared near its summit, stands close S of the SW point of Pulau Gaya. A village stands on the N side of the island.

Detached reefs and foul ground extend 2.25 miles SW from the S side of Pulau Bohaydulong and 2.5 miles NW forming a protected lagoon on the S side of the crescent formed by the two islands. The inner part of this lagoon is fairly clear with depths of 12.8 to 23m being found in the middle part. The entrance of the lagoon lies S of Pulau Tatagan and is less than 0.1 mile wide with a least depth of 6.4m in the fairway. Less water than charted in the fairway has been reported. There are no aids to assist in entering and only vessels with local knowledge should attempt it.

Anchorage can be taken in a depth of about 18m, sand, E of the village on the N side of Pulau Tatagan. Anchorage can also be taken outside the lagoon in a similar depth with Pulau Tatagan bearing 036°, distance 0.5 mile, but strong currents are experienced.

Clear deep channels surround this group of reefs and islands, but care should be taken to clear the shoal, with a least depth of 8.2m, which lies about 1.5 miles NE of the N end of Pulau Bohaydulong.

Pulau Sabangkat (4°34'N., 118°40'E.), a small island 49m high to the top of the trees, lies about 3.75 miles SW of Pulau Tatagan. This island stands at the SW end of a reef which extends 3 miles E and 4.5 miles NNW. This reef encloses a foul shallow lagoon with no entrances leading into it.

Pulau Salakan (4°34'N., 118°42'E.), 73m high and wooded, stands 1.5 miles SW of Pulau Tatagan and within the limits of the same reef.

Pulau Maiga (4°36'N., 118°41'E.), 38m high, stands on the S and W sides of a narrow reef 1.5 miles long, which lies with its S end about 1.25 miles N of Pulau Salakan. A narrow, deep, clear passage lies to the E of the reefs surrounding Pulau Maiga and Pulau Salakan, and to the W of the reefs surrounding Pulau Gaya.

10.31 Pulau Sibuan (4°39'N., 118°40'E.), 460m high to the tops of the trees, stands on the S end of a reef about 0.75 mile long which lies with its S extremity about 5 miles N of Pulau Sabangkat.

Two high prominent trees stand close together on the center of the island and are useful landmarks. Clear deep channels pass on all sides of this reef and island. Magnetic compass variations up to 20° were reported observed 0.3 mile W of Pulau Sibuan.

Church Reef (4°41'N., 118°39'E.), awash and about 1.5 miles long and 1 mile wide, lies with its S extremity 1.25 miles NW of Pulau Sibuan.

Tides—Currents.—The currents run very strongly around and between these islands and reefs. Generally speaking, the ebb sets to the N and E and the flood to the S and W at a rate of 1 to 1.25 knots.

Directions.—The NE extremity of Pulau Sabangkat in range, bearing 297° with Mount Tannaballu leads NE of Bulipatuid Shoal and Pasalat Reef and between them and Baturua Reef.

Richards Reef (4°44'N., 118°43'E.), lying centered about 6 miles NE of Pulau Sibuan, consists of a group of partly drying reefs separated by narrow channels. The reefs are steep-to on all except their NW and NE sides.

Freemante Shoal (4°44'N., 118°46'E.), an irregularly-shaped bank with a least depth on its S part, lies about 2 miles ENE of Richards Reef and is steep-to on all sides.

Pulau Mantabuan (4°38'N., 118°47'E.), a small bell-shaped islet about 30m high to the top of the trees, lies 1.5 miles NE of the E end of Pulau Gaya. A triangular-shaped reef, enclosing a lagoon, extends 1.5 miles NW from the islet.

A reef, topped by a drying sandbank, extends 1.75 miles N from a position about 2.35 miles ESE of Pulau Mantabuan. The reef is steep-to on all except its S side, from which a shoal extends 0.5 mile to the S. A least depth of 7.3m lies near the S edge of this shoal.

Pulau Pom Pom (4°36'N., 118°52'E.), a small, wooded, circular islet, 24m high to the tops of the trees, stands 4.5 miles SE of Pulau Mantabuan. A narrow steep-to reef surrounds this islet.

10.32 Pulau Pandanan (Pulau Kapale) (4°35'N., 118°55'E.), wooded and about 15m high to the tops of the trees, stands on the SW side of a reef almost 1 mile long which lies with its N end about 3 miles ESE of Pulau Pom Pom. A bush-covered islet stands on a drying sand spit which extends 0.25 mile N from the island. A shallow bank joins this reef with the N extremity of a reef about 0.65 mile to the S.

Pulau Timba Timba (4°33'N., 118°55'E.), a small wooded islet about 10m high, lies near the N end of a narrow, steep-to reef about 7 miles long which lies close S of the reef on which Pulau Pandanan stands. A drying sandbank extends 0.5 mile S from this islet.

Pulau Bohayan, 36m high and densely wooded, lies near the S end of the same reef on which Pulau Timba Timba stands.

Two small detached shoal patches, with depths of 11.6m and 14.6m, lie about 8.5 miles ENE of Pulau Bohayan.

Pulau Matakang (4°34'N., 118°57'E.) and Pulau Matakang Kechil stand on the W side of a narrow, steep-to reef which extends 2.5 miles N from a position 2 miles ENE of the S end of Pulau Timba Timba. The E side of this reef forms the W side of Alice Channel and a deep channel, 1.5 miles wide lies between this reef and the reefs to the W and SW.

Pulau Matakang is wooded and 24m high to the tops of the trees, while Pulau Matakang Kechil is only 15m high.

A narrow, drying sand ridge joins the two islands.

Alice Channel (4°35'N., 119°00'E.), the S entrance leading into Darvel Bay to the N, is a deep passage about 6.25 miles wide at its narrowest part. It connects Darvel Bay with the N side of Sibuku Bay, and separates the islands and reefs to the W from the islands and reefs which lie near the W extremity of the Sulu Archipelago. These dangers are described in Pub. 162, *Sailing Directions (Enroute) Philippine Islands*.

10.33 Bajapa Reef (Sikorong Reef) (4°41'N., 119°05'E.), which marks the E side of Alice Channel, extends NNE 9 miles from a position 6.75 miles E of Pulau Matakang Kechil. The reef dries in places and encloses a lagoon in the center which is entered from the SW side. The reef is steep-to on all but its N side, which is marked by shoal water for a short distance.

Panguan Islet (Maranas Islet) (4°43'N., 119°02'E.), a small, wooded islet 23m high, stands on the S half of a narrow, steep-to reef which lies about 8.75 miles NE of Pulau Matakang Kechil. A shoal, with a least depth of 9.1m, extends 0.2 mile N and SW from this reef.

Alice Reef (4°45'N., 119°04'E.), which encloses a lagoon and is 5.5 miles long, lies with its S end about 1.25 miles SE of Panguan Islet. The reef is steep-to on all except its NE point, which is bordered by a shoal, which extends about 0.5 mile offshore. Alice Reef bares in spots at LW.

In Alice Channel tidal currents are strong, especially in the vicinity of Panguan Island and Bajapa Reef and set straight through the channel between the steep-to edges of Alice Reef and Bajapa Reef. The flood sets S and W and the ebb to the N and E at a maximum rate of 2 to 2.5 knots.

10.34 Darvel Bay (4°48'N., 118°47'E.) is located on the S side of the peninsula of which Tanjong Unsang is the NE extremity and is entered between Tanjong Labian and the islands and reefs to the W of Alice Channel.

The N shore of the bay, W of Tanjong Labian, is clear of off-lying dangers except Howard Shoal, a 4.1m patch about 35 miles WSW of Tanjong Labian, and Kinabalu Shoal, a 4.9m patch 6.75 miles farther W; there are numerous islands and coral reefs in the W and S parts of the bay.

Several rivers discharge into the bay, but none have any commercial value to ocean-going vessels.

The hills on the N side are densely wooded and mostly low and undulating, of uniform height, presenting but few definite features, and terminate in the Bagahak Range midway along the coast. The S side is also thickly wooded with mountainous ranges some distance inland, but these are generally more

remarkable in shape and more easily identified than those on the N shore.

Most prominent among them are Mount Madai and Sinalong, and on a clear day Mount Silam, at the head of the bay, towers above all others in the vicinity.

Of the islands in the bay, Timbun Mata separated from the mainland by a narrow channel, is by far the largest and Mount Tannabalu, with its sharp summit, is an excellent landmark. Pulau Gaya, farther to the E, stands well out from the land, and is so remarkably shaped it is easily identified from most directions.

Pulau Bum Bum to Pulau Timbun Mata

10.35 Pulau Timbun Mata (4°39'N., 118°25'E.), mountainous, densely wooded, and the largest island on the S side of Darvel Bay, extends 16.25 miles W from Tanjong Sidungal, its E extremity, located about 8.25 miles NNW of the NW extremity of Pulau Bum Bum, and has an extreme width of 5.75 miles. It rises from a low W point to Mount Tannabalu near its center. This sharp conspicuous conical peak rises to a height of 620m. At the E extremity of the island Gunung Sedungal rises to a height of 489m and is also conspicuous.

The N side of the island is very irregular and is fronted by reefs and dangers. Its S side is separated from the mainland by a shallow passage known as Trusan Sigalong.

The fringing shore reef extends about 0.32 mile E of Tanjong Sidungal and then curves in a convex curve to Tanjong Timbun Mata, which lies 3.25 miles SW of Tanjong Sidungal. Two low islets stand near the SW side of this fringing reef.

Pulau Larapan (4°34'N., 118°36'E.), about 61m high to the tops of the trees on its SW part and wooded, stands 3.5 miles NNW of the NW extremity of Pulau Bum Bum. The intervening channel is deep and clear seaward of the fringing dangers. A village stands on the W side of the island.

Pulau Silawa (4°33'N., 118°33'E.), which lies almost 1 mile W of Pulau Larapan and is separated from it by a narrow channel about 0.3 mile wide, is flat-topped and wooded with a conspicuous hill, 110m high, near its SW end. The channel between Pulau Silawa and the mainland is 0.5 mile wide and between Pulau Silawa and another island W of it nearly 1 mile wide, with a least depth of 6.1m in the fairway. Depths of less than 5.5m extend 0.3 to 0.8 mile off this last island. To keep in the greatest depths, the SW point of Pulau Silawa should be rounded at a distance of about 0.2 mile.

A shoal, with a least depth of 5.9m, lies in the entrance of the channel between Pulau Silawa and the shore reef fronting the SE side of Pulau Timbun Mata.

Vessels should pass to the S of the above shoal which is located about 2.5 miles ENE of Tanjong Timbun Mata.

The SE extremity of an high islet located about 0.75 mile SW of Tanjong Timbun Mata, in range bearing 252° with the SE extremity of a wooded island 2.25 miles WSW, leads S of this shoal and through the fairway into Trusan Sigalong.

A rock, with a depth of 0.9m, lies 0.5 mile SW of the SW extremity of Pulau Silawa.

Trusan Sigalong (4°34'N., 118°31'E.), a narrow, shallow, tortuous channel, separates Pulau Timbun Mata from the mainland to the S. It has a least width of 0.65 mile and is navigable only by small craft with local knowledge. A

mudbank, with a depth of 2.4m, extends across the channel near its midpoint.

10.36 Tanjong Timbun Mata (4°35'N., 118°33'E.) is formed by a spur that extends S from the mountains on the E side of Pulau Timbun Mata. The S end of the point is fringed by a shoal which extends about 0.25 mile offshore. A small foul bay lies W of the point.

A long narrow reef fronts this bay and extends 2.5 miles WNW from a position 0.5 mile SW of Tanjong Timbun Mata. A small islet stands on the E end of this reef and a similar islet stands near the center of the reef.

Two wooded islets, 72 and 117m high, lie 2 and 3.5 miles NNW of the SW extremity of Pulau Silawa.

Trusan Sigalong entrance channel passes S of the above long reef and then between the two islets, at which point it shoals rapidly to a least depth of 2.7m.

The Sungai Sigalong discharges into the SE part of Trusan Sigalong about 3.5 miles SW of Pulau Silawa, but has no commercial value.

Pyramid Hill, conspicuous and 314m high, stands close to the coast about midway along the S shore of Trusan Sigalong. It is the N peak of an isolated range of hills which stand on the peninsula E of the Sungai Sipit.

The Sungai Sipit discharges along the S side of Trusan Sigalong, close W of Pyramid Hill. This shallow river is navigable only by small boats.

Anchorage.—A vessel has anchored in a depth of 21.9m with Tanjong Timbun Mata bearing 267°, distance 0.5 mile. A vessel might anchor out of the strength of the current in a depth of 11 to 12.8m with the S extremity of Tanjong Timbun Mata bearing 079°, distance 0.5 mile, by passing between the shoal water off the point and the reef fringing the small islet 0.75 mile SW. This anchorage has not been closely examined.

The tidal current through the E entrance of the Trusan Sigalong sets NE at a rate of 0.75 knot during the ebb and SW during the flood, at a rate of 1 knot.

Between Tanjong Sidungal and the N point of the island, about 8.75 miles WNW, the N coast is deeply indented by reef-fringed bays which are encumbered by reefs and other dangers. As the approaches to these bays are foul, vessels should not approach this coast in a depth of less than 40m.

10.37 Pulau Balusuan (4°41'N., 118°32'E.), a small islet 18m high with a light green treeless summit, stands 1.5 miles offshore about 4 miles NW of Tanjong Sidungal. Foul ground extends up to 0.7 mile offshore from all sides of the islet, and then extends in a SE direction for 3.75 miles toward Tanjong Sidungal. An 18.3m patch lies 1 mile N of the islet and a 14.6m shoal lies 2.25 miles NNW of it.

Pulau Tatagan Tatagan (4°40'N., 118°33'E.), 76m high, stands S of Pulau Balusuan and is joined to Pulau Timbun Mata by a narrow drying sand ridge.

Vessels are advised not to pass S of Pulau Balusuan because the coast of Timbun Mata to the W and NW of this islet is fronted by dangers which lie up to 1.5 miles offshore.

Pulau Batik (4°43'N., 118°27'E.), 245m high to the tops of the trees, is separated from the N point to Pulau Timbun Mata by a narrow channel with a depth of 3.7m in the fairway.

Pulau Batik Kulambu, 249m high to the tops of the trees, densely wooded and steep-to, stands with its E end close off the NW coast of Pulau Timbun Mata.

Anchorage can be taken by vessels in a depth of 23.8m at the head of the bay, formed by the S side of Pulau Batik Kulambu and the coast of Timbun Mata to the S and E.

This bay, which is 2.25 miles wide at its entrance, extends 3.25 miles E to its head and is clear of dangers except along its S side. Hambly Reef, drying 0.9m, lies almost in the middle of the entrance of this bay. A rock, 1.8m high, stands close E of the N part of this reef. Vessels entering this bay should pass between this rock and the coast of Pulau Batik Kulambu to the NE.

An islet, 64m high to the tops of the trees, stands almost 1 mile S of Hamby Reef and close N of the coast of Timbun Mata. Two detached reefs lie near the parallel of this islet and within 1 mile W of it.

Islands and Dangers North and Northwest of Pulau Timbun Mata

10.38 Pulau Adal (4°45'N., 118°31'E.), a conspicuous, wooded, conical island 110m high, stands 2.75 miles NE of the E end of Pulau Batik. A drying sand spit extends about 0.25 mile SW from the S point of this reef-fringed island. A detached shoal, with a least depth of 11.9m on its E part, lies 1 mile NNE of the N end of the island. A detached 14.6m patch lies about 1.75 miles SSE of the SW extremity of Pulau Adal.

Bakuhang (4°45'N., 118°29'E.), Bakungan, and Gatahan are three small islets lying on reefs that are almost joined. These islets extend 1.5 miles WNW from a position 1.5 miles WNW of Pulau Adal. Bakuhang, 87m high, is the E islet and the largest of the three.

Pulau Tabawan (4°48'N., 118°23'E.), the largest of a group of thickly wooded islands standing in the SW part of Darvel Bay, lies with its E end about 4.5 miles NW of the N end of Pulau Batik. Being higher than the other islands of the group and standing well offshore, it may be easily identified when approaching from the E. The W peak of two, which stands near the center of the island, is 275m high and shows up well from all directions.

A small bay, with depths of 23.8 to 36.6m in its center, lies between two promontories near the middle of the S side of the island. The head of the bay is foul.

Pulau Silumpat (4°46'N., 118°23'E.), 168m high and wooded, stands close S of Pulau Tabawan and is almost divided into two parts. Both parts are joined by a narrow peninsula.

Learmouth Reef (4°44'N., 118°25'E.), dries 0.3m, lies 2 miles SE of Pulau Silumpat.

Pudsey Reefs (4°45'N., 118°21'E.), two drying reefs 1.5 miles apart, lie centered about 2.65 miles W of Pulau Silumpat.

Dawson Rock (4°45'N., 118°20'E.), a pinnacle with a depth of 1.8m, lies 3 miles WSW of the W end of Pulau Silumpat.

Pulau Bohayan (4°48'N., 118°19'E.), the timber loading site for the port of Lahad Datu, is a small triangular-shaped island 238m high to the tree tops and densely wooded, standing 2 miles W of Pulau Tabawan.

Pulau Malundangan, 101m high to the tops of the trees, stands 0.2 mile S of Pulau Bohayan and is separated from it by

a narrow foul passage. Pulau Tanah, 120m high, stands 0.75 mile SW of the SW end of Pulau Bohayan. A long narrow reef lies in the passage between Pulau Bohayan and Pulau Tanah, and a 8.5m patch lies close off the NW end of Pulau Bohayan.

Pulau Majinkil (4°47'N., 118°18'E.), 131m high, is a narrow island which stands about 0.5 mile S of Pulau Malundangan. Two small islets lie close S and W of Pulau Majinkil.

The offices of this loading site are situated at the SW end of Pulau Bohayan. Customs officials board at the anchorage. Vessels loading timber use the anchorage between Pulau Tanah and Pulau Malundangan during the Northwest Monsoon, and W of Pulau Bohayan during the Southeast Monsoon. Vessels anchor in depths of 40.2 to 49.4m in the former anchorage.

Beacons in range, bearing 326°, stand on the SW end of Pulau Bohayan and yellow range beacons stand close ENE of the same point. These ranges indicate the anchorages.

10.39 There are three passages leading into the S anchorage; the E passage leads E of Pulau Bohayan and then between Pulau Malundangan and Pulau Majinkil; the W passage leads W of Pulau Bohayan and then between the SW end of Pulau Bohayan and the narrow reef to the SW; the third passage leads S of Pulau Tanah.

Pulau Maganting (4°49'N., 118°17'E.), the W island of this group, is topped by two hills of almost equal height and stands 1 mile WNW of Pulau Bohayan. A small reef awash lies about 0.3 mile S of the middle part of the S coast of the island.

Little Reef (4°51'N., 118°16'E.), about 0.65 mile in extent and dries, lies centered about 1.75 miles NNW of Pulau Maganting.

A chain of small coral reefs, which almost dry, lie between the above islands and the coast, and extend to the NW for about 7.25 miles from a position about 3 miles W of Pulau Batik Kulambu. Deep channels pass in between these reefs.

Walton Reef (4°42'N., 118°21'E.), the southeasternmost reef of this chain, lies 3 miles W of Pulau Batik Kulambu.

McKinlay Reef, composed of drying coral at its NE end and drying sand at its SW end, lies 1.75 miles NW of Walton Reef. Rashleigh Reefs, composed of drying coral, lie 2.25 miles farther NW. Reefs and shoals extend about 0.75 mile E from this latter reef.

Normanhurst Reef (4°45'N., 118°18'E.), crescent shaped and drying, lies about 1.5 miles NE of Rashleigh Reefs and Sheppard Reef, with a small drying pinnacle, lies 1.25 miles W of the same reefs.

Lawler Reef (4°47'N., 118°15'E.), the NW reef of the chain, is a small, steep-to drying coral ridge lying 2 miles NW of Sheppard Reef.

The W extremities of Pulau Tanah and Pulau Maganting in range, bearing 343°, lead very close W of Normanhurst Reef and E of Sheppard and Rashleigh Reefs.

Nichols Reef (4°49'N., 118°14'E.), a small coral patch almost awash, lies about 2 miles WSW of the NW extremity of Pulau Maganting.

Caution.—Mariners are advised to exercise extreme caution in the area S of 4°50'N. Also, use caution W of 118°26'E. Uncharted reefs exist in the area.

From the W entrance point of Trusan Sigalong, which lies 1 mile W of the W extremity of Pulau Timbun Mata, the coast extends NW for about 7 miles to the mouth of the Sungai

Madai. The irregular coastline is bordered by mangroves and fringed by reefs and foul ground which extend up to 0.75 mile offshore. Many reefs lie off this section of coast.

10.40 Merrett Reefs (4°41'N., 118°18'E.) lie at the N end of a chain of reefs and shoals which extend about 2.5 miles N from the W entrance point of Trusan Sigalong. Detached shoals, with depths of 3.9 to 5.7m, lie within 0.85 mile E and 0.45 mile N of the N end of Merrett Reefs. A detached 1.2m patch lies E of the Merrett Reefs, about 1.75 miles N of the W entrance point of Trusan Sigalong.

A 2.4m depth lies about 0.5 mile S of the latter depth.

Greep Reefs (4°42'N., 118°15'E.), several in number, lie from about 1 to 2.25 miles offshore, 4.75 miles NW of the W extremity of Pulau Timbun Mata.

Lloyd Reefs (4°42'N., 118°16'E.) consist of two groups of drying reefs and shoals about 137m apart which lie 0.75 mile SE of Greep Reefs.

Beacons mark some of the numerous reefs and dangers which lie between Merrett and Lloyd Reefs and the coast.

Mostyn (Kunak) (4°41'N., 118°15'E.), a small village and export center, stands on the coast about 3.5 miles NW of the W entrance point of Trusan Sigalong.

A palm oil loading terminal is situated about 0.65 mile NE of the port. A pier stands on the edge of a fringing reef abreast the port and consists of a small square platform on wooded piles fronted by dolphins about 38m apart with a least depth of 9.1m alongside. Mooring port side to it is recommended.

Pilotage.—Pilotage is not compulsory but is recommended. Vessels proceeding to Mostyn from foreign ports are required to proceed to Lahad Datu for clearance and board a pilot. Coastwise vessels board a pilot at Pulau Bohihan. Pilots are also available at Sandakan. A daylight arrival is recommended.

Directions.—Mostyn should be approached from the NE on a course of 212°, passing the NW point of Pulau Tabawan at a distance of 0.5 mile and then 1 mile NW of the beacon marking Dawson Rock.

This course will lead 1 mile NW of the beacon marking Dawson Rock, 1 mile NW of the beacon marking McKinley Reefs, and 0.8 mile NW of the N end of Merrett Reefs.

When the beacon on the SW extremity of Lloyd Reefs bears 275°, course should be altered to 228° in order to clear Batt Reef and Michael Shoal and pass midway between James and Collins Reefs. The S end of James Reef should be rounded at a distance of not less than 0.15 mile, and when the timber derrick on the old jetty at Mostyn bears 305°, it should be steered for on that bearing.

Sungai Madai, a shallow river fronted by a mudbank, discharges about 3.75 miles NW of Mostyn. A small islet lies 0.75 mile E of the entrance at the end of a drying mud and sand spit. A broad spit of reef extends 0.75 mile N from the islet.

Pulau Tagabua (4°46'N., 118°14'E.), a small islet, stands 2.25 miles NNE of the above islet and 2 miles offshore. Foul ground lies within 0.5 mile WNW, 1 mile SE and 1.25 miles SW of Pulau Tagabua. The passage between this islet and the coast is foul.

Anchorage.—Anchorage can be taken, in a depth of 16.5m, mud, with Pulau Tagabua bearing 047°, distance 1.25 miles.

Head of Darvel Bay

10.41 The coast between the mouth of the Sungai Madai and Tanjong Batai, 7 miles NNW, is intersected by two salt water creeks. A ridge of coastal hills, from 87 to 120m high, runs parallel to the coast for 2 miles from the N entrance point of the Sungai Madai. This ridge assists in identifying the river entrance.

Lubock Sabahan (4°52'N., 118°09'E.), entered between Tanjong Batai and Tanjong Bangkuran, about 2.5 miles to the N, penetrates the coast for about 2 miles to the W and provides anchorage in depths of 9 to 14.6m, mud.

Tanjong Batai, the S entrance point, is low and mangrove covered and fronted by a drying spit which extends about 0.75 mile to the NNE. The outer edge of the spit is steep-to. The Sungai Tingkayu, a small shallow river discharges close S of the point.

The S and W sides of the bay are shallow with depths of 5.5m lying up to 1 mile offshore in places. The shores of the bay are fringed by an extensive mud flat. Several small rivers flow into the bay but none have any commercial importance.

Moorhen Reefs (4°52'N., 118°12'E.) consist of a line of four small reefs which lie centered about 2.75 miles NE of Tanjong Batai.

The summit of Tanjong Bangkuran in range, bearing 301°, with the W Stewart Peak leads SW of Moorhen Reefs.

The summit of **Pulau Baik** (4°57'N., 118°15'E.), bearing 038°, and well open SE of Giffard Islet, leads close SE of these reefs.

The coast between Tanjong Bangkuran and Tanjong Batu, about 3.5 miles NE, is fronted by many small detached reefs extending about 2.5 miles offshore.

Tanjong Bangkuran may be identified by a conspicuous small knoll, 79m high near its extremity, and by the conspicuous Stewart Peaks, 460m and 491m high, rising 3.75 and 4.5 miles, respectively, WNW of it.

Kiddle Reefs (4°54'N., 118°12'E.) consists of two narrow drying reefs separated by shallow water. The reefs extend WNW 0.7 mile from a position about 1.75 miles SSE of Tanjong Batu. Foul ground extends S from the S side of the E reef for about 0.12 mile and a 6.1m patch lies about 0.15 mile N of it. A 11m patch lies close off the E side of the E reef.

Mount Mark (4°59'N., 118°11'E.), bearing 338° in line with the W extremity of Pulau Sagai, leads E of Kiddle Reefs.

Pulau Saranga (4°55'N., 118°12'E.), which lies close E of Tanjong Batu, consists of two wooded hills joined by a narrow strip of mangroves. The N hill is 52m high and the S hill is 76m high. The S side of the island is fringed by a reef which extends about 0.25 mile offshore.

The passage between this island and the point to the W is reported to be foul.

A small detached reef lies about 0.65 mile E of the E end of the island.

10.42 Silam Harbor (4°57'N., 118°14'E.) lies in the NW part of Darvel Bay between Tanjong Batu and the W end of Pulau Sakar about 6.75 miles ENE.

Several channels lead into the harbor through the reefs which lie across the entrance but the main channel, about 0.75 mile

wide, leads between Pulau Kalungan and Misanmisan Reef in the middle of the chain.

A boat channel marked by stakes leads to the old pier at Silam Village.

The shores are irregular and fronted by reefs and islands within almost 1 mile of the coast. Pulau Baik, near the middle of the harbor, and the Saddle Islands to the SW of it, protect the anchorage off Silam. The harbor depths are very irregular and range from over 36.6m at the entrance to about 18.3m at the anchorage.

Aspect.—Mount Silam, a flat-topped wooded mountain, 890m high, stands about 2.5 miles E of Silam Pier and is conspicuous as the highest mountains in that vicinity. It stands up boldly, being separated from the other mountains W and S of it by a deep valley, and slopes steeply to the NE. The ridge rises again to Mount Mark and continues to the E as a coastal range with a gradually diminishing altitude.

Mount Mark, with a well-defined summit, 466m high, stands about 1.5 miles NW of Silam Pier and about 2 miles NE of Mount Silam. It is easily identified as the first summit showing on the skyline NE of Mount Silam, and has a long spur extending down toward Silam.

Tanjong Batu, the S point of Silam Harbor, is the E extremity of a low range of coastal hills and is conspicuous.

Adams Reef, small in extent, lies awash at LW about 2.5 miles SE of Pulau Saranga. A small drying sand bank lies at its E end.

Wanderer Reef, awash at HW, lies about 0.5 mile ENE of Adams Reef. The reef is about 0.5 mile long and 0.2 mile wide.

10.43 Gusong Dilaut (4°55'N., 118°15'E.), a narrow reef about 0.3 mile long and awash at LW, lies about 0.5 mile NNE of Wanderer Reef. The passage between this reef and Pulau Kalung Kalungan is clear.

Pulau Kalung Kalungan, a small islet with a round top 44m high stands on a small reef about 0.5 mile E of Gusong Dilaut. A light is shown from a metal framework tower on the islet.

Kissing Hill, which stands on the N shore about 1.75 miles N of Pulau Baik, in range 356° with the E extremity of this island, leads between Gusong Dilaut and Pulau Kalungan.

Misanmisan Reef (4°56'N., 118°16'E.), awash and sometimes difficult to see, lies about 0.9 mile NNE of Pulau Kalungan. A reef, awash at LW, lies about 0.5 mile ENE of Misanmisan Reef and from it, reefs and foul ground extend 1.65 miles ENE to the SW extremity of Pulau Sakar. Pulau Baik, near the middle of Silam Harbor, stands 1.65 miles NNW of Pulau Kalung Kalungan. This island is thickly wooded and has a conspicuous conical summit 114m high near its E end. White Rocks, just above water at high tide, lie at the outer end of a narrow tongue of reefs that extend 0.4 mile NW from the island.

A light is shown at the end of this reef. Vessels loading lumber may anchor W of Pulau Baik.

The NE extremity of Pulau Baik is fringed by a reef that extends about 0.12 mile to the N. A narrow detached reef, separated from the fringing reef by a narrow, deep channel, lies over 0.1 mile N and extends 0.2 mile farther N.

Woodhall Reefs (4°58'N., 118°15'E.), two detached drying patches, lie 0.65 mile N of Pulau Baik. A deep channel, 0.25

mile wide, lies between these reefs and the detached reef N of Pulau Baik.

The SW end of Pulau Baik, in range 299° with Mount Mark, leads SW of Misanmisan Reef. The NE end of Pulau Baik, in range 296° with Mount Mark, leads between Misanmisan Reef and the reefs E of it.

Wise Hill, 140m high, about 1 mile NE of Silam Pier, in range 290° with Mount Mark, leads between Woodhall Reefs and the narrow detached reef N of Pulau Baik.

10.44 Saddle Islands (4°56'N., 118°14'E.) consist of six wooded islands extending 2.25 miles in a NW direction from a position about 1.5 miles W of Pulau Kalung Kalungun.

Giffard Islet, 37m high and the E islet of the chain, stands 1.5 miles W of Pulau Kalung Kalungun and is fringed by a narrow reef. The reef on the NW side of the islet extends 0.25 mile WNW to the S side of Pulau Tabauwan. A small islet lies about midway between these two islands.

Pulau Laila (Pulau Tabauwan) (4°56'N., 118°14'E.) rises to a 93m summit near its center and a 53m hill near its N end. Powers Spit, a coral ledge with a least depth of 1.8m, extends about 0.35 mile NNW from the N extremity of the island.

The W extremity of the island is joined to the SE extremity of Pulau Sumabun to the WNW by a reef. Pulau Nipa Nipa, a small islet 61m high, lies on this reef about midway between the two islands.

Pulau Sumabun, 85m high, is about 0.5 mile long and 0.25 mile wide.

Pulau Sagai, 59m high and the W island of this chain, stands on a reef that is separated from the reef fringing the W side of Pulau Sumabun by a very narrow passage.

The W end of Pulau Sumabun in range, bearing 330° with Mount Mark, leads SW of Adams Reef.

The E extremity of Giffard Islet, in range 024° with the NW point of Pulau Baik, leads W of Adams Reef.

Tides—Currents.—The tidal currents off Silam Harbor are very weak and appear to turn about at HW and LW by the shore.

Silam Harbor—West and North Shores

10.45 From Tanjung Batu, the W entrance point of Silam Harbor, the coast extends in a general NE direction for 3.75 miles to the W entrance point of Soai Soaium Bay. The coast between these two points is indented, irregular, and fronted by reefs and foul ground up to 1 mile offshore. The settlement of Silam is situated along this section of coast about 2 miles NNE of Tanjung Batu.

Soai Soaium Bay (4°58'N., 118°14'E.) is entered about 2.25 miles NE of Silam through an entrance about 0.45 mile wide with depths of 12.8 to 14.6m.

The W side of the bay is very irregular and has two shallow finger-like arms at the head. Foul ground extends about 0.5 mile S from the W entrance point. A 4.6m patch lies in the entrance of the bay.

A small jetty in Soai Soaium Bay, with a depth of 1m alongside, will accommodate vessels up to 500 dwt. Larger vessels anchor W of Woodhall Reefs to work cargo into barges.

The coast between Soai Soaium Bay and the W extremity of Pulau Sakar, about 4 miles ESE, is indented in its E half by a shallow bay that extends 1 mile inland.

Anchorage.—Anchorage can be taken about 0.5 mile SE of the pier at Silam in a depth of about 13 to 15m, sand and coral. The anchorage should be used only by small and medium sized vessels as it lies over a very uneven bottom and is fouled by three 5.5m coral heads to the S and E and by Holmes Rock, with a depth of 4.6m, lying 0.5 mile N of the N end of Pulau Sumabun.

Good bearings can be taken at this anchorage, which has limited swinging room.

Larger vessels should anchor outside these patches, lying on the irregular shore reef fronting Silam, in depths of 27 to 29m.

Good anchorage can be taken, in depths of 33 to 36.6m, close N of the reef extending NW from Pulau Baik and W of Woodhall Reefs.

Sheltered anchorage can be taken, in depths of 14.6 to 18.3m, mud, in the bight on the N side of Tanjung Batu with the N extremity of that point bearing 154°, distance 0.5 mile.

Directions.—The anchorage off Silam may be approached by passing on either the N or S sides of the Saddle Islands. The approach from the E passing to the N of the Saddle Islands is clear of dangers after passing in between Pulau Kalungan and Misanmisan Reef, but Power Spit must be given a wide berth. The passage from the S, between Pulau Sagai and Pulau Saranga, and then between Pulau Sagai and the coast is clear but narrow.

Vessels approaching Silam from the E should pass at least 2 miles off Darvel Peninsula and then steer for Pulau Kalungan. After passing 0.3 mile N of Pulau Kalungan, vessels should then steer 305° for Mount Mark until the N extremity of Pulau Baik is in range 095° with the S extremity of the S islet lying off the SW end of Pulau Sakar.

Vessels should then keep this range dead astern until the W extremity of Pulau Sagai is in range, bearing 199° with the E extremity of the S part of Pulau Saranga, at which time anchorage should be taken. This range clears Holmes Rock by about 0.1 mile and leads to the inner anchorage for small and medium-sized vessels.

Vessels approaching Silam from the S should pass about 1 mile SW of Adams Reef, bringing the W extremity of Pulau Sagai in range 338° with Mount Mark and steering for it. This course leads about 0.25 mile E of the small detached reef lying off Pulau Saranga. Pulau Sagai should then be rounded about 0.1 to 0.2 mile off after which they should bring the W extremity of Pulau Sagai in range, bearing 205° with the summit of the S hill on Pulau Saranga. Course should then be altered to this range dead astern up to the anchorage, passing between the two W patches of depths of 7.3m.

Darvel Bay—North Side

10.46 Lahad Datu Harbor (5°00'N., 118°23'E.) is entered between the E extremity of Pulau Sakar and the W coast of Darvel Peninsula, about 4 miles to the E and recedes about 5.5 miles WNW to its head. The depths in the approach are deep and clear seaward of the coastal reefs and range from 25.6 to 40.2m. From WNW of the entrance, which has depths of 18.3 to 34.7m, the depths decrease gradually toward the head of the

bay which has a depth of 9.1m at the anchorage 0.25 mile off the pier head. Small vessels entering to load cargo can be accommodated at the pier off the settlement. Larger vessels are required to anchor.

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Courtesy of Sabah Ports Authority

Lahad Datu Harbor

Pulau Sakar (4°58'N., 118°20'E.), a densely wooded and irregular shaped island, rises near the center of its S side to a conspicuous knob, 224m high. It extends 5 miles in a WSW direction from its E end and has a greatest width of about 2.4 miles. A narrow shallow channel less than 0.1 mile wide separates its W side from the mainland.

The S coast of the island is straight and fringed by a very narrow steep-to reef. The small islets off its SW end have been previously described.

Crook Reef (4°47'N., 118°20'E.), which dries, lies 3.25 miles WSW of the E end of Pulau Sakar and 0.7 mile offshore. A small detached reef lies about 0.7 mile W of Crook Reef and some small islets lie within 1 mile farther W.

The N coast of the island is irregular and indented in several places by narrow shoal inlets. Some inlets lie close offshore along this side of the island. The NE extremity of the island slopes steeply down to a low point from which a reef extends E for 0.75 mile. The edge of this reef cannot always be seen and vessels rounding it are advised to exercise caution. A light is shown at the end of the reef.

Halloran Reef (Terumbu Belasu) (4°59'N., 118°21'E.), lying about 0.32 mile off the center of the N coast of the island and about 0.5 mile WNW of the NE point of the island, is a small, drying reef. Shoal water extends for a short distance off its NE side.

Directions.—The summit of **Pulau Adal** (4°45'N., 118°31'E.) in range, bearing 153° astern with the SW peak of Gunung Sedongal just clears the edge of the reef off the NE end of Pulau Sakar, and Pulau Adal must be brought slightly to the SW of this peak before rounding the reef.

The NE extremity of Pulau Sakar in range, bearing 124° with Tanjong Melandong leads about 0.25 mile NE of Halloran Reef.

Pulau Sakar has been reported a good radar target at distances up to 21 miles.

The W coast of Darvel Peninsula, between Tanjong Melandong and the delta of two small rivers about 2.5 miles NNW, is fringed by a bank which extends up to 1.5 miles offshore in places.

Armstrong Reef (4°56'N., 118°26'E.), which dries 1.5m, lies outside this bank about 2.25 miles WNW of Tanjong Melandong.

Directions.—The summit of Pulau Adal in range, bearing 153° with the SW peak of Gunung Sedongal leads 0.5 mile SW of Armstrong Reef and 0.5 mile SW of the shore bank fringing the coast. Both Pulau Adal and the SW peak of Gunung Sidungal, 8 miles SW, show as sharp well-defined summits.

The coast between the river delta and the settlement of Lahad Datu, about 8 miles WNW, is fronted by detached reefs which lie within 1 mile from the shores. From Lahad Datu, for a distance of about 3 miles S, the coast is fringed by mangroves and fronted by shoal water up to a distance of over 1 mile.

10.47 Lahad Datu (5°01'N., 118°19'E.) ([World Port Index No. 51730](#)), a small coastal settlement, is the headquarters of the District Office and also the tobacco company.

A coral mole extends 0.17 mile SE from the SW corner of Lahad Datu. Government Wharf and the customs shed are situated at the seaward end of the mole. The wharf is 96m long, 17m wide at the head, and has a least depth of 4.6m alongside.

Sabah Port Authority Wharf, situated about 2 miles E of the town, is an L-shaped jetty extending S from the shore. The berthing face is 91m long and 12m wide, with an alongside depth of 9.75m, and is aligned in an E-W direction. Mooring dolphins are situated off each end of the wharf. The maximum size of vessels which may be accepted is 25,000 dwt.

Tides—Currents.—The water at Lahad Datu is usually stationary, but a very slight E current is experienced at times. The range of spring tides is 1.8m.

Three drying reefs extend from 0.5 to 1.5 miles SE from the head of the pier at Lahad Datu. These steep-to reefs are bordered by depths of 9 to 12.8m.

The N reef is named Gosungan, the center and largest reef is Voorwyk, and the S reef is named Tinggeri. Navigational aids mark all of these dangers. A coral patch named Bershesherk lies between Gosungan Reef and the shore to the N of it. A navigational aid also marks this danger.

Gray Reef (5°01'N., 118°20'E.), a small coral patch, with a least depth of 5.5m close to its edge, lies about 0.5 mile S of the pierhead. A beacon marks this danger.

Pilotage.—Pilots are available; however, 24 hours advance notice is required. The pilot boat is equipped with VHF radiotelephone.

Anchorage.—Anchorage can be taken by vessels up to 91m in length between Gray Reef and Gosungan Reef in a depth of 9.1m, mud, with the light structure on the pier bearing 325°, and Gray Reef Beacon bearing 215°. Larger vessels can anchor in a depth of 11m with the same light bearing 333°, and Tinggeri Reef Beacon bearing 080°.

Anchorage can be taken N of Pulau Sekar in depths of 12.8 to 25m, good holding ground.

Anchorage is prohibited to vessels carrying explosives or dangerous petroleum products in the approach fairway, or within 0.7 mile of the pierhead.

Directions.—After passing about 0.25 mile NE of Halloran Reef, vessels should steer WNW to pass W of Tinggeri Reef. When the S mast of the two radio masts at Lahad Datu is in range, bearing 326° with the light structure on the pier, course should be changed to the NW to the anchorage.

Tanjong Melandong to Tanjong Labian

10.48 The coast between Tanjong Melandong and Shoal Point, the SE extremity of Darvel Peninsula, about 2.75 miles to the E continues low and is marked by trees, 30 to 35m high.

The S side of the peninsula is fronted by shallow water extending almost 1 mile S. Depths decrease rapidly from 20 to 5.5m SE of Shoal Point. Vessels should give this area a wide berth because the soundings give little warning.

The E coast of the peninsula extends about 3 miles NE from Shoal Point to the head of Kennedy Bay and continues low and swampy and is densely wooded.

Kennedy Bay (4°57'N., 118°33'E.), a small, partially examined inlet appears to provide good anchorage in a depth of 18m, mud, about 0.65 mile from its head.

The E side of the bay is formed by a reef that extends about 0.5 mile SSW from Tanjong Tambak the E entrance point of the bay.

The W side of the bay is formed by a mud flat, parts of which dry, that extends about 1.5 miles E and NE from Shoal Point.

The bay is about 0.75 mile wide at its entrance. Several detached reefs lie in the NE corner of the bay close to the fringing reef.

Turner Patch (4°56'N., 118°35'E.), a small coral shoal with a depth of 12.8m, lies 1.5 miles SE of Tanjong Tambak.

Websper Patch (4°56'N., 118°34'E.), with a least depth of 10.4m, lies almost 1.25 miles SSE of Tanjong Tambak.

Tambak Reef, which dries 0.6m, lies 0.5 mile SE of Tanjong Tambak.

Kinabalu Shoal, with a least depth of 4.9m, lies 3.25 miles ESE of Shoal Point.

Kennedy Bay may be entered by bringing the 102m summit, located about 2.5 miles NNE of Shoal Point, to bear 312° and steering for it. This course will lead 0.5 mile SW of Turner Patch and to the anchorage. Shoal Point bears 235°, with the W extremity of Pulau Tabauwan just open SE of it, from this position.

Tides—Currents.—Along the N shore of the bay the flood sets to the W and the ebb to the E at a rate of about 1 knot at springs. The current appears to turn at about the time of HW and LW by the shore.

Everest Bay (4°57'N., 118°34'E.), a small inlet to the E of Kennedy Bay, is entered between Tanjong Tambak and Tanjong Bakapit. Numerous shoals and reefs foul the entrance, some of which dry at LW.

Bakapit (4°57'N., 118°35'E.), situated on the W shore of Basilan Bay, just E of Everest Bay, is a timber loading port. A small, narrow pier is situated at Bakapit.

A beacon stands on the drying reef about 0.3 mile E of Tanjong Bakapit. This beacon, bearing 000°, leads between Brantian Reef and Ireton Patch, lying about 0.5 mile SSE and 0.75 mile SE, respectively, of Tanjong Bakapit. A beacon marks the SE end of Brantian Reef.

Anchorage.—Anchorage can be taken about 1 mile S or 1.25 miles SW of Tanjong Bakapit. Anchorage is prohibited in the approach fairway or within 0.65 mile of the beacon which stands on a point on the E side of Basilan Bay, to vessels carrying explosives or dangerous petroleum. A pilot is available and can usually be boarded in the vicinity of Turner Patch. Several tugs are available for hauling logs.

The coast between Tanjong Bakapit and Tanjong Membatu (Bagahak Point), about 4 miles ESE, is fringed by reefs and shoals which extend up to about 0.75 mile offshore in places. This latter point is low and covered with mangroves. A light is shown from an 11m high, white metal framework tower situated on an 82m hill, 1 mile WNW of Tanjong Membatu. A conspicuous spur, 159m high, runs in a S direction to within 1.25 miles E of the point. This spur is prominent when viewed from the E or W, and a summit, 289m high and 1 mile inland, forms an easily identified landmark from those directions but not from the S because of the higher land behind it.

10.49 Howard Shoal (4°54'N., 118°40'E.), a narrow, steep-to coral shoal with a least depth of 4.3m, lies 2.5 miles SE of Tanjong Membatu.

A bank, with a depth of 22m, lies 0.75 mile SW of Howard Shoal.

The coast between Tanjong Membatu and Tanjong Tungku, about 13.5 miles to the E, continues high, mountainous, and steep-to within a short distance offshore. Several small rivers flow into the sea along this stretch of coast.

A light is shown from a 23m high, white metal framework tower situated on Tanjong Tungku.

To the W of Tanjong Tungku, which is low, the land rises to the Bagahak Range, the spurs from which slope steeply to the coast.

Mount Bagahak (5°03'N., 118°46'E.), 835m high, standing 7 miles WNW of Tanjong Tungku, is the summit of this range. North of Tanjong Tungku, there is a well-defined ridge of rolling hills, 120 to 155m high, lying about 1.5 miles inland. The Sungai Tungku, a shallow river of no importance, flows into the sea close W of the point. A village stands on its E bank about 0.75 mile within the entrance.

A drying mud flat extends almost 0.5 mile S from the point and shoal water extends 0.25 mile farther S, falling steeply into a depth of 25.6m. As this shoal does not show clearly because of the discoloration of the river water, vessels should keep outside the 30m curve when passing.

The coast between Tanjong Tungku and Tanjong Labian, about 23 miles ENE, remains high for about 12.5 miles and then becomes low and densely wooded for the remaining distance. With the exception of a narrow fringing reef bordering the coast, there are no off-lying dangers.

Tolibas Village stands at the mouth of a small stream about midway between Tanjong Tungku and a red cliff about 10 miles to the ENE. Telok Sabahat, a small river, discharges about 1 mile ENE of this red cliff. A rounded point, which can

be identified by the prominent high trees, stands close E of the river and a similar point stands 7.5 miles farther ENE.

The tidal currents on the E end of the N shore of Darvel Bay are weak and run about 1 knot at springs, with the flood to the W and the ebb to the E.

Tanjong Labian (5°09'N., 119°13'E.) is low and difficult to identify. A light is shown from a white metal framework tower.

Caution.—A dangerous wreck lies about 1 mile SSW of the mouth of Telok Sabahat.

Tanjong Labian to Sandakan Harbor

10.50 The coast between Tanjong Labian and Dent Haven, about 7.5 miles NNE, consists of a hard sandy beach backed by jungle which becomes swampy as Dent Haven is approached.

Between Dent Haven and Tanjong Labian, the currents run strongly from 1.5 to 3 knots at times with the flood setting to the S and the ebb to the N, but the currents are extremely variable in strength and there is no certainty as to their direction. Occasionally the current was observed to run strongly in one direction for one or two days and then in the opposite direction for one day for no apparent reason. At other times the currents changed at about high and LW by the shore.

Dent Haven (5°16'N., 119°15'E.), a small bay which slightly indents the coast and which is partially protected to the NE by Hull Rock, is entered between Mangrove Point and Reef Point about 2 miles to the N. The bay is generally free from dangers and provides good anchorage during the Southwest Monsoon in depths of 6.1 to 7.3m, sand and mud. A slight swell sometimes sets into the bay. The S part of the bay close inshore is foul. The whole shoreline of the bay is the barrier of a great swamp.

Vessels should pass in between the S end of the shoal ground surrounding Hull Rock and Hardy Patch. The extremity of the coast S of Mangrove Point should not be brought to bear less than 217°, until the S end of the long sandy beach in the bay N of Alfred Point bears 255°. Vessels may then steer for a convenient anchorage.

Reef Point, the N entrance point of the bay is fringed by a reef that extends about 137m from it.

Mangrove Point, the S entrance point, is the N extremity of an island covered by mangroves lying close offshore. The island is fringed by a narrow reef on its E and N sides.

In Dent Haven the current begins to set to the N three hours before HW and to the S three hours before LW. It appears probable that this is an eddy.

Caution.—Hull Rock, located about 1.5 miles NE of Reef Point, has a least depth of 1.2m and breaks at times. The rock lies on a long narrow bank of hard sand, with depths of 1.8 to 9.1m, that stretches almost 1.25 miles N and 1 mile S.

A sandbank, awash, extends about 0.32 mile N from a position about 0.3 mile ENE of Reef Point, and has a greatest width of about 0.13 mile. A shoal patch, with a least depth of 4.8m, lies close N of this sandbank.

A 7.6m patch lies 1 mile ENE of Reef Point.

Between the sandbank and the N tongue of the shoal area surrounding Hull Rock, there is a channel 0.5 mile wide with depths of 11 to 12.8m. This channel is not recommended because it is fouled by a sandy patch with a least depth of

5.5m, which lies 1.5 miles NNE of Reef Point. The depths are irregular and numerous 6.4 to 7.3m patches exist.

Hardy Patch, a coral shoal with a depth of 5.5m, lies to the SE of Hull Rock and is located about 2.75 miles ESE of Reef Point. Strong tide rips mark it and discolored water is usually formed. This shoal is not only a danger to vessels approaching Dent Haven, but also to vessels passing along the coast at night or in thick weather. It may be avoided by passing E of the 36.6m curve.

There are several 4.8 to 5.5m patches lying within 0.8 mile N of Mangrove Point.

The coast from Reef Point extends N and NW in a gentle curve for 10 miles to Tanjong Unsang, and then WNW for 3.25 miles to Pulau Tambisan. This section of coast is low, swampy, covered with jungle growth, and fringed by a narrow strip of steep-to coral.

Pulau Tambisan (5°28'N., 119°07'E.) rises to a uniform height of 18 to 21m with the top of the trees on the unclear portion about 61m high. The island is fringed by a coral reef along its shores which is about 0.75 mile wide in places. A narrow channel, available only to small boats, lies between the island and the mainland. The W end of the island is easily made out from seaward during the day, but the E end is low and hard to identify.

Between Dent Haven and Pulau Tambisan, the tidal currents run at a rate of 2 to 3 knots with the flood to the S and the ebb to the N.

Tangusu Bay (5°27'N., 119°03'E.), a shallow bight formed by the receding coast and protected to the NE by Pulau Tambisan, lies SW of the island. A rock, with a depth of 1.2m, lies in the bay about 1 mile SW of the SW end of Pulau Tambisan. A coral reef, with a least depth of 0.9m, lies about 2.75 miles W of the SW extremity of Pulau Tambisan.

Off-lying Dangers and Banks

10.51 Rene Shoal (5°30'N., 119°09'E.), with a least known depth of 3.7m, coral and sand, extends NW for about 4.25 miles from a position about 3 miles ENE of Pulau Tambisan.

Gem Reef (5°35'N., 119°08'E.), coral and sand and with a least depth of 0.9m, lies to the N of Rene Shoal about 7.75 miles N of the E end of Pulau Tambisan.

From Gem Reef SE to Sibutu Passage, frequent and sharply defined tide rips occur which have the appearance of shoal water.

Magpie Bank (5°45'N., 119°05'E.), with a least depth of 16.5m on its SW side, is an extensive bank of rotten coral which lies centered about 17.25 miles N of Pulau Tambisan.

A 9m patch was reported to lie about 1.5 miles W of the 16.5m head on Magpie Bank. A 9.6m depth was reported to lie outside the bank about 5 miles NE of the 16.5m head.

A patch with a depth of 9.6m was reported to lie about 1.5 miles NE of Magpie Bank in the fairway between Magpie and Sandy Bank.

Sunday Bank (5°49'N., 119°09'E.), with a least depth of 11.9m near its W side, lies about 20 miles N of Pulau Tambisan.

Normanby Bank (5°48'N., 119°13'E.), a shoal coral bank with a least depth of 11m, lies centered about 21 miles NNE of Pulau Tambisan.

Sentry Bank (5°42'N., 119°19'E.), with a least depth of 12.8m, lies about 17 miles NE of the E end of Pulau Tambisan and consists of coral and sand formation.

Tides—Currents.—During two days on Sentry Bank (in the month of August), the current was observed to set almost constantly between NE and SE, varying from 0.25 to 1.5 knots. The tidal currents appeared to exercise a marked influence on the strength and direction of the current. The flood was observed to set to the S and the ebb to the N.

10.52 Talantam Shoal (5°42'N., 119°28'E.), with a least charted depth of 9.1m, lies about 23.25 miles NE of Pulau Tambisan. Deep draft vessels should avoid this shoal because a depth of 7.9m was reported. Less depths than charted may exist over this shoal.

When the wind and tide are in opposition, heavy tide rips form over this shoal and resemble broken water.

A shoal patch with a least depth of 6.7m was reported to lie about 20.5 miles NE of the E extremity of Pulau Tambisan.

A shoal, with a least depth of 9.1m, was reported to lie about 33 miles NW of Talantam Bank and 40 miles N of the E end of Pulau Tambisan.

An unexamined area, with a least known depth of 19.2m, is located about 10 miles SE of Talantam Bank; a depth of 13m was reported (1993) to lie 8 miles SSE of the bank.

The coast between Pulau Tambisan and the Kuala Maruap, about 9.75 miles to the W, continues low and swampy. The mouth of this river is about 0.75 miles wide, with depths of 5 to 9m in the entrance. There is a least depth of 1.8m over the bar which extends 3.25 miles offshore from the entrance.

Caution.—Caution is necessary crossing the bar as the sea breaks during SE winds. Evans Island lies about 3 miles S of the entrance where the river divides into several branches.

The Kuala Segama, which lies about 9.25 miles WNW of the Kuala Maruap, is about 0.5 mile wide at the entrance and has a depth of about 4.3m. A shallow flat, over which there is a depth of 3.3m at HWS, extends about 3 miles offshore from the mouth. An island stands 2 miles inside the entrance and to the S the river splits up into several creeks. The river is fouled by shifting sand bars and other dangers, and is available only to small craft with local knowledge.

The coast between the Kuala Segama and the Kuala Kinabatangan Besar, about 14 miles to the NW, is jungle covered and bordered by grass and bushes.

Sungai Kinabatangan (5°39'N., 118°37'E.), which discharges through the Kuala Kinabatangan Besar, has depths of 6.7 to 9m, is 0.6 mile wide at the entrance, and fronted by a bar that extends 3.5 miles offshore. The bar has a depth of 2.7m at LWS. Vessels not having local knowledge and drawing more than 2.4m should not attempt to cross the bar because the tides are greatly influenced by the winds, making the time of HW uncertain.

10.53 Driftwood Point (5°39'N., 118°37'E.), the E entrance point, is a wooded, sharp, well-defined projection. A light is situated on the W entrance point from a white metal framework tower with red bands.

From the entrance the river extends SW and then S for 5 miles to Dewhurst Bay, where there are depths from 1.8 to

10.9m. The main branch of the river turns W about 5 miles from the entrance and becomes narrow. Some settlements and rubber plantations stand along the river banks farther upstream.

Royalist Rock (5°43'N., 118°40'E.), with a least depth of 1.8m, coral near its SW end and steep-to, lies 4.75 miles NNE of Driftwood Point.

Nymphe Reef (5°44'N., 118°40'E.), about 0.75 mile in extent with a least depth of 0.3m, coral and sand, lies 6 miles NNE of Driftwood Point. The discolored water from the river extends as far N as this reef. The reef is seldom seen but it is marked by a slight ripple and breaks in heavy weather. Patches with depths of 10.3m and 12.8m lie between Nymphe Reef and Royalist Rock.

Pegasus Reef (5°46'N., 118°50'E.), 14 miles NE of Driftwood Point, has a least depth of 0.9m and is composed of live coral with patches of sand. The discolored water over this reef can be seen from aloft. Pegasus Reef Lighted Beacon stands on the N side of the reef.

10.54 Benrinnes Reef (4°51'N., 118°45'E.), with a least depth of 8.2m, lies 7 miles NW of Pegasus Reef. A 2.1m patch lies 0.5 mile W of Benrinnes Reef. Caution should be exercised when navigating in the vicinity of Pegasus Reef, because numerous other dangerous shoals have been reported.

The coast between the Sungai Rinabatangan and Tanjong Aru, the E entrance point of Sandakan Harbor about 30 miles WNW, is bordered by shoal ground which lies up to 8 miles offshore in places. Several small rivers and streams discharge along this section of coast which remains low, swampy, and densely covered by jungle growth.

Aspect.—About 20 miles SE of Tanjong Aru and 11 miles from the coast are the Kinabatangan Hills, 293m high. These hills appear from seaward as a long range with a slight peak. Confusion Hill, about 4.5 miles SE of the Kinabatangan Hills, shows as a round top when seen from the NE. Aguia Peak, which stands about midway between Confusion Hill and the coast to the NE, is 194m high and from the E appears as a double cone. Notch Hill, about 10 miles ESE of Confusion Hill and 8.5 miles from the coast, is 245m high and is the most conspicuous hill in the vicinity of the Sungai Kinabatangan. It has a sharp, steep fall near its summit.

Mount Hatton (5°15'N., 118°42'E.), 606m high and standing about 16 miles SSE of Notch Hill, is the most conspicuous mountain on the coast, appearing as a sharp peak from all directions. Ragged Hill, 444m high, stands 7 miles W of Mount Hatton and appears as two cone-shaped hills when viewed from the E.

Mount Bagahak, previously described in [paragraph 10.49](#), stands 12.5 miles SSE of Mount Hatton.

Sandakan (5°49'N., 118°08'E.)

[World Port Index No. 51720](#)

10.55 Sandakan, the principal port on the NE coast of Borneo, stands on the NW side of Sandakan Harbor about 0.75 mile SW of Tanjong Papat. Ample, modern alongside berthing facilities are provided for cargo and tanker vessels. Sandakan is a first port of entry. It comprises the area lying between the indented coast extending in a general SW direction from

Tanjong Papat, and the low land extending S from Tanjong Aru, the broad point lying 2 miles ESE. Pulau Bai, an island 96m high, lies about 4 miles SSW of Tanjong Papat and forms the S part of the harbor.

The harbor entrance lies between the SE side of Pulau Berhala and Tanjong Aru about 1.5 miles SE. The width of the entrance between the 11m curves is about 1 mile.

Pulau Berhala extends about 2 miles N from its S end, located 1 mile NE of Tanjong Papat and is about 0.6 mile wide. The N part of the island is low and very narrow. Its S part rises to two conspicuous hills of almost equal height which slope gradually to the W. The E face of the N hill is marked by two white streaks running from top to bottom. A light is shown from a 20m high, white metal framework tower situated near the summit of the N hill.

The harbor extends S and W from Pulau Bai for about 15 miles from the entrance, but the only part accurately surveyed is that part N of Pulau Bai and the N approach to Sapagaya Bay, located on the S shore 9 miles S of Tanjong Aru.

The NW side of the harbor extends SW from Tanjong Papat for about 1 mile to the principal cargo wharf.

Between this wharf and Pavitt Point, 3 miles to the SW, there is an extensive bight fouled by Allard Bank. The area to the SW and S of Pavitt Point has not been fully examined. Two T-head piers and an island wharf extend from the shore at Pavitt Point.



Courtesy of Sabah Ports Authority
Sandakan Port

Tides—Currents.—Tidal currents change at the time of high and LW. The maximum flood current is 1.5 knots and the maximum ebb current is 2 knots.

Alongside the wharf, the current frequently sets in a reverse direction to the harbor. Swells enter the harbor only when the Northeast Monsoon blows strongly.

Depths—Limitations.—The approach to the entrance of Sandakan Harbor is fronted by a large shoal area which extends up to 8.5 miles N from Tanjong Aru. Depths over the outer part range from 6.7 to 11m up to a position 3.5 miles N of Tanjong Aru. Less water than charted has been reported in this area. From this position the depths increase to the S to depths of 23.8 to 27.4m through the entrance and depths of 14.6 to 16.5m off the wharf at Sandakan.

Atjeh Rock, with a depth of 4.2m, lies about 0.65 mile ESE of the wharf at Sandakan.

An obstruction, with a depth of 7.6m, lies about 0.1 mile S of the SW end of the wharf. A foul area, with a depth of 7.9m, lies 0.1 mile E of this obstruction.

A depth of 8.2m exists about 0.5 mile E of Pavitt Point. A 9.4m spot lies 0.43 mile SE of Pavitt Point.

Elton Bank, an extensive area of shoal water, extends almost 1.75 miles NE from Pulau Bai. The N limit of this shoal area, defined by the 11m curve, lies about 1.5 miles SSE of the wharf at Sandakan.

A rock, 0.6m high and marked by a beacon, stands near the E extremity of the rocks bordering the channel to the E of Pulau Bai.

Borneo Rock, with a depth of 1.2m, lies on the E side of the same channel about 2 miles S of the above mentioned beacon.

Sandakan Wharf (Government Wharf) is 229m long. There were depths of 5.8m alongside the length of the wharf. A dolphin stands almost 30.4m off each end of the wharf.

Considerable reclamation work has been carried out in the vicinity of Sandakan Wharf.

Pavitt Point Oil Jetties are situated close WSW of Pavitt Point. The larger T-headed jetty extends 0.12 mile SSE from the shore. Its T-head is 79m in length. A mooring dolphin standing off each end of the T-head increases the berthing length to about 305m.

There was a depth of 9.4m alongside. The jetty can take tankers of 18,000 dwt. The berth also is used for loading palm oil in bulk. A tug is available from Sandakan to assist berthing.

The smaller jetty on the W projects 168m from the shore has a 39m long concrete T-head. A mooring dolphin stands 134m away from each end of the jetty head.

Sandakan Port, an island wharf, is situated E of the oil jetties. The wharf is connected to the shore by two access bridges. This wharf has four berths, the dimensions of which are, as follows:

Berth	Length	Depth
No. 1	213m	9.4m
No. 2	122m	6.4 to 9.4m
No. 3	76.2m	6.1m
No. 4	164m	7.8 to 9.4m

Aspect.—The N shore of the harbor rises to many summits conspicuous from seaward. Bukit Mekarrah, 255m high, is the highest of these summits and rises about 2.25 miles W of Tanjong Papat. These hills slope gradually on their N and W sides and are generally steep-to on their S and E sides. Two radio masts are reported to stand close NW of the summit of Bukit Mekarrah and are very conspicuous.

Pilotage.—Pilotage is not compulsory, but is available 24 hours a day. The Harbor Master acts as pilot. A private pilot may be flown in from Kota Kinabalu. Prior notice of at least 24 hours is required. Port operating hours are from 0730 to 2200 hours. Work beyond these hours is subject to prior arrangement and approval.

Regulations.—All vessels carrying cargo must load and discharge cargo at Sandakan Wharf unless written permission to do so elsewhere has been obtained from the Superintendent

of Customs. Berthing at the Pavitt Point Oil Jetties is forbidden after 1900 hours. Unberthing may take place at night only by prior arrangement.

Signals.—During daylight hours a continuous watch is maintained by the signal station on the E end of the Custom House. The International Code of Signals is used. Tide signals are displayed at the signal station, as follows:

Signal	Meaning
Cone, point up	Ebb current
Cone, point down	Flood current
Ball	Slack water

Berthing signals are displayed below a red and white checkered flag, as follows:

Pennant No.	Berth
0	Anchorage
1	Sandakan Wharf, inner side
2	Sandakan Wharf, outer side, E berth
3	Sandakan Wharf, outer side, W berth
4	Small boat jetty
9	Pavitt Point Oil Jetties

The berthing flag may also be displayed on the wharf to indicate the position of the bow and/or stern at the berth allocated.

Anchorage.—The most convenient anchorage lies about 0.3 mile S of Sandakan Wharf, in a depth of 12.8 to 16.5m.

Vessels loading timber are required to anchor in a depth of 9.1m in the vicinity of the black and white buoy situated about 1.25 miles SW of Sandakan Wharf.

The quarantine anchorage lies on the E side of the harbor with its center almost 2 miles E of the Sandakan Wharf.

The explosives anchorage lies close SW of the quarantine anchorage.

Anchorage is prohibited within an arc of a circle extending about 610m from Sandakan Wharf.

Directions.—Vessels approaching Sandakan, after passing between Taganak Island and Taganak Patches, should steer for the approach lighted buoy moored about 9.5 miles NE of the S extremity of Pulau Berhala. Having passed the buoy close-to, steer 218° for the S extremity of Pulau Berhala. This leads across the bar in a least depth of 7.3m.

When the bar has been crossed and depths of 9.8 to 11m are sounded, course should be altered a little to the S and pass about 0.5 mile E of the S extremity of Pulau Berhala and then to the anchorage taking care to avoid Atjeh Rock.

Sandakan to Marchesa Bay

10.56 The coast between Tanjong Papat, the W entrance point to Sandakan and Tanjong Pisau, about 15.75 miles NE, is

low, densely wooded, and intersected by numerous small rivers. A large shoal area, defined by the 10m curve, extends up to 6.75 miles off the N half of this section of coast. Two low, wooded islands stand on this shoal about 4 miles NNW of Tanjong Papat.

Labuk Bay (6°07'N., 117°50'E.), entered between Tanjong Pisau and Tanjong Niug, the S point of Pulau Pura Pura about 19.5 miles NE, is fouled by numerous sandbanks over most of its area. A narrow channel leads to the Bongaya River on the NW side and another channel on the SE side provides passage to the Kuala Labuk in the SW corner of the bay.

These channels are used only by small boats with local knowledge. The W and SE sides of the bay are densely wooded and the shores are fringed by islets and rocks which extend some distance offshore. The N part of Pulau Torongohok, which stands in the SW part of the bay about 17 miles W of Tanjong Pisau, is covered with trees, 43m high, and is conspicuous when approaching from the NE.

10.57 Tanjong Niug (6°15'N., 117°43'E.) is a well-defined point covered with trees about 43m high. Quoin Hill and Flat Hill, 198 and 192m high, respectively, stand about 8 miles NW of the point.

Some low islets, which are merely clumps of mangroves on the fringing reef, extend about 0.75 mile N and 2.25 miles E from Tanjong Pisau. Pulau Kawan (Bankawan), about 31m high to the tops of the trees, lies outside this fringing reef about 1.5 miles NE of Tanjong Pisau.

Pulau Tikus, a wooded pyramidal-shaped island 56m high to the tops of the trees, lies about 1 mile WNW of Tanjong Pisau. A rock that dries 2.4m stands 0.5 mile N of this island.

Pulau Gusong, a small sandy, treeless islet, lies at the NE end of a large sandbank near the middle of the bay about 10 miles W of Tanjong Pisau.

A chain of islets, which Pulau Torongohok is the northernmost, lies in the SW part of the bay.

Tides—Currents.—The maximum rate of the ebb observed in Kuala Labuk was 3 knots. The tidal influence is felt for a distance of about 20 miles from the entrance. In the N part of Labuk Bay the flood sets WSW and the ebb ENE at a rate of 1 knot at springs. The ebb is the stronger and tends to run for longer than the flood.

Anchorage.—Anchorage can be taken in the N part of Labuk Bay, almost 1 mile SE of Tanjong Niug, in a depth of 5.5m. A vessel should approach from the E with Tanjong Niug bearing 260°, which leads over a least depth of 6.4m, between the two detached shoals with depths of 4.6m and 5.5m which lie 5.5 miles ENE and 6.5 miles E, respectively, of the point. When about 4 miles E of Tanjong Niug, course should be altered WSW for the anchorage.

Caution.—A vessel drawing more than 4.5m should approach the anchorage only at HW because of the difficulty of accurately determining the vessel's position.

10.58 Off-lying dangers.—The following islands, which lie in the NE and N approach to Sandakan Harbor, are known collectively as the Turtle Islands.

Gubbins Rock (6°03'N., 118°12'E.), with a depth of 2.1m and steep-to, lies about 10.75 miles NNE of the N end of Pulau Berhala. A 3.7m patch, marked by a lighted beacon, lies about

0.3 mile S of Gubbins Rock. A coral patch, with a depth of 2.7m, lies 2.5 miles SW of Gubbins Rock.

Taganak Island (6°05'N., 118°19'E.) lies about 20 miles E of Tanjung Pisau and rises to a height of 137m. A fringing reef extends up to 0.5 mile offshore in places.

An abandoned lighthouse tower stands on the summit of the island.

Taganak Patches (6°06'N., 118°15'E.), with depths of 8.2 to 16.5m, lie with their shallowest part 4.5 miles WNW of the summit of Taganak Island. Tide rips are occasionally seen in the vicinity.

A 7.9m patch lies 6.5 miles WNW of Taganak Island.

Baguan Island (6°05'N., 118°27'E.), 70m high and densely wooded, is located about 7.75 miles ENE of Taganak Island and is surrounded by a coral reef that extends 0.75 mile offshore in places. Shoal depths extend about 2.25 miles ENE from the N extremity of the island. A pinnacle rock, with a depth of 5.5m, lies 2 miles NW of Baguan Island.

Laurel Rock, 1.6m high, stands 3.25 miles NNE of Baguan Island. The channel between Baguan Island and Laurel Rock is reported to be clear, but it is not recommended.

Clotilde Rock (6°14'N., 118°23'E.), a small coral reef 0.6m high and steep-to, lies about 9.5 miles NNE of Taganak Island. A 3.3m shoal lies 0.5 mile SW of Clotilde Rock.

10.59 Pulau Libaran (6°07'N., 118°01'E.), 43m high and wooded, lies 3.25 miles NE of Tanjung Pisau. A coral reef extends 1.25 miles E from the island and 0.75 mile W from the island. Black Rock and White Rock, both above-water, lie on the E reef and Pulau Bonting, which exhibits a light, and Tree Rock, also above water, lie on the W reef.

Pulau Gulisaan (6°09'N., 118°03'E.), an islet with a conspicuous clump of trees 23m high, stands on the S edge of a coral reef 2 miles NE of Pulau Libaran.

Pulau Silingaan (6°10'N., 118°04'E.), about 31m high to the tops of the trees, lies about 1.5 miles N of Pulau Gulisaan. The islet is coral fringed and foul ground extends 0.75 mile NW from it. A light is shown on the S end of the island from a white metal framework tower with red bands.

Turtle Rock (6°12'N., 118°03'E.), with a least depth of 3.3m, lies 2 miles NNW of Pulau Silingaan.

Great Bakkungaan (6°11'N., 118°07'E.) and Pulau Bakkungaan Kechil are two wooded islands fringed by coral reefs and about 44m and 31m high to the tops of the trees. These islands lie 3.5 miles ENE and 3 miles E, respectively, of Pulau Silingaan.

Shoals and reefs lie between Pulau Silingaan and Great Bakkungaan and up to 2 miles NW of Great Bakkungaan.

Langaan Island (6°12'N., 118°09'E.), about 27m high to the tops of the trees, stands 1.75 miles NE of Great Bakkungaan Island. The island is fringed by a reef that extends 1 mile NW and N, 1.25 miles NE, and 0.5 mile SE from it.

A sandbank, above-water, lies about 0.5 mile from the islet on the E edge of the reef.

The passage between Great Bakkungaan and Langaan Island is fouled by reefs and shoals. Three reefs and shoals lie within 2 miles WNW of Great Bakkungaan Island.

Johnston Rock (6°13'N., 118°11'E.), a shoal with a least depth of 2.4m, lies 2.25 miles NE of Langaan Island. Several

shoal patches, with depths of less than 11m, extend W from Johnston Rock. A 8.5m patch lies 1.25 miles E of the rock.

Several patches, with depths of 6.1 to 18.3m, lie centered about 3 miles NNE of Langaan Island.

A coral patch, with a least depth of 8.5m, lies about 4.5 miles ESE of Langaan Island. A 15.8m patch lies about 1 mile N of this coral patch.

Lihiman Island (6°14'N., 118°04'E.), about 67m high to the tops of the trees and densely wooded, lies about 4.75 miles WNW of Langaan Island. An islet, about 20m high to the tops of the trees, lies on the outer edge of a reef which extends about 0.75 mile NE of the island.

Boaan Island (6°17'N., 118°05'E.), 78m high to the tops of the trees and conspicuous, stands almost 3 miles N of Lihiman Island. A shoal, with a least depth of 4.3m, lies about 1.75 miles ESE of Boaan Island.

Lihiman and Boaan Islands are mud volcanos. Lihiman was reported active a half century ago.

10.60 Powell Shoal (6°18'N., 118°06'E.), with a least depth of 7.6m, lies about 1.5 miles NE of Boaan Island.

Sibaung Island (6°18'N., 118°00'E.), about 12m high to the tops of the trees, stands 4 miles WNW of Boaan Island. Glen Shoal, with a least depth of 9.1m, lies 2 miles NNE of Sibaung Island.

Flying Fish Rock (6°17'N., 118°08'E.), with a least depth of 2.7m and steep-to, lies 2.5 miles E of Boaan Island.

The coast between Tanjung Niug and Tanjung Sesip, about 11.5 miles to the N, is broken by several shallow rivers and creeks, and bordered by shoal ground which extends up to 10.5 miles off the former point and 2 miles off the latter point. From Tanjung Sesip, the coast extends about 18 miles NW to Tanjung Semangut and is fringed by reefs which extend up to 2.5 miles offshore in places.

Several shallow rivers and streams discharge along this section of coast, which is bordered by a low sandy beach.

Marchesa Bay (6°40'N., 117°34'E.) lies between the chain of reefs extending NE from the coast for 9.5 miles to Pulau Billean, and the chain of reefs extending NE for 7.5 miles from Tanjung Taroh to Pulau Leonan. This latter point marks the SE point of Pulau Jambangan.

Between these chains of reefs, the bay ranges in width from 10 to 12 miles with depths in the entrance of 18.3 to 31m, mud and shells, decreasing gradually SW to the shore. The shore of the bay is fringed by drying sandbanks and reefs which extend from 0.5 to 2.75 miles offshore.

Numerous reefs lie within the bay, but the approach entered between Tanjung Semangut and Tanjung Taroh is free from dangers.

Claire Rock (6°41'N., 117°37'E.), with a least depth of 2.4m, lies 7.5 miles NE of Tanjung Semangut.

Green Patches (6°40'N., 117°40'E.), with a least depth of 1.3m, consists of a group of four detached coral heads, the S reef of which dries, which lie about 8 miles ENE of Tanjung Semangut.

March Reef (6°38'N., 117°37'E.), which dries about 0.3m and which is surrounded by dangers with depths less than 1.6m, lies about 5.5 miles E of Tanjung Semangut. Sealark, which dries 0.3m, lies about 1.5 miles SW of March Reef.

Off-lying Dangers and Islands

10.61 Kestrel Shoal (6°30'N., 117°59'E.), with a least depth of 2.4m, lies about 15.5 miles ENE of Tanjung Sesip.

Kechil Reef (6°35'N., 118°01'E.), a coral patch with a least depth of 5.5m, lies about 19 miles NE of Tanjung Sesip.

Miller Rock (6°34'N., 117°59'E.), with a least depth of 7.9m, lies about 1.25 miles WSW of Kechil Reef. A detached coral head, with a depth of 9.4m, lies about 2 miles NE of the rock.

DeCourcy Dangers (6°34'N., 117°56'E.), with depths of 4.1 to 17.6m, lie from 2 to 5 miles N of Pulau Lankayan.

Pulau Lankayan (6°30'N., 117°55'E.), an islet about 34m high to the tops of the trees, lies about 11.75 miles NE of Tanjung Sesip. Numerous dangers, with depths of 1.6 to 11m, lie within 1.5 miles E and W, and 1 mile N of the island.

Cranefield Dangers (6°26'N., 117°50'E.) consists of a large number of shoals with depths of less than 1.8m in places, lying midway between Pulau Lankayan and Tanjung Sesip.

10.62 Pulau Billean (6°37'N., 117°46'E.), about 11m high and marked by a few bushes, lies about 11.5 miles NNE of Tanjung Sesip. A cay lies about 0.25 mile SE. Pulau Billean is surrounded by coral reefs and dangers which extend about 4 miles NE, 1.5 miles E, and 3.5 miles W. Similar dangers lie between this island and the coast, about 9.5 miles SW. Some of these reefs are marked.

Pulau Tegipil (6°33'N., 117°43'E.), a densely wooded and conspicuous islet about 27m high to the tops of the trees, lies on this chain of reefs about midway between Pulau Billean and the coast.

Bankuruan Cays (6°32'N., 117°41'E.), two small wooded islets about 11 and 20m high to the tops of the trees, lie on this chain about 2 miles SW of Pulau Tegipil.

Harcourt Reef, Chambers Reef, and Mitchell Rocks, together with numerous patches with depths of 9.1m and less, lie between the chains of reefs extending SW from Pulau Lankayan and Pulau Billean to the coast. The positions of these dangers can best be seen on the area chart.

Billean South Dangers (6°40'N., 117°53'E.) consist of a group of coral reefs lying from 7 to 11 miles ENE of Pulau Billean. They consist of Ground Rock, a 3.3m patch about 7.5 miles NE of Pulau Billean; Sunbeam Rock, with a depth of 2.7m, about 7 miles ENE of Pulau Billean, with Irene Rock, a 3.3m patch about 1.5 miles farther in the same direction; Paknam Shoal, with a depth of 5.5m, about 3.5 miles E of Irene Rock; and an 8.2m patch lying about 1.75 miles SSW of it.

All of these shoals are steep-to and less water than charted may exist. The recommended track shown on the chart has been followed with safety, but vessels are advised to use caution when navigating in the vicinity of these dangers.

Billean North Dangers (6°46'N., 117°45'E.), a group of coral reefs with a least known depth of 0.9m, lie centered about 9.25 miles N of Pulau Billean. These dangers have not been completely examined and should be avoided.

Sedgeman Rocks (6°43'N., 117°44'E.), with a least depth of 8.2m, lie about 6.5 miles NNW of Pulau Billean.

10.63 Pulau Leonan (6°44'N., 117°37'E.), a small drying sand cay, lies about 7.5 miles NE of Tanjung Taroh and about

0.75 mile within the NE end of an extensive chain of reefs which extend 8 miles NE from the E side of **Pulau Jambongan** (6°41'N., 117°27'E.). Numerous shoals, the positions of which may best be seen on the chart, extend up to 5 miles NW from Pulau Leonan.

Pole Reef (6°46'N., 117°40'E.), a small drying atoll, lies about 2.75 miles ENE of Pulau Leonan. A clear channel, about 2 miles wide, lies between this reef and the dangers fringing Pulau Leonan. Two detached reefs, with depths of 2.4m and 1.8m, lie 1 and 1.5 miles, respectively, NE of Pole Reef.

Pole Reef Lighted Beacon stands on the W side of the reef. It was reported that the lighted beacon was replaced by a lighted buoy.

Dingle Rock (6°47'N., 117°36'E.), with a least depth of 7.6m, lies about 3.5 miles NW of the beacon, reported destroyed, marking Pole Reef. John Rock, with a similar depth, lies about 1.3 miles farther NW. A detached coral patch, with a least depth of 10m, lies 0.5 mile SSW of this latter rock.

Sandy Cay is located W of Sandy Island. A beacon stands 0.1 mile SW and Sandy Cay West Lighted Beacon stands on the S side of this patch. The light was reported extinguished.

Sandy Island (6°49'N., 117°37'E.), a small sand atoll 1.6m high, stands 5 miles N of Pulau Leonan. A chain of shoals, with depths of 7.3 to 18.3m, extends 3.25 miles NE from a position about 0.5 mile SE of Sandy Island.

Some shoal patches lie within 0.5 mile SW and 0.6 mile W of Sandy Island.

Harrison Reef (6°50'N., 117°34'E.), a coral reef with a least depth of 0.6m, lies about 2.5 miles WNW of Sandy Island. It is marked on its S side by a beacon. The beacon was reported destroyed.

Caution.—Numerous dangers lie between John Rock and Dingle Rock, and the coast of Pulau Jambongan, 7.5 miles SW. Inshore navigation is possible with caution, noting that dirty water may make the shoals invisible.

10.64 Pulau Sipindung (6°52'N., 117°33'E.), a sand cay about 0.6m high and covered at HW, stands on the W side of a reef about 1.32 miles in extent, which lies 4 miles NW of Sandy Island. A group of shoals, some uncovering, lie up to 2.5 miles N and NE and 0.5 mile S of the island.

Gibson Reef (6°51'N., 117°32'E.), which uncovers, lies on the W side of a shoal 0.5 mile in extent, which lies about 1.3 miles SW of Pulau Sipindung.

A large number of shoals and reefs, some of which uncover and others marked by cays, extend up to 4.5 miles W through 7.75 miles SW of Gibson Reef.

Gibson Reef Lighted Beacon stands on a patch lying 1 mile ESE of the reef. The lighted beacon was missing and was replaced by a (starboard hand) lighted buoy.

Dampier Rock (6°52'N., 117°32'E.), a 4.9m coral patch with an 8.2m patch 0.32 mile SW of it, lies almost 1.5 miles W of Pulau Sipindung.

An area, measuring about 20 miles wide from W to E and 14 miles long in a N and S direction, lies centered in 6°56'N, 117°50'E, about 17.5 miles ENE of Pulau Sipindung. Numerous reefs, with depths of 1.6 to 3.7m, are reported to lie within this area, which may best be seen on the chart. This area has not been surveyed and vessels are cautioned not to enter it.

Numerous detached shoals and reefs lie between this foul ground and Bilean South Dangers and Bilean North Dangers to the S, and between this area and Sandy Island and Pulau Sipindung to the SW, and to Malawali Eastern Dangers about 11 miles W of the NW side of this area.

10.65 Pudsey Dawson Dangers (7°03'N., 117°46'E.) are a group of shoals which border the NW and N sides of this unsurveyed area. The W patch has a least depth of 4.6m and the remaining patches, which extend about 17.5 miles ENE from this patch, have depths of 4.6 to 18.3m.

Numerous shoal patches, with depths of 11m and less, lie within 8 miles N, NW, and WNW of Pudsey Dawson Dangers.

Muligi Patches (6°56'N., 118°02'E.) consist of a group of shoals, with depths of 8.2 to 18.3m, which lie close off the middle of the side of the unsurveyed area.

Monmouth Shoals (6°42'N., 118°07'E.) lie about 11 miles SE of the unsurveyed area. They consist of a group of five detached shoals with depths of about 4 to 8m and deep water between.

Meander Patch (7°10'N., 117°37'E.), about 1 mile long and narrow with a least depth of 3m near its center, lies about 10.5 miles NNW of the 4.6m patch on the W end of Pudsey Dawson Dangers.

Numerous shoals lie within 15 miles radius of Meander Patch. A 5.9m shoal was reported to lie 4.5 miles SE of Meander Patch.

Tides—Currents.—Off the coast between Malawali Channel and Sandakan Harbor, no regular tidal current was perceptible, but when the Northeast Monsoon blew steadily there appeared to be a constant set that tended to flow to the NW.

Directions.—From Sandakan Harbor to Malawali Channel are generally followed by the deep draft vessels as guided by recommended track-line shown on the charts. The NE coast of Borneo, from Sandakan Harbor to Marchesa Bay, Pulau Jambangan, and then to Maliwali Channel, is generally low, densely wooded, and intersected by many streams and rivers.

For a considerable distance, the coast is fronted by numerous coral reefs and a good lookout from aloft should be exercised.

This passage is best made with the sun overhead or astern.

Caution.—The recommended track has been followed with safety, but there may be less water than charted on some of the shoals and other uncharted dangers may exist.

It should be borne in mind that no reliance can be placed on the positions of the sand cays which have no vegetation on them.

The action of the sea frequently causes them to shift considerably and even disappear. The beacons are often difficult to make out.

Marchesa Bay to Tanjong Inaruntong

10.66 Pulau Jambangan (6°41'N., 117°27'E.), which lies with Tanjong Taroh its SE extremity about 2.5 miles NNW of Tanjong Semangut, is about 7.5 miles long and 11 miles wide and densely wooded. Its SW part is separated from the mainland to the S by a shallow unexamined channel about 0.75 mile wide.

The village of Jambangan stands on the SE side of the island about midway between two low cliffs 2 miles apart.

The SW cliff is red colored.

The E side of the island is bordered by mangroves and a clump of trees, 61m high, which stand close inland about 3 miles NNW of Tanjong Taroh. In the vicinity of Tanjong Landung Hayang, the NE point of the island, the coast becomes cliffy and rises to a height of 52m.

The channel to the logging settlement is about 0.32 mile wide with depths of 7.3 to 18.3m. The S side of the channel is marked by beacons and a buoy moored 2.5 miles WSW of Claire Rock that marks the W end of the bar. The bar, with a least reported depth of 4.6m and 2 miles wide, fronts the entrance of the channel which leads along the SE side of Pulau Jambangan as far as the red cliff; beyond this position the channel appears to shoal.

A black and white checkered buoy is moored about 6.5 miles WSW of Claire Rock. Shallow depths lie to the S of this channel. About 5 miles SSW of Tanjong Semangut and S of this extensive area of shoal ground lies the estuary of the Sungai Paitan, a small river. Three small islands lie in this estuary and about 4 miles to the W is a larger wooded island. The coast and the waters lying to the W of this extensive shoal have only been partially examined.

The N coast of the island between Tanjong Landung Taroh and Tanjong Buli Gantungan (Northwest Bluff), the NW point of the island, is bordered by cliffs about 6 to 15m high. The N point of the island rises to a hill about 0.75 mile within the point.

10.67 Tanjong Buli Gantungan (Northwest Bluff) (6°44'N., 117°23'E.), 156m high, and Southwest Bluff, 140m high, lying about 5.5 miles SW, are prominent headlands on the W side of the island. An inlet lies between these headlands and penetrates the island in an ESE direction for over 3 miles. The entrance of the inlet is 1.5 miles wide with a least depth of 3.7m. The shores and the low head of the inlet are wooded.

The W shore of Pulau Jambangan appears to be clear, but the water is shallow. A drying sand patch and a reef lie a little less than 2.5 miles WSW of Tanjong Buli Gantungan.

Reefs and other dangers extend about 5.5 miles N and NE from the NE coast of Pulau Jambangan and about 8 miles to the E. On these reefs are many sand cays, two of which are especially conspicuous.

Pulau Bunkuduan, 21m high and tree covered, stands 1.75 miles NNW of the NE point of the island, and Pulau Kalangan, 3m high and bush covered, stands 2.25 miles NE of the same point.

Reefs and foul ground extend 2.25 miles ENE from this latter cay.

A danger area, 4 miles in diameter, is centered around a point 2 miles N of Tanjong Limau.

The E side of the island, as far S as Tanjong Taroh, is fringed by reefs and foul ground which extend up to 2.5 miles offshore in places.

The coast between Tanjong Landung Hayan and Tanjong Layang Layang, about 17.25 miles NW, is indented by Paitan Bay, a large expanse of shoal water, most of which has not been examined. Numerous reefs, some drying and marked by islands and islets, lie scattered throughout the bay especially

across the entrance. Depths in the bay range from 11m across the entrance to depths of 1.6m and less in its inner reaches.

Pulau Landayang (Bush Island) (6°48'N., 117°21'E.), a sandy bush-covered cay about 6m high, lies near the middle of a reef, 7.75 miles WNW of Tanjong Landung Hayang. Pulau Musa, densely wooded, lies on a similar reef about 4.5 miles farther WNW. Two additional small islets lie about 0.5 mile S of the S end of Pulau Musa.

Benkoka (6°53'N., 117°13'E.), a prominent wooded hill 179m high, stands 4.5 miles SSW of Tanjong Layang Layang.

The coast between Tanjong Layang Layang and Tanjong Naruntong, about 7.25 miles NW, is bordered by reefs and foul ground which extend up to 3 miles offshore in places, as defined by the 10m curve. Some of these reefs are marked by cays and islands.

Pulau Mematuaan (Tree Rock) (6°57'N., 117°15'E.), small in extent and 6.4m high, lies on the coastal reef almost 0.5 mile NE of Tanjong Layang Layang.

10.68 Pulau Mandidarah (Mandiralla) (6°56'N., 117°20'E.), a palm covered island about 26m high to the tops of the trees, lies about 4.75 miles ESE of Tanjong Layang Layang. It lies on a coral reef which extends about 0.7 mile from its N side and 1 mile ENE from its E side.

Numerous scattered sunken and drying reefs lie from 2 miles E to 5 miles SSE of Pulau Mandidarah.

Fly Rock (6°58'N., 117°18'E.), drying, lies about 3.5 miles NE of Tanjong Layang Layang. Numerous drying coral reefs lie up to 1 mile S of Fly Rock and between it and Tanjong Layang Layang. Pulau Nangka lies near the edge of the coastal reef about 2.25 miles W of Fly Rock.

Passage Reef (6°59'N., 117°17'E.), awash, lies about 1.5 miles NE of Pulau Nangka. A small drying coral reef lies about 2.75 miles E of Passage Reef.

Passage Reef Lighted Beacon stands on the N side of the reef. A drying reef, marked by a beacon (port hand), lies 2.75 miles E of Passage Reef.

Pulau Lakataan (6°59'N., 117°12'E.), about 3.5 miles SE of Tanjong Naruntong, is bordered on its NE side by a red cliff 11m high. A reef extends about 0.75 mile from its E side.

Off-lying Islands and Dangers

10.69 Pulau Tigabu (6°53'N., 117°28'E.), 61m high to the treetops on the NW end and 52m high to the treetops on the SE end, lies on the S part of a drying reef about 4.5 miles NW of Pulau Sipindung. A 12m high metal framework tower stands on the summit of the island. Detached reefs, marked by several sand cays, extend about 3.5 miles ENE and 3 miles NE from the NE extremity of the island.

Pulau Tibakan (6°56'N., 117°28'E.), bush covered and 3m high, lies about 2.32 miles N of Pulau Tigabu. Foul ground extends about 0.5 mile SW from the island and up to 1.25 miles NE.

Two detached drying coral reefs lie centered about 2 miles NW of Pulau Tibakan.

Sky Rock (6°54'N., 117°25'E.), awash, lies 3.25 miles WNW of Pulau Tigabu and is marked by a lighted beacon. Several detached shoals and reefs lie within about 1.3 miles ENE, 2

miles NE, and 2 miles NNE of this rock. Merlin Rock, with a depth of 2.1m and dark colored, lies near the center of this foul ground, 1 mile NE of Sky Rock.

Pulau Kukuban (6°56'N., 117°24'E.), covered with trees about 26m high, lies about 2 miles NNW of Sky Rock. A rock, awash, lies 1.25 miles SSE of Pulau Kukuban.

Lubani Rock, marked by a lighted beacon, lies 2.5 miles SSW of Pulau Kukuban.

Mosquito Rock (6°58'N., 117°29'E.), with a least depth of 0.9m, lies almost 2.5 miles NE of Pulau Tibakan.

10.70 Pulau Buaning (6°59'N., 117°30'E.), a sand cay, lies on the S edge of a reef about 1.5 miles long in an E and W direction, which lies about 1 mile N of Mosquito Rock. A detached 1.8m patch lies about midway between this rock and the reef.

Pulau Tamboulian (6°58'N., 117°28'E.), about 21m high to the tree tops and surrounded by a reef, lies 2.25 miles N of Pulau Tibakan.

A large number of detached coral reefs, some of which uncover at LW lie up to 7.5 miles WNW of Pulau Tamboulian.

Pulau Malawali (7°03'N., 117°18'E.), about 169m high in its NW part, lies with Tanjong Tobo its S extremity, about 5.25 miles NE of Tanjong Layang Layang. Pulau Mati and Pulau Tanjong lie off the NW and N sides of the island. The island is fringed by a reef which extends almost 1 mile offshore NE, N, and NW and about 0.5 mile from the S and SW sides.

Pulau Malawali is sparsely populated, the main village being at the N end of Pulau Tanjong.

Two shoals, with depths of 3m and 4.3m, lie about 1.25 miles and 1.75 miles WNW of the N extremity of Pulau Tanjong.

A sand cay lies on a reef about 0.6 mile NE of Pulau Tanjong. This reef extends, with drying patches, about 2.5 miles to the E. Another drying reef lies about 2 miles NNE of the E end of Pulau Malawali, and two reefs lie within 1 mile WNW of it. A spit of coral, which dries in places, extends ENE from the E end of Pulau Malawali for about 2.5 miles. There is an islet, 9.1m high, and a sand cay, 0.6m high, on the coral spit close to the E end of Pulau Malawali. Two other reefs, the N of which dries at its NE end, lie from 1 mile to 2.25 miles farther ENE.

Malawali Eastern Dangers (7°01'N., 117°27'E.) comprise a large number of detached reefs and shoals which extend up to 12 miles between ENE and SE from Pulau Malawali. No vessel should attempt to navigate through these dangers.

Drying reefs extend for 1.75 miles ENE from the 0.6m sand cay located about 0.75 mile E of the E end of Pulau Malawali. Two extensive reefs, the NE ends of which dry, lie about 2.75 and 4.5 miles, respectively, ENE of the above sand cay. About 6.75 miles ENE of the above sand cay and NW of Straggler Island, there is a reef with a depth of 2.1m.

10.71 Straggler Island (7°05'N., 117°29'E.), 6m high and wooded, lies 8.25 miles ENE of the E extremity of Pulau Malawali. The reef on which the island stands extends about 1 mile E and about 0.5 mile SW.

A reef, with a depth of less than 1.8m, lies 1.25 miles SE of Straggler Island. Another reef, with a similar depth, lies 2 miles SE of the same island; 0.5 mile ENE of the latter reef is a 5.8m coral patch. Other dangers of the group, which may best be seen on the chart, extend 7 miles farther S.

Fairway Shoal (7°07'N., 117°30'E.), with a rock awash on its S side, lies 2.75 miles NE of Straggler Island. The channel between this shoal and the E end of Southeast Banggi Dangers to the NW is 3 miles wide and deep.

A steep-to 5.8m patch lies 1.5 miles E of Fairway Shoal, and 3.5 miles to the NE there is a 12.8m patch. A 7.3m shoal was reported to lie 1 mile SW of the 12.8m patch.

South Channel Dangers (7°06'N., 117°11'E.) consist of numerous coral shoals lying to the W of Pulau Malawali and on the S side of Banggi South Channel. The westernmost patch dries 0.6m and lies 6.5 miles W of Pulau Mati, an island off the NW extremity of Pulau Malawali.

A 7.6m patch extends into the fairway of Banggi South Channel about 0.75 mile NE of the 0.6m drying patch. The NE shoal, which dries at its S end, lies 3 miles NW of Pulau Mati. The S shoal, with a depth of 1.5m, lies 4 miles W of the same island.

There is a channel leading from Banggi South Channel to Malawali Channel to the S, passing between South Channel Dangers and Egeria Rocks to the W and Pulau Malawali to the E, but there is a 6.1m patch at the S end about 1.25 miles SSE of Egeria Rocks.

10.72 Egeria Rocks (7°03'N., 117°13'E.), with a depth of 0.6m and steep-to, lies 2.5 miles SW of Pulau Mali. A shoal patch, with a least depth of 1.2m and marked by a light, lies about 1.25 miles W of the rocks. The light was reported extinguished. An 8.2m patch lies 0.5 mile NW Egeria Rock.

Malawali Channel (7°00'N., 117°17'E.) NW entrance lies between the dangers fronting the N and NE coasts of Sabah (North Borneo) to the S and Pulau Malawali and the dangers to the W of it, on the N side. This channel leads SE to Sandakan Harbor through the islands, shoals, and reefs previously described.

Directions.—Vessels approaching Malawali Channel NW entrance should follow the recommended tracks as shown on the chart as far SE as Passage Reef. After passing NE of this reef at a distance of about 0.75 mile, keep the right extremity of Pulau Kukuban in range, bearing 121° with the summit of Pulau Tigabu; this is a good mark and is easily picked up.

When about 0.75 mile distance from Pulau Kukuban, alter course S to pass between the foul ground lying to the SE of Pulau Mandarah and the reefs lying between Pulau Kukuban and Pulau Tigabu. When about 4 miles WSW of the NW summit of Pulau Tigabu, alter course to about 095° and steer for Pulau Sipindung. The reverse of these directions is followed by vessels bound NW.

Tanjong Naruntong (7°01'N., 117°09'E.) is the N extremity of a peninsula which extends N for about 23 miles between Paitan Bay on the E, and Marudu Bay on the W. The NE side of Tanjung Naruntong, toward Malawali Channel, is fringed by a bank on which there are numerous reefs and rocks, sunken and awash, extending 2.5 miles offshore.

Pulau Banggi—Islands and Channels North of Borneo

10.73 Pulau Banggi (7°14'N., 117°10'E.), a densely wooded and hilly island, is separated from Tanjung Naruntong by Banggi Channel. Tanjung Kammaung, the S extremity of Pulau Banggi, lies 7 miles NNW of Tanjung Naruntong.

Pulau Banggi is fringed by a reef. The SE coast is fronted by several smaller islands with deep channels between them. Off the NE side of the island there are numerous islets and dangers which lie within 5.5 miles of the coast. A reef extends about 0.5 mile off the NW side of the island, and the water is foul to a distance of about 1 mile. Between Mayangit Point, the W extremity of the island, and Tanjung Kammaung (Kalutan Point), 11.5 miles S, the coast is slightly irregular and has numerous sunken rocks and dangers lying up to 1.25 miles off the projecting points. Islands and dangers extend 4.5 miles WSW from Tanjung Kammaung.

Bukit Banggi (Banguay Peak) (7°17'N., 117°06'E.), 528m high, is a prominent peak that stands near the NW extremity of Pulau Banggi. When viewed from NE or SW, the apex appears as a nipple, but from other directions the nipple shape becomes less apparent and the summit assumes a more rounded form. A range of hills extends E for 6 miles and terminates in East Hill.

A peak 328m high, then a range of smaller hills extends about 3 miles N and terminates in North Hill near the coast, which **Tanjong Samarang** (Samarang Point) (7°21'N., 117°09'E.) lies 5 miles WSW of the N extremity of Pulau Banggi. The coast between these two points is indented by two small bays. The W bay is fringed by reefs to a distance of 0.2 mile and has a sandy beach at its head.

Vessels can anchor in 7.3m in the entrance of this bay.

The E bay is foul and has a small islet in its entrance.

10.74 Mangsi Great Reef (Mangsee Great Reef) (7°29'N., 117°14'E.) lies 5.5 miles N of the N extremity of Pulau Banggi. It lies on the N side of Main Channel and separates that channel from Mangsi (Mangsee) Channel.

The reef is mostly covered at HW, but there is usually a sand cay on some part of it awash. At LW the reef dries 1.4m and presents a vast expanse of coral and sand, with lagoons here and there. A shoal spit, defined by about the 20m curve extends about 2 miles WSW from the W edge of the reef. A pinnacle rock, with a depth of 9.1m, lies close off the E extremity of the reef. A 16.4m patch was reported in the fairway, about 2.75 miles SW off the E extremity of the reef. A 15m patch was reported (1995) in the fairway, about 2.8 miles SW of the E extremity of Mangsi Great Reef.

Black Watch Rock (7°26'N., 117°17'E.), a sunken danger, lies on the S side of Main Channel about 5.5 miles NE of the N extremity of Pulau Banggi. The area between Black Watch Rock and Pulau Banggi is fouled by shoals, reefs, and small islets whose positions are charted.

Banggi Outer Northeast Reefs (Banguay Outer Northeast Reefs) (7°23'N., 117°21'E.), a group of reefs and shoals, parts of which dry, extend 4.5 miles SE from a position 2.25 miles SE of Black Watch Rock.

Mangsee Channel separates Mangsi Great Reef from North Mangsee and South Mangsee Islands. This channel is seldom used and should be attempted only by vessels with local

knowledge and then only under the most favorable of conditions.

Main Channel (7°26'N., 117°14'E.) passes between Mangsi Great Reef on the N and Black Watch Rock on the S. This channel is 5.5 miles wide, but the navigable width is reduced to 1.5 miles between the charted 18m lines on either side.

This channel is sometimes used by vessels coming from the SW and bound through Balabac Strait during the Northeast Monsoon. Such vessels should steer a course of 124° for a position, with the N extremity of Pulau Balambangan, bearing 234°, distant about 5.75 miles. Then a course of 080° should be steered to a position about 0.75 mile S of the S edge of Mangsi Great Reef, then a mid-channel course should be steered, passing 2 miles S of South Mangsee Island, then as required.

Vessels coming from the Sulu Sea should steer for South Mangsee Island on a course of 272°. When about 5 miles from the island the course should be altered so as to pass about 2 miles S of it. Then a reverse of the directions given above should be followed.

The dangers lying N, NE, and E of Mangsi Great Reef are described in Pub. 162, Sailing Directions (Enroute) Philippine Islands.

10.75 Southeast Banggi Dangers (7°07'N., 117°24'E.) are an extensive group of reefs and shoals, drying in parts and steep-to on its S side, that lie about 6 miles off the SE coast of Pulau Banggi. The water between these dangers, N to Banggi Outer Northeast Reefs, is encumbered by many dangers which may best be seen on the chart.

Carrington Reefs, a large mass of drying reefs, lie on the N side of Banggi South Channel, about 2 miles W of Southeast Banggi Dangers.

Pulau Balak (7°08'N., 117°08'E.) reaches a height of 88m in its W part. The island lies close off the SE coast of Pulau Banggi, about 4.25 miles W of Carrington Reefs.

Pulau Patanunan (Patanunam) lies 0.75 mile E of the S extremity of Pulau Banggi. The island rises to a height of 99m near its S end. Shoal water extends 0.2 mile S and 0.45 mile SW of the island.

Pulau Maliangin Kechil (7°05'N., 117°01'E.), 47m high, lies on the S side of the foul ground that extends 4.25 miles WSW from Tanjong Kammaung. Pulau Maliangin Besar, 123m high, is located on the foul ground 1 mile NE of Pulau Maliangin Kechil.

Pulau Langisan, 9m high, is located on foul ground 1.75 miles WNW of Tanjong Kammaung.

Pulau Balambangan (7°16'N., 116°56'E.), a large irregular-shaped island, is located 2.25 miles W of Pulau Banggi and is separated from that island by Banggi West Channel. The N portion of the island is flat and densely wooded with high trees, and the S part is hilly and attains a height of 134m.

Tanjong Siagut, the N extremity of the island is fringed by reefs and dangers to a distance of 2.5 miles W and 1.5 miles N. Detached patches, with depths of 11.3 to 14.6m, lie up to 4.5 miles NNE of the point. Siagut Shoal, consisting of a number of coral heads with depths of 1.8 to 7.3m, and one coral head awash, extends 2 miles SW from a position about 1.5 miles W of the N extremity of Pulau Balambangan.

The E coast of Pulau Balambangan is indented by North and South Harbors. North Harbor is entered between Tanjong

Batang (Battang Point), located 5 miles S of the N extremity of the island and Tanjong Sempriok (Saparoak Point), 3 miles farther SSW. The entrance channel is about 0.5 mile wide between the reefs fringing the above points. A reef awash lies 1 mile W of Tanjong Batang. A reef extends NNE from Tanjong Sempriok to a position 0.5 mile S of the above reef that is awash. Depths of 12.8 to 18.3m are found in the outer part of the harbor, but vessels are cautioned against entering unless the reefs are clearly visible.

Anchorage.—Anchorage can be taken in 18m in a position about 0.35 mile W of the above mentioned awash reef. In this position Tanjong Batang bears 083° and Tanjong Sempriok bears 204°. South Harbor is entered N of Tanjong Raha (Raha Point), which is located 5.5 miles SW of Tanjong Sempriok. Foul ground extends 2 miles E and 0.5 mile S from the N entrance point of South Harbor and reefs which dry extend 0.5 mile E of Tanjong Raha.

The entire SE coast of Pulau Balambangan is fronted by reefs whose positions are charted.

Banggi West Channel (Selat Banggi Barat) is encumbered by foul ground.

10.76 Pulau Tiga (7°20'N., 117°03'E.), a low wooded islet, located about 2.75 miles ESE of the N extremity of Pulau Balambangan, stands near the middle of a steep-to reef that extends 1 mile N and 1 mile SE from the islet. The channel W of Pulau Tiga should only be used by small vessels with local knowledge and only then if the dangers are clearly discernible.

Rifleman Rock, a small coral patch with a depth of 2.7m, lies 1.75 miles ESE of Pulau Tiga. Labuan Rock, with a depth of 2.7m, lies 2 miles SSE of Pulau Tiga.

A shoal, with a depth of 3.6m, has been reported to extend NE from the rock to a position about 0.25 mile NW of Rifleman Rock.

Half Channel Patch (7°13'N., 117°01'E.) has a depth of 0.9m, breaks at times, and lies near the middle of the fairway in a position 2 miles SE of Tanjong Sempriok.

The channel between it and the reef fringing Pulau Banggi is about 2.5 miles wide and has depths of 24m in the fairway.

Vessels entering Banggi West Channel from the N should pass W of Rifleman Rock, and between the shoal extending NE from Labuan Rock and the reef that extends from Pulau Tiga. After having passed W of the rock, the course should pass about 0.5 mile off Manyangit Point, lying S of Labuan Rock, then from 1 to 1.5 miles off the coast of Pulau Banggi, passing E of Half Channel Patch.

Having passed the patch, course should be altered as required.

Vessels coming from the W should round the S extremity of Pulau Balambangan at a distance of about 2 miles, then keep that point on a bearing of more than 261° in shaping a course to pass well E of Half Channel Patch.

When clear of that danger, vessels should follow the reverse of the directions given above.

10.77 Banggi South Channel (Selat Banggi Selatan) (7°07'N., 117°10'E.) is bound on the N side by Pulau Balambangan and Pulau Banggi. The N coast of Borneo and adjacent dangers form the S side of the channel.

The dangers that form the S side of Banggi South Channel lying N, NE, and E of Tanjong Naruntong have been previously described in [paragraph 10.72](#).

Petrel Shoals (7°04'N., 117°07'E.) is a group of shoals that range in depth from 3 to 8.5m, which extends about 1.25 miles WSW from a position 4 miles NNW of Tanjong Naruntong. A light is situated on the E end of the shoal area. Ten Foot Rock, with a depth of 3m, lies 0.75 mile SW of Petrel Shoals. There are heavy tide-rips over a shoal, with a depth of 4.9m, about 0.5 mile S of Ten Foot Rock.

North Borneo Dangers, an extensive bank with drying rocks, lies about midway between Ten Foot Rock and Tanjong Naruntong.

Outer Shoal (7°02'N., 117°00'E.), which is bordered on its E and S sides by drying patches, lies on the S side of the W entrance of the channel about 2.5 miles SSW of **Pulau Maliangin Kechil** (7°04.5'N., 117°01.5'E.). It is the largest and farthest NW of the Northwest Borneo Dangers. The shoals in this area extend E about 4.5 miles from Outer Shoal, then NE 2.5 miles to Ten Foot Rock.

A light is shown on Outer Shoal.

Tides—Currents.—Tidal currents in Banggi South Channel are weak but currents up to one knot in velocity have been experienced.

Directions.—This channel connects the South China Sea with the Sulu Sea and is used primarily by coasting vessels rounding the N end of Borneo. The channel is intricate and requires local knowledge. The channels N of Pulau Banggi are considered safer and easier to navigate.

The best time for proceeding through the channel from the W is during the afternoon with the sun overhead or astern, at which time reefs and dangers are easier to identify.

Vessels having rounded Pulau Kalampunian, which is marked by a light and will be discussed later, at a distance of 2.5 miles, should steer 098° to pass about 1 mile N of Outer Shoal light and 1.25 miles S of Pulau Maliangin Kechil. When the summit of Pulau Maliangin Kechil bears 341°, course should be altered to 061° to pass 1.25 miles SE of Tanjong Kammaung. About 2.5 miles E of Tanjong Kammaung course should be slowly altered to 085°, which will lead midway between Carrington Reefs on the N, and the dangers that lie N of Pulau Malawali on the S. When the N extremity of Pulau Malawali bears 180°, about 2.5 miles, a course of 110° should be steered for about 5.25 miles, at which time the E extremity of Pulau Malawali will bear 222° about 3 miles distance, thence a course of 068° should be steered. This course leads SE of Southeast Banggi Dangers and about 1 mile N of Fairway Shoal, and then into the Sulu Sea.

Tanjong Naruntong to Tanjong Sempang Mangayau

10.78 From Tanjong Naruntong, the coast, which is indented by two bays, trends 9 miles SW to **Cape Mafsie** (6°56'N., 117°01'E.), which is 15m high. There are conspicuous white cliffs close NE of the cape.

Sungai Tigatarok enters the sea through a shoal, reef-filled bay 2 miles SW of Tanjong Naruntong.

Pulau Sapirak (6°59'N., 117°03'E.) lies on the edge of the coastal reef 6 miles WSW of Tanjong Naruntong and 0.25 mile

offshore. The perimeter of this thickly wooded island is surmounted by steep cliffs about 15m and rises to an elevation of 34m to the tops of the coconut trees which stand on it.

Due to the dangers of coral reefs and rocks lying within a 4 mile radius of the island, vessels should not pass between the island and Outer Shoal Light, 5 miles NW.

From Pulau Sapirak, the coast trends 1 mile S to the entrance of the inlet leading to Sungai Melobong. Both entrance points of the inlet are fringed by reefs which reduce the width of the channel to about 0.6 mile. The head of the inlet is encumbered by mudbanks, which leave a narrow channel toward the NE shore with charted depths of 2.7 to 5.5m.

Tanjong Berungus, the W entrance point of the above-described inlet, is located 1 mile N of Cape Mafsie. A reef extends 1 mile N and 0.75 mile W of the point.

Marudu Bay (6°58'N., 116°56'E.), into which Sungai Bandau (Marudu River) flows, is entered between Cape Mafsie and Tanjong Sempang Mangayau, 18 miles WNW. This bay is about 25 miles long in a general N and S direction and has general depths of 11 to 33m. Several rivers, which shift their channel after each rainy season, flow into this bay.

From Cape Mafsie, which is fringed by a reef that extends 0.5 mile W, the coast trends in a S direction, 2.5 miles to Tanjong Perawan, which is 17m high and may be identified by its red cliffs.

Sungai Telaga (6°50'N., 117°02'E.), the largest river flowing into Marudu Bay, is about 0.4 mile wide but decreases inside. The channel leading into the river's entrance is about 1m deep over the bar, but boats of 2.5m draft can ascend the river at HW for a distance of about 12 miles. Pulau Bengkoka, 8m high to the tops of the trees, is located in the mouth of the river at the S end of a sand spit extending 1.5 miles off the mainland.

The Sungai Taka flows out into the bay about 3.25 miles SW of the mouth of the Sungai Telega. Zebra Reefs are several coral patches, one of which dries, lying within about the 20m curve fronting the shore about 2 miles SW of the mouth of Sungai Taka. A patch, with a depth of 1.2m, lies near the middle of the bay about 2.75 miles W of Zebra Reefs and Barraut Reef, a rocky shoal with a least depth of 1.2m, lies on a coral patch near the middle of the bay 1.25 miles SSW of the 1.2m patch above.

10.79 Mompokad (6°41'N., 116°57'E.) is a small village situated 5 miles SSW of the mouth of the Sungai Taka. Powell Rock, with a least depth of less than 1.8m, lies 0.75 mile N of Mompokad. Good anchorage for small vessels in a depth of 12.8m, mud, is found 0.35 mile NW of the village.

From Mompokad to Tanjong Batu, 7.5 miles SW, the coast is fringed with a reef of sand and coral and foul ground to a distance of 1 mile offshore. Hills up to 265m high lie within 1 mile of the coast, and a peak, with a height of 692m, lies 5 miles SE of Tanjong Batu.

Sungai Taritipan enters the bay 2 miles S of Tanjong Batu. From Sungai Taritipan, the head of Marudu Bay trends W 5 miles to Sungai Bandau (Marudu River), which enters the bay in its SW extremity. The coast between these rivers is covered with dense mangroves, mudbanks, which dry from 0.3 to 0.6m, front the shore.

The channel leading to the entrance of Sungai Bandau has a least depth of 0.5m and follows a general WSW direction for

about 3 miles, between extensive mudbanks. Small boats of 2m draft can ascend the river for about 1.5 miles at HW, but the channel must be marked by beacons.

Vessels with a draft of 6.1m may anchor in 9.4m, mud, with Tanjong Batu bearing 060° about 1 mile and those with less draft may anchor further S. Vessels with a draft of 4.5m may anchor in 6.4m, mud, off the entrance of the Sungai Bandau, with the S extremity of Tanjong Batu, bearing 104° at a distance of 2.5 miles. Deeper draft vessels should anchor about 0.3 mile NE of this anchorage in 10 to 11m, with the S extremity of Tanjong Batu bearing 115°, distant 2.25 miles.

From Sungai Bandau, the shore is fringed by mangroves and extensive flats as far N as abeam of Pulau Matunggong, about 4.5 miles distant. Pulau Matunggong is about 5.5m high and consists of a small mound surrounded by low rocks, mangroves, and is connected with the Sungai Matunggong to the W by a drying sandbank.

Brandon Reefs (6°42'N., 116°50'E.), several large coral patches which almost dry, lie 3 to 4 miles NE of Pulau Matunggong. The outer patch, with a depth of 3.2m, lies 2 miles offshore.

Pirate Point (6°46'N., 116°51'E.), low and mangrove covered, lies 4.5 miles N of the N Brandon Reef. A sand spit extends about 0.5 mile E and 0.5 mile N of this point.

Matunggong, a conspicuous wooded hill 389m high, lies 6 miles SW of Pirate Point.

Pulau Limau Limauan (6°50'N., 116°52'E.), a triangular-shaped island about 19.8m high, is joined to the coast at LW and lies 3 miles N of Pirate Point. A drying reef extends about 0.5 mile ESE and S from the island. A 3m patch lies 1.32 miles NE of the island and is marked by a beacon.

Between Pulau Limau Limauan and Tanjong Tigasamil, the S entrance point to Kudat Harbor, about 1.75 miles NNW, the coast is indented by a bay with depths of 14.6 to 18.3m.

Kudat Harbor (6°52'N., 116°50'E.) is 1.25 miles wide between Tanjong Tigasamil and the reclaimed land which has absorbed Tanjung Bornugas. Depths in the entrance range from 11 to 16.5m, shoaling gradually toward the bay head.

A shallow bay lies on the N side of the harbor between a point located about 0.5 mile W of Tanjung Bornugas and Egeria Bluff, about 1.25 miles farther W. Low overhead telegraph wires cross the entrance of a river in the NW part of this bay.

The three bays, which lie in the inner reaches of the harbor to the W, are shallow and fouled by numerous flats and shoals.

10.80 Kudat (6°53'N., 116°51'E.) ([World Port Index No. 51710](#)), a small town, is situated on the N point of the entrance of the harbor. The town is built on the flat land N and W of Tanjung Bornugas and was once the capital of North Borneo. This port will cease to receive general cargo ships when the road system linking it to Kota Kinabalu has been improved. It will then become a minor port exporting timber, loading being carried out at anchor.

Winds—Weather.—The dry time of year is from April to October. Fever is most prevalent during this time.

Strong NE winds with heavy rain usually occur during December and January.

Tides—Currents.—Tidal heights above datum of soundings are: MHHW, 1.7m; MLHW, 1.2m; MHLW, 1.2m; and MLLW, 0.5m.

The tidal currents are weak, the maximum observed was about 0.5 knot.

Depths—Limitations.—Sandilands Rocks, with a depth of 2.1m, lies in the middle of the entrance to Kudat Harbor, 0.75 mile ESE of Gueritz Rock.

Witti Rocks, two in number with least depths of 1.8m, lie close N of Sandilands Rock. A 5.5m patch lies close N of each rock.

Tigasamil Spit, which dries, extends about 0.4 mile NE from Tanjong Tigasamil. An islet, 6.1m high, lies close off Tanjong Tigasamil. Tern Rock, 1.2m high, lies on a drying reef which extends 0.25 mile N from Tanjong Tigasamil.

Gueritz Rock, with a depth of 0.6m, lies 0.3 mile SE of the Government Pier, close off the reclaimed land and is marked by a light. Datum Rock, covered only at the highest spring tides, dries 2.1m and lies 0.2 mile WNW of the Government Wharf.

A rock, with a least depth of 1.8m, lies in the middle of the harbor about 0.75 mile WSW of Datum Rock. An overhead cable crosses the bay between a point 0.1 mile N of Government Wharf and Residency Point.

Government Wharf, an open-pile pier, extends 99m SSW from the shore about 0.4 mile E of Residency Point and then 102m SW. The outer length is 12m wide and used for berthing. Two vessels, about 114m long, can berth alongside where there is a depth of 6.4m. A catwalk, 30m long, connects the head of the wharf to a lighted dolphin.

Aspect.—Conspicuous objects which mark the approach to Kudat Harbor are the Government Pier, the radio tower, Gueritz Rock Beacon, Sandilands Rock Light, and a water tower 0.75 mile NNW of Gueritz Rock Beacon.

Pilotage.—Vessels desiring a pilot should give at least 24 hours notice prior to arrival. Pilots normally board within the harbor limits.

Signals.—Berthing signals are indicated by two hoists; the vessel's call sign and by a red and white checked flag above the International Code pennant, as shown below:

Pennant No.	Berth
0	Anchor
1	Government Wharf—seaward face
2	Government Wharf—inside face

1. A vessel should acknowledge the berthing signal with the Answering Pennant. The hoist at "half-mast" indicates that the vessel should prepare to move, but should not get underway until the hoist is "close-up."

2. Red and white checkered flags are displayed on the wharf to indicate the position of the bow and/or stern of the vessel at the berth indicated.

3. International Code flag "B" is displayed on the opposite yardarm to the berthing signal when a vessel loaded with inflammable or dangerous cargo is berthing or unberthing.

Signals, denoting the state of the current alongside the Government Wharf, are displayed as follows:

Signal	Meaning
Cone, point up	Ebb current
Cone, point down	Flood current
Ball	Slack water

Anchorage.—Anchorage is recommended, in a depth of 11.9m, about 0.75 mile ESE of Gueritz Rock, with the conspicuous radio tower in range, bearing 354° with Gueritz Rock, and Sandilands Rock Lighted Beacon, bearing 085° or nearer the town if draft permits.

Anchorage is prohibited within 0.3 mile of the head of Government Wharf. No vessel carrying explosives or dangerous petroleum is permitted to anchor in the approach fairway or within 0.65 mile of the head of Government Wharf.

10.81 Between the N entrance point of Kudat Harbor and Tanjong Kapor, 1 mile NNW, the land has been reclaimed and a small boat marina has been constructed. Coral shoals, with depths of 3.7m and 5.5m, lie close E of the reclaimed land.

From Tanjong Kapor to Tanjong Tajau, 4.5 miles NNW, the coast is foul for a distance of 0.5 mile offshore. Sungai Agong Agong flows into the bay 2.75 miles NNW of Tanjong Kapor.

Tanjung Agong Agong lies 0.5 mile NNE of this river, and Tanjong Tajau lies 1.5 miles NNW of Tanjong Agong Agong.

Tanjung Sempang Mangayau (7°02'N., 116°45'E.), the N extremity of Borneo lying NW of Tanjong Tajau, is also the NW entrance point to Marudu Bay. The point is readily distinguished by its grassy bluff, and by Pulau Kalampunian which lies about 1 mile N of it.

Low hills rise from the NW side of the bay to an elevation over 183m.

Melau Besar (6°47'N., 116°50'E.), about 17 miles SSE of Tanjong Sempang Mangayau, is a conspicuous hill with a bare, flat summit 207m high. Matunggong, 414m high, is a thickly wooded, conspicuous peak, located 5 miles SW of Melau Besar.