The hilly land between Labuan Amuk and Tandjung Setra is a useful landmark when navigating Selat Badung. Among these hills are two light green, trapezoidal hills 669 feet and 892 feet high, respectively, with a darker grove at the top.

Djambul, northward of the trapezoidal hills, rises 1,434 feet and is recognizable by a large temple and waringin tree at the summit. The ridge of which Djambul is a part merges northeastward with Gunung Agung.

GILI SELANG (MANUK), 2 miles south-southeastward of Tandjung Ibus, is a 39-foot high, forested islet lying about 25 yards off the east extremity of Bali. The islet is joined to the coast by a drying reef of stones. About 1 mile southward of Gili Selang there begins a narrow, drying reef fringing the coast to Labuan Amuk; boulders lie on the reef.

It was reported (1963) that Gili Selang was a good radar target at a distance of 4 miles.

UDJUNG VILLAGE, 6 miles southwestward of Gili Selang, is situated on a bight between the rocky Tandjung Lokan and the sandy Tandjung Data. The village is the port for Karang Asem, chief town of the area. Vessels ANCHOR off the village in 16 to 25 fathoms, sand, but should shoal no farther as the bottom rises steeply.

5A–12 TANDJUNG BIAS PUTIH, 8¾ miles southwestward of Gili Selang, is very steep-to with a depth of 9 fathoms against the shore. Bias Putih village is situated in the ½-mile bight northward of Tandjung Bias Putih, and may be recognized by warehouses with zinc and red roofs. ANCHORAGE in 20 fathoms, sand and rocks, is afforded in the middle of the bight, Gili Biaha offering some shelter.

Gili Biaha is a 60-foot-high, rocky, forested islet about ¼ mile offshore from Tandjung Bias Putih. The channel between is deep and clear but tidal currents run strongly through it. Near the top of Gili Biaha is an opening connected by tunnel to the sea. The surf beating against the islet is emitted as a fine mist through this opening, giving the appearance of a column of smoke rising from a crater.

TANDJUNG BUGBUG, the north entrance point of Labuan Amuk, to be described, lies 2 miles west-southwestward of Tandjung Bias Putih. The conspicuous hill northward of the point was described in section 5A–11. Gili Tepekong, a grassy islet 1 mile southward of Tandjung Bugbug, rises steeply to 167 feet. Midway and ¼ mile westward of a line joining the islet and the point is a drying reef upon which are above-water rocks. The passage between Gili Tepekong and the reef, and Tandjung Bugbug and the reef, is deep and clear but should only be attempted at slack water.

A report (1961) indicates Gili Tepekong to be about ¼ mile west of the charted position.

LABUAN AMUK is entered between Tandjung Bugbug and Tandjung Sari, 4¼ miles west-southwestward. Locally, the northeast part of the bay is known as Labuan Mendira; the north central as Labuan Buitan; and the entire west part as Labuan Amuk. Mendira village is situated westward of Tandjung Bugbug but is not visible from seaward. Sand beaches chiefly make up the north and northwest shores of the bay; the west shore is steep and very hilly. There is a temple about 300 yards northwestward of Tandjung Sari.

Partially protected, fairly good ANCHORAGE is taken in 23 to 27 fathoms, soft bottom about ½ to ¾ mile north-northeastward of the short spit ¼ mile northward of Tandjung Sari. At springs the tidal stream attains a rate of up to 4 knots. The bay is visited regularly by vessels trading between the islands.

Teluk Padang, separated from Labuan Amuk by Tandjung Sari, has some significance as a prau harbor. Drying reefs chiefly occupy this cove.

SELAT BADUNG

5A–13 SELAT BADUNG, the strait between Bali and Nusa Penida and its adjacent islets, is much traversed by local Indonesian traffic. In the west monsoon, and during the change of monsoons, the strait is much used by sailing craft. See section 5A–4 for a detailed description of the tidal currents in Selat Badung. There now follows a coastal descrip-

tion of the west and east sides of the strait.

BALI–SOUTHEAST COAST
(CONTINUED)

5A–14 TANDJUNG BUNGSIL (8°32′ S., 115°31′ E.), ½ mile southward of Tandjung Sari, has a small crowned tree, seen prominently from southwestward when close inshore.

Tandjung Setra, a low sandspit 4 miles southwestward of Tandjung Bungsil, is marked by two tall trees and by an above-water, darker colored rock. The village of Kusambe is situated close northward of Tandjung Setra and is distinguished by sheds and a long row of salt pans. Tandjung Kloto, 2¾ miles west-southwestward of Tandjung Setra, has a temple with a broad crowned tree nearby.

Lebih village, 3 miles westward of Tandjung Kloto, is almost hidden by a coconut grove, but a large warehouse with red roof is conspicuous. The Sungai **Petanu** flows out 2½ miles westward of Lebih, paralleling the coast for 600 yards and forming the narrow tongue Tandjung **Petanu**. Close westward of this point is a detached, dark grove containing a number of dwellings.

Between Tandjung **Petanu** and Tandjung Geling, 2¼ miles southwestward, is the village of Pabean Ketewal, marked by three warehouses with galvanized roofs. An opening made in the coastal reef by a small river at the village is easily found by the discoloration of the water. Tandjung Geling is a low, sandy point covered with pandanus palms. A house with a sharp roof, situated 1,200 yards northward of the point, can be seen plainly from off Tandjung Serangan.

SANUR ROAD is located off the head of the bight between Tandjung Geling and Tandjung Serangan, a low, wooded point with white sand beach, 4¾ miles south-southwestward. The north part of the bight has a dark gray sand beach, which, farther northward becomes white. A good mark for Sanur Road is a coconut grove which begins at the village at the head of the bight and extends without a break to Tandjung Serangan. Northward of the village there is only one coconut grove interrupting the rice fields.

The village of Pabean Sanur is situated on the beach at the head of the bight; close inland is the larger village of Sanur. Pabean Sanur is conspicuous for a large, white house, close by which is a tall straight tree. Sanur village may be identified by a large temple with a large, crowned tree nearby.

The coastal reef broadens in the south part of Sanur Road. The depths in the bight gradually decline to the 7-fathom curve, but are irregular beyond, with some detached reefs. Vessels ANCHOR in not less than 7 fathoms with Tandjung Serangan bearing not less than 187°. Landing is made by passing northward of the coastal reef, steering clear of a number of rocks which are indicated by small, unofficial BUOYS.

5A–15 PANTAI–TIMUR is a bay with swampy shores lying between Tandjung Serangan and Tandjung Benoa 3¾ miles southwestward. Tandjung Benoa is the north extremity of a peninsula, with white sand beach, jutting 2 miles northward into Pantai-timur; on the point is the village of Benoa. Drying coastal reef, steep-to, fringes Tandjung Serangan to 2/3 mile, and, save for two channels, extends solidly southwestward across the entrance of Pantai-timur. The reef also occupies the greater part of the bay.

Serangan is an island in the entrance of Pantai-timur, and, except for a boat channel leading to the village on the north end of the island, is surrounded by drying reef. Serangan is mostly covered with coconut palms and has a white sand beach on its seaward side. The village on its north end is invisible from seaward, but the red pointed roof of a mosque projects above the trees on certain bearings.

BENOA ROADSTEAD.—There is anchorage almost everywhere outside the coastal reef of Pantai-timur. The bottom is very irregular inside the 30-fathom curve, however, and there is often a heavy swell on the shoal ridges about 2 miles northeastward of the two islets, Nusa Dua, described in section 5A–17. The least depth on these ridges is 6½ fathoms. During

the west monsoon a high swell, almost breaking, runs over them so that vessels cannot anchor there. In this event, there is very good shelter 1 1/2 to 2 miles northward of Nusa Dua. In 1965 a vessel anchored in depths of about 11 fathoms, mud, with the northern Nusa Dua bearing 196°, distant 1 3/5 miles. Five shackles of chain were used. There is also good anchorage off the boat channel leading to the north point of Serangan.

BENOA CHANNEL, a break in the drying coastal reef, closely skirts the village of Benoa Tandjung and continues one mile inside Pantai-timur. On the north side of the channel, about 3/4 mile past Benoa Tandjung, is the marine terminal Benoa Udjung.

DEPTHS.—Off the entrance of Benoa Channel the 10-fathom curve lies about 1 mile off the coastal reef; within the curve are scattered depths of 23 feet or more. A depth of 10 feet lies on the north edge of the shoal projecting about 1/10 mile northeastward from the reef on the south side of the channel entrance. A screwpile in this vicinity is invisible at half tide and is dangerous.

The least depth in Benoa Channel is 19 feet (reported 1962). The bottom is uneven sandy ground with intermittent coral and rock. Several obstructions exist.

TIDES.—The tide at Benoa Udjung is mixed but predominantly semidiurnal. The average spring and neap range (semidiurnal) is 7 feet and 2 1/2 feet, respectively. The average spring and neap range (diurnal) is 2 1/2 feet and 1 foot, respectively. Neither the spring high or low tides of the two systems can coincide.

CURRENTS.—Strong tidal currents may be encountered in Benoa Channel. The flood current sets strongly southward eastward of the easternmost wharf at Benoa Udjung, and the ebb current sets strongly northward in the same location.

NAVIGATIONAL AIDS.—Two beacons in range 251 1/2° lead from seaward into Benoa Channel. The front and rear beacons of the range each have a white triangle topmark, point up and point down respectively.

A red can buoy with cylinder topmark is moored southward of the range, in a position 9/10 mile eastward of the northeast end of the Benoa peninsula. The buoy marks the northeast end of shoal water. The west end of the shoal water is marked by a beacon.

The channel to the wharves is marked on the north side by black beacons and black buoys. It is marked on the south side by red buoys and beacons.

It was reported (1965) that all channel buoys, except a red and white buoy located 367 yards east-southeastward of Udjung, had been replaced by stakes. Oil lamps were attached to these stakes for night navigation. Green lights were shown on the starboard side of the channel.

There was a good radar presentation of the coastline observed by a vessel approaching Benoa Channel.

PILOTAGE.—Pilotage is compulsory for merchant vessels, and is recommended for all craft not familiar with the area. A local pilot boards the vessel 3 miles eastward of Benoa. Customs and health officials board inside the harbor.

DIRECTIONS.—Benoa Channel is well-marked by buoys and beacons, but because of the sharp bend in the entrance is limited to vessels up to 330 feet in length, and then only with a current of less than 1 knot. The best time for entering is 1 hour before high water or 1 hour after low water. In 1954 Benoa Channel was regularly used by a 312-foot vessel drawing 15 feet.

BENOA UDJUNG (8° 45′ S., 115° 12′ E.)

5A-16 BENOA UDJUNG, situated within Pantai-timur at the west end of Benoa Channel, has, with Benoa, become the chief port of Bali. The wharves of Benoa Udjung are connected by a causeway across the north

part of Pantai-timur and thence by road to Denpasar, the chief location in southern Bali. Exports are coconut oil, cattle, pigs, copra, and spices. The port is under Indonesian naval control.

WHARVES.—Two timber wharves on steel piles are located on the south side of the eastern of two connected concrete "islands" which together form the port facilities of Benoa Udjung. Each wharf is about 80 feet long and has a least depth of 23 feet alongside. Taken together, the wharves have a berthing length of 210 feet. The western concrete island, used for oil storage, has no wharf.

SUPPLIES.—Provisions are scarce. Water can be trucked from Denpasar. No coal or oil is available to shipping.

COMMUNICATION.—Benoa Udjung is connected with Denpasar by telephone and thereby with the general telegraph network. An auto road leads to Denpasar, 5 miles northward.

MEDICAL.—The port has a harbor doctor. Denpasar has a hospital.

5A-17 BUKIT BADUNG (TAFELHUK), whose northeast extremity is Tandjung Benoa, is the peninsula forming southernmost Bali: Although Bukit Badung rises 709 feet, it is low in comparison with the adjacent mountainous country. Its south shore is steep, but in places there is a sandy beach at the foot of the cliffs. A drying coastal reef fringes the east and south sides of Bukit Badung.

Nusa Dua, two islets 3 1/4 miles south-southeastward of Tandjung Benoa, lies close off the east extremity of Bukit Badung. Nusa Dua are relatively high, thickly overgrown, and lie on a shoal. Between the islets is an above-water rock.

Tandjung Gagar, the southeast extremity of Bukit Badung, is relatively low. Between this point and the rocky Tandjung Lebang close northward, there is a break in the coastal reef.

Tandjung Mebulu is the west extremity of Bukit Badung. On the point is a temple 256 feet above the sea; about 3/4 mile eastward is a wooded hummock, 485 feet high. A cluster of rocks lying close south-southeastward of Tandjung Mebulu is a good landmark.

Pantai-barat, the bay northward of Bukit Badung, is described in Chapter 4 with the southwest coast of Bali.

NUSA PENIDA AND NUSA LEMBONGAN

5A-18 NUSA PENIDA (NUSA BESAR), the island between Selat Badung and Selat Lombok, has hills sloping rather steeply to all coasts but the north. Mundi, the summit of the island, is 1,585 feet high and has many trees none of which are noticeably conspicuous. During the Southeast Monsoon when water is scarce, Nusa Penida and adjacent islands appear barren except in coastal areas under coconut cultivation. The shores of the island are very steep-to so that anchorage is almost unobtainable. A coastal description of the island follows the remarks concerning Nusa Tjeningan, below.

NUSA LEMBONGAN, almost completely under coconut cultivation, is hilly in the southwest and low in the northeast. A LIGHT is shown from Tandjung Taal, the northwest point of the island. The fringing coastal reef extends almost 1/2 mile west-northwestward from Tandjung Taal. A broad crowned tree in range 198° with the west side of a conspicuous rock on the coastal reef (both objects in the cove near Tandjung Sangiang, described below), leads just westward of the reef.

Vessels ANCHOR in 6 to 7 fathoms, coral and stone, off a foul cove 1/2 mile northeast of Tandjung Sangiang, the southwest extremity of Nusa Lembongan. The cove is identified by a sand beach on which is a temple and a broad crowned tree. Vessels must be careful not to be carried too fast toward the cove by the current. The nearby village of Lembongan is not visible from the anchorage.

Nusa Tjeningan, joined to the southeast side of Nusa Lembongan by a drying reef, is hilly except for its northwest corner. The island is nearly covered with coconut groves. The channel between Tjeningan—Lembongan and Nusa Penida is ½ mile wide and over 50 fathoms deep; strong CURRENTS make navigation difficult.

SHORES OF NUSA PENIDA.—The coastal reef around the island is nowhere wider than 400 yards, and the 20-fathom curve runs close along it. The north and northeast coasts have no offlying dangers.

The rock Batu Aba, 128 feet high and covered with vegetation, lies just off the east extremity of Nusa Penida. A reef with less than 10 fathoms over it extends 400 yards southward from Batu Aba; two above-water rocks lie on the reef. Vessels can ANCHOR in 15 to 20 fathoms, sand bottom with rocks and coral, in the small bay westward of Batu Aba but anchorage is poor and maneuvering is made difficult by strong, irregular currents.

It was reported (1963) that Batu Aba was a good radar target at a distance of 5 miles.

Tandjung Sedihing, the south extremity of Nusa Penida, forms a cove on its north side. The cove, which is the only landing place in the south part of the island, has a narrow sand beach on which is a small temple; immediately behind the beach the land rises steeply. Anchorage is neither afforded in the cove nor outside it.

Batu Lumbung, a rock 177 feet high, lies 3¾ miles northwestward of Tandjung Sedihing, in a position 600 yards off the southwest coast of Nusa Penida; the channel between has a depth of 23½ fathoms. About midway between Batu Lumbung and Tandjung Pandan (Sari), 5½ miles northwestward, is a low, arched rock 600 yards offshore. An above-water rock, covered with vegetation, lies 200 yards southward of Tandjung Pandan.

There is a sand beach in the second cove northward of Tandjung Pandan, and in the cove opposite the south end of Nusa Tjiningan. These are the only beaches on the northwest and southwest coasts of Nusa Penida.

LOMBOK—WEST COAST

5A–19 The 12,350-foot peak Gunung Rindjani is, except for Gunung Kerintji in Sumatra, the highest and largest volcano in the archipelago. It has 4 peaks in a circle, with a fifth peak, from which smoke always issues, rising in the middle. Gunung Rindjani is thickly wooded except for the upper 2,000 feet which is covered with volcanic sand. It is reported that the peak can be seen for a distance of 80 miles in clear weather. Southward of the range in which Gunung Rindjani is located the mountainous land descends regularly to a hilly, fertile country which again rises to a desolate range of mountains running along the south coast of the island. Elevations along this range seldom exceed 1,000 feet except for several conspicuous peaks near Labuan Tring. The highest of these, Gunung Maredjek, is 2,428 feet high.

Since the 11-fathom curve is fairly far from the coast, there are a number of anchorages but depth are irregular. Coastal navigation is facilitated by many conspicuous points and by the absence of current in the large bight between Tandjung Santigi and Tandjung Pandanan, 13⅓ miles southwestward.

From Tandjung Papak (sec. 5B–1) to Tandjung Sirrah, 6½ miles west-southwestward, the northwest coast of Lombok is low with a rising hinterland. The 11-fathom curve which incloses the numerous, scattered shoal heads off this coast, lies less than ½ mile off Tandjung Papak but 3 miles northward and 5 miles westward of Tandjung Sirrah. The three islets off Tandjung Sirrah, to be described, are also inclosed by the curve. Of particular note is a 1½-fathom patch 2⅓ miles north-northeastward of Tandjung Sirrah.

The bight between Tandjung Papak and a point 3 miles southwestward offers ANCHORAGE. The bight is clear except for a large, 1½-fathom shoal fronting the conspicuous village of Ketapang. To enter, vessels steer 158° for the village, passing close along the fishing stakes on the coastal reef northward of the village. Anchorage in 10 fathoms is taken inside the 1½-fathom shoal.

SORONG ROADSTEAD, of some importance as a shipping place for local products, lies

SEE SHORT CORRECTIONS

midway between Tandjung Papak and Tandjung Sirrah. The road is an indentation in the above- and below-water reefs extending seaward from the villages of Sorong Djukung and Paloh. The reefs serve as breakwaters and provide a quiet anchorage. A BEACON with red topmark stands near the shore end of the east reef, and a beacon with black topmark stands farther offshore on the west reef. See directions below for entering Sorong Roadstead.

The three mentioned islets off Tandjung Sirrah are Aer, Meno and Trewangan. Trewangan, the outermost island, is hilly; the other two are low but have tall trees. The channel between Trewangan and Meno is navigable in 5 fathoms or more. A 5½-fathom patch lies on the west side of the south approach. The channel between Aer and Tandjung Sirrah is avoided, mainly because of a 2¼-fathom shoal head, seldom visible, in the south approach, ⅔ mile south-southwestward of Aer. The channel usually used is that between Meno and Aer, which, because of a convenient bearing, may be navigated in 12 fathoms.

It was reported (1963) that Pulau Trewangan was a good radar target at a distance of 20 miles.

DIRECTIONS.—Sorong Road is entered from the north keeping just westward of the drying reef marked by discoloration which extends about 1 mile northward from Sorong Djukung. A vessel from southward can pass between Meno and Air steering 022° keeping Tandjung Mipah astern bearing 202°. When the northern extremity of Trewangan bears 252° course may be altered to 072°, which leads northward of all dangers, to a position northward of the entrance from whence course may be altered to pass between the beacons marking the entrance of the road.

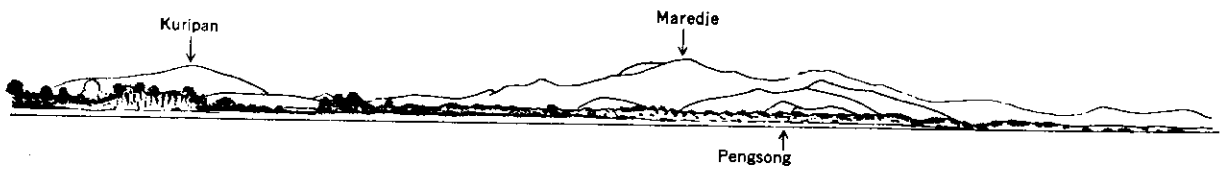
TELUK KOMBAL, formed southward of the three islands off Tandjung Sirrah, lies between Tandjung Sirrah and Tandjung Ketjinan, 4¾ miles southward, and is unprotected from the west monsoon. At times, however, when a strong northwest wind is blowing in Selat Lombok, Teluk Kombal experiences only weak northeasterly winds. At this time quiet ANCHORAGE in 10 fathoms is afforded off the village of Benu at the head of the bay. It is best to approach this anchorage from the southwest, along the Lombok coast, since shoal heads lie in the north half of the head of the bay. A stranded wreck lies close off Tandjung Ketjinan, in the south part of the bay.

From Tandjung Ketjinan to Tandjung Santigi, 6 miles southward, the coast is mountainous. The shore rises steeply from the sea and may be closely approached. The rock close off Tandjung Mipah has been mentioned. A similar rock lies close off Tandjung Mangsit, 1¼ miles north-northwestward of Tandjung Santigi. The mountainous coast continues southward to Ampenan Road, described below, but off this stretch of coast are several dangers.

5A–20 AMPENAN ROAD, 4½ miles southward of Tandjung Santigi, offers safe anchorage in the Southeast Monsoon and transition period. At this time there is a land breeze or it is calm.

LANDMARKS.—A light is shown from the village of Ampenan. About ¼ mile northward of the light is a house with red roof. Southward, nearer the village, are two red, triangular beacons, point up and point down respectively.

DANGERS.—Santigi Reef, with a least depth of 5 feet, lies 1½ miles southward of Tandjung Santigi. A 3½-fathom patch lies ¾ mile north-northeastward of Santigi Reef, and a 3¾-fathom patch lies ⅞ mile south-southeastward of the reef.



AMPENAN ROADSTEAD, LIGHTHOUSE 1000 YARDS, 098°

Wilhelmina Reef, with a least depth of ¾ fathom, lies about 1 mile north-northwestward of Ampenan light.

Medusa Reef, with a least depth of 2¼ fathoms, lies a little more than 1 mile west-southwestward of Ampenan light. A BEACON with black cone topmark stands on the north end of the reef and marks the least depth.

A ridge having several 3-fathom patches continues 5 miles southward from Medusa Reef to Tandjung Djerandjang (sec. 5A–22), and then turns seaward. The ridge generally lies about ¾ mile offshore, and between it and the shore are depths of more than 5 fathoms.

A patch, with a least depth of 8 fathoms, is located ½ mile northwestward of Medusa Reef Beacon.

TANKER BERTH.—Two red mooring buoys, for the use of tankers, lie about ¼ mile northwestward of the pier at Ampenan. A submarine pipeline extends from shore to a position midway between the buoys. The end of the flexible hose connected to the pipeline is marked by a gray drum buoy. Anchorage is PROHIBITED within 330 yards of the tanker mooring buoys.

ANCHORAGE.—Vessels anchor in 10 fathoms, black sand, ½ mile off Ampenan village. It is well not to shoal to less than 10 fathoms for the bottom rises quickly.

In the west monsoon, north to northwest winds raise a rough sea, and landing becomes almost impossible. To signify this condition, a blue flag is hoisted at the village.

CURRENTS.—Currents in the roadstead are limited and irregular.

DIRECTIONS.—The roadstead is best approached from west-northwestward, passing north of the beacon on Medusa Reef.

5A–21 AMPENAN (8°34′ S., 116°04′ E.), the most important commercial center of Lombok, is situated near the mouth of the Sungai Djankok. Because the river mouth is never dry, there is an especially lively prau traffic in the Northeast Monsoon. Praus from Makasar trade salt for rice, and Chinese wangkangs load pigs for Singapore. Mataram, the chief town of Lombok, is 1 mile inland.

The customs officer acts as harbor master. Near the harbor office is a 130-foot-long iron pier on which is a ¼-ton crane. Fresh provisions are plentiful. The village is connected to the general telephone system, and good roads lead inland. A harbor doctor serves the port. Mataram has a good infirmary.

LOMBOK—WEST COAST (CONTINUED)

5A–22 TANDJUNG DJERANDJANG lies 5 miles southward of Ampenan. A 2-fathom patch lies ¼ mile northwestward and a 2½-fathom patch 2 miles westward, respectively, of the point. The hill, Pengsong, rises 328 feet 1½ miles northeastward of Tandjung Djerandjang, **and the peak, Kuripan (Sasak), rises 1,312 feet 6 miles southeastward of the point.**

TELUK LABUAN TRING, entered 4½ miles southward of Tandjung Djerandjang, occupies a pocket in the coast formed by the abrupt change in coastal direction from south to west. The bay provides good ANCHORAGE in both monsoons; with northerly winds it is better to anchor in the northeast arm.

A 3-fathom patch is located about 1,100 yards north-northeastward of Tandjung Bunutan.

The east side of the entrance is low and sandy, but Tandjung Bunutan, the west entrance point, is bluff and readily distinguishable. A mud flat extends 325 yards eastward from this point, reducing the navigable width of the entrance to about 700 yards. Tandjung Gresak, ¾ mile west-northwestward of Tandjung Bunutan, is marked by a 643-foot hill close southward. A steep-to drying reef extends ¼ mile northward and more than ⅓ mile east-northeastward from the point.

The northeastern arm of Teluk Labuan Tring is entered between Tandjung Tjemara and Tandjung Kubur, 985 yards southeastward, but the navigable width is greatly reduced by flats of mud and stone extending from both sides of the entrance. The arm is easily entered, however, because of the several BUOYS and BEACONS defining the channel.

DEPTHS.—The outer part of Teluk Labuan Tring is clear, with depths from 12½ fathoms in the entrance to 7½ fathoms ½ mile from the head. The head shoals abruptly in flats of mud and stone. The northeast arm has a least depth of 4¼ fathoms in the entrance, and 3¼ to 3¾ fathoms inside.

ANCHORAGE.—Anchorage is taken in 9 fathoms off the entrance of the northeast arm, with Tandjung Tjemara bearing about 328°.

TIDES.—The tides are mixed, but predominantly semidiurnal. The average range of diurnal spring tides is 4 feet, and of semidiurnal spring tides, 3 feet.

DIRECTIONS.—Because of the lack of current in this part of Selat Lombok, vessels, with local knowledge, may proceed to Teluk Labuan Tring inside the shoal ridge extending southward from Ampenan Road, by keeping in not less than 7 fathoms. This route should not be used in adverse weather and care must be taken to avoid the 3-fathom patch 1,100 yards north-northeastward of Tandjung Bunutan.

A better route passes outside the reefs. Steer westward from Ampenan Road until the islet Ringgit (sec. 5A–23) bears south, and steer for it on that course. When the peak, Kuripan, bears east, steer for it on that course, passing northward of the 3-fathom reef westward of the islet Po (sec. 5A–23). When Teluk Labuan Tring is well open, enter on a southerly course, giving Tandjung Bunutan a berth of ¼ mile.

LEMBAR (8°44′ S., 116°04′ E.), a village on the north side of the inner arm of Teluk Labuan Tring, has a landing pier. Praus land their goods here when shore communication at Ampenan is broken by the west monsoon. An auto road leads to Ampenan.

LOMBOK—WEST COAST (CONTINUED)

5A–23 FROM TANDJUNG GRESAK TO TANDJUNG PANDANAN, 10½ miles westward, several bays encumbered with islets and reefs indent this uninhabited coast. The bay between Tandjung Gresak and Tandjung Lingong, 2½ miles westward, is partly inclosed by the islets of Suda, Tangkong and Nanggu. The east half of the bay is foul, and there is a 7-foot shoal in the entrance. A rock awash, marked by surf, lies ¾ mile northward of Tangkong, and reefs extend ½ mile northwestward from Nanggu.

TANDJUNG TAMBERAN (8°44′ S., 115°58′ E.), 4 miles westward of Tandjung Gresak, is fronted by two islets. Lontar, the outer islet, is low and round. The islet, Po, almost 1½ miles north-northeastward of the point, is almost identically shaped to Lontar, but by its isolation is a much better landmark. A 3-fathom patch lies ⅔ mile westward of Po.

The bight between Tandjung Tamberan and Tandjung Bebera, a low, wooded point 5¾ miles westward, is encumbered with islets. Gili Gede, the largest islet, rises 371 feet. The islet, Ringgit (8°43'S., 115°55'E.), outermost in the bight, lies 2¾ miles eastward of Tandjung Bebera. Ringgit is low and has a flat hill. A detached, drying reef lies within 7/8 mile eastward of the north end of the islet.

Between Tandjung Bebera and Tandjung Pandanan, ¾ mile westward, is a cove with a sandy beach.

From Tandjung Pandanan the coast bends southwestward for 3 miles, and then trends 4¾ miles southward to Tandjung Batu Gendang. The first part of this stretch is mainly flat with a sand beach, but then the coast rises steeply and becomes desolate. About midway between Tandjung Pandanan and Tandjung Batu Gendang the shore rises sheer from the sea in a whitish wall, 1,457 feet high. A detached, drying rock lies ½ mile southwestward of the whitish wall.

TANDJUNG BATU GENDANG is the southwest extremity of Lombok. The point is high and steep, and is marked by a perpendicular, finger-shaped rock, 351 feet high. If the point is viewed from southwestward, the rock cannot be distinguished from the shore behind.

The remaining coasts of Lombok are described in Part B, following, of this chapter.

PART B. LOMBOK AND SELAT ALAS

5B–1 TANDJUNG PAPAK (8°19′ S., 116°11′ E.), a point on the northwest coast of Lombok, is fringed by a narrow, drying reef. The 10-fathom curve skirts the reef closely.

COAST–GENERAL

5B–2 LOMBOK has two mountain ranges passing through it from west to east, the northern and higher range wholly volcanic. Between these, and occupying the center of the island, is an extensive plain intersected by a line of volcanic hills not more than 100 feet above sea level. The central plain and the lower mountain slopes are highly cultivated.

The north coast of Lombok is straight and regular but the remaining coasts are broken by bays and inlets which afford fair anchorage according to the prevailing monsoon. The most frequented bays are Ampenan and Labuan Tring on the west coast, and Lombok, Labuan Hadji and Pidju on the east coast. The many small rivers of Lombok are of no importance to navigation.

Selat Alas, between Lombok and Sumbawa, may be recognized from southward by the high, rugged land of southwest Sumbawa, and by the steep cliffs of the southeast point of Lombok, which, from 15 miles off, appear low and flat. From northward, Gunung Rindjani (see sec. 5A–19) and the high northwest part of Sumbawa are conspicuous, and the islands under the coasts of Lombok and Sumbawa are apparent.

DEPTHS—DANGERS

5B–3 The 100-fathom curve incloses all dangers on the north coast of Lombok. From a maximum of 1 mile offshore at the west end of this coast, the curve advances to 3 miles offshore at the east end, passing within 1 mile of the islands Gili Lawang and Gili Sulat. The only danger of note is the 2¾-fathom shoal, 2 miles offshore, lying northwestward of these islands.

Selat Alas has depths of more than 50 fathoms in midchannel. The 100-fathom curve closely approaches and incloses the islets and shoals on both sides of the north entrance of the strait. Southward of these dangers, the Lombok side is clear; a few steep-to islets lie as much as 3¼ miles off the Sumbawa side.

The 100-fathom curve lives 5½ miles off the east end of the south coast of Lombok, and 3 miles off the west end. A narrow, drying reef fringes much of the south coast, and islets lie close offshore in several places. Gili Batu, comprising an islet and a rock awash, lies 1½ miles offshore at the east end of this coast; it is the outermost danger.

CURRENTS—TIDAL CURRENTS

5B–4 On the north coast of Lombok, the influence of the tidal currents of Selat Lombok is felt as far eastward as Tandjung Agar Agar.

On the south coast of Lombok, the influence of the tidal currents of Selat Lombok extends eastward to Teluk Blongas, and the current may be 3 to 5 knots. The influence of the tidal currents of Selat Alas is felt to a couple of miles eastward of Teluk Awang. Inside the 100-fathom curve between Teluk Blongas and Teluk Awang a strong easterly current has been noted from mid-December to mid-February.

There are counter-currents or weaker currents in the bights of the south coast.

The tidal currents in Selat Alas are semidiurnal, with the flood setting northward and the ebb southward similarly to Selat Bali and Selat Lombok. The currents are, however, influenced by the monsoons in the Bali Sea and Flores Sea. Thus, in the strength of the east monsoon, a predominant south-going current may be expected, and in the west monsoon, a predominant north-going current.

With weak tides, the current may run continuously in one direction (as determined above), the tidal influence being noticeable only by periodic slackening of the rate. With strong tides, the tidal current and the monsoon current may more or less balance each other, or may augment each other. The rate of the stronger currents is usually 4 knots, but, with maximum lunar effect, can reach 5½ knots.

EAST MONSOON: The strongest south-going current of the day can be expected 6 hours after the moon's upper and lower transits. At the time of transit (depending on the relative strengths of tidal and monsoon influences) either a weak north-going current or slack water is experienced, or, when the monsoon current predominates, a weak south-going current.

Along the Lombok shore there is a counter-current between Tandjung Gali and Tandjung Kuang Wahe. In Labuan Hadji Road (sec. 5B–12) it was observed that the north-going counter-current runs from 6 hours before to 1 hour before the moon's transits, and the south-going counter-current from 1 hour before to 6 hours after the moon's transits. The counter-current is always weaker than the main current.

Along the Sumbawa shore, the currents are very weak, and the direction is the same as the main current.

WEST MONSOON: The monsoon influence appears only in the north part of Selat Alas, and there is the following difference between currents in this part and the south part:

Northward of Tandjung Gali, in the deep channel eastward of Tandjung Petagan, the strongest north-going currents of the day can be expected at the times of the moon's upper and lower transits. About 6 hours after these transits (depending on the relative strengths of the tidal and monsoon influence) there is either a weak south-going stream or slack water, or, if the monsoon's influence predominates, a weak north-going current.

Westward of the deep channel in the north part of the strait, between Tandjung Kajangan and Tandjung Gali, the currents run with some strength 1 hour to 2 hours earlier, thus often causing an indraft toward the Lombok shore. Eastward of the deep channel, close along the west side of Belang, and also southward of that island, there is little or no current, and sometimes a counter-current.

Southward of Tandjung Gali, the north-going current runs from 4 hours before to the times of the moon's upper and lower transits; the south-going current then runs until 8 hours after the moon's upper and lower transits. The maximum rate observed was 3 knots for both north- and south-going currents. The rate of the south-going current increases to 4½ knots only with maximum lunar effect. The maximum rate of 5½ knots, previously mentioned, never occurs in the west monsoon in the south part of the strait.

In the west monsoon there is no counter-current along the Lombok shore, but the current there is weaker and changes 2 hours earlier than the main current. In Labuan Hadji Road, therefore, the conditions are much the same as in the east monsoon—the north-going current runs from 6 hours to 1 hour before the moon's transits, and the south-going current from 1 hour before to 6 hours after these transits.

Along the Sumbawa shore, the conditions are the same as for the east monsoon.

It should be noted that when approaching or passing the south entrance of Selat Alas the influence of the tidal currents through the strait is felt at a great distance. See the general remarks on currents at the beginning of this chapter.

WINDS—WEATHER

5B–5 In the Southeast Monsoon the south wind blows strongly in Selat Alas for the greater part of the day, but subsides toward evening when the land breeze from Lombok begins. In the Northwest Monsoon variable and baffling southerly winds are often experienced in Selat Alas.

The climate of Lombok is much drier than that of Java.

LOMBOK—NORTH COAST

5B–6 FROM TANDJUNG PAPAK (sec. 5B–1) TO TANDJUNG BONDEK, 33 miles eastward, the coast is alternatingly low, and steep and rocky. It is formed by a relatively narrow strip of gently undulating land, soon merging inland with the steadily steeper slopes of the Rindjani volcanic complex. The most noticeable point from westward is the precipitous Tandjung Beri; all the points westward of this point are sloping.

The anchorages on the north coast are little frequented. Because the coast is steep-to and has not been closely examined, it must be approached with CAUTION.

Tandjung Agar Agar, low and inconspicuous, lies 10 miles northeastward of Tandjung Papak. The villages of Lubuk, Sasait, Amor Amor, and Marba (1 mile eastward of Tandjung Agar Agar) are situated on this coast and afford open ANCHORAGE with good holding ground close inshore.

Tandjung Beri, a precipitous point, lies 7½ miles eastward of Tandjung Agar Agar. Bangsal Barat village is situated 4¼ miles westward of Tandjung Beri. ANCHORAGE is taken in 20 fathoms 600 yards from shore, with Gunung Rindjani bearing 162°. Depths seaward increase rapidly.

Labuan Tjari village is situated 2 miles west of Tandjung Beri. The ANCHORAGE is in 18 fathoms, hard coral, with Gunung Rindjani bearing 169°. In the west monsoon a heavy surf usually breaks upon the shore, but landing is sometimes possible in this season.

The northeast end of Lombok is fronted by Gili Lawang and Gili Sulat, two low, brush-covered islets. Taken together, the islets are 5 miles in length and are separated from each other by a narrow but deep channel. A 2¾-fathom shoal extends 1,400 yards northwestward from the northwest point of Gili Lawang, and a detached patch of the same depth lies almost 1½ miles northwestward of the point. From the southeast point of Gili Sulat a narrow, 5½-fathom shoal extends 2 miles southeastward.

SELAT SUNGIAN, the strait separating Gili Lawang and Gili Sulat from the Lombok shore, has a least navigable width of about ½ mile, and a least depth of 6½ fathoms. When the strait is entirely open, a midchannel course may be steered with safety.

ANCHORAGE is afforded in Selat Sungian. One position is in 12 fathoms, soft bottom, with the south point of Gili Selat bearing 090° and the west side of the same islet bearing 319°. The CURRENT here was less than 2 knots.

TANDJUNG BONDEK is the northeast extremity of Lombok.

LOMBOK—SOUTH COAST

5B–7 The south coast of Lombok is rocky and steep-to. It is inaccessible except here and there in the bays, because of surf raised by the heavy oceanic swell. Though the hinterland is desolate and lacking in landmarks, the coast itself is varied. It has many high, dark points between which are short sections of sand beach. Occasionally there are conspicuous hilltops near the coast.

LANDMARKS.—A conical hill rises 499 feet about 2½ miles eastward of Tandjung Batu Gendang. Panggung, a 1,119-foot peak 10 miles east-southeastward of the same point, is the highest peak of a saddle-shaped mountain, and affords good bearings over much of the south coast. A group of conspicuous trees stand on a ridge 3 miles north-northwestward of Teluk Gumbang.

CURRENT.—See section 5B–4.

FROM TANDJUNG BATU GENDANG (sec. 5A–23) TO TANDJUNG PANGGA the coast trends 10 miles southeastward. Midway on this stretch is a small bay which affords an-

chorage if swell and surf are not too heavy. The part of the bay eastward of a drying reef tongue is foul.

Tandjung Pangga is a spur of the high hill land in this vicinity. An islet close northwestward of Tandjung Pangga is hard to discern against the coast. Sophia Louisa Rock, about 1 mile southward of Tandjung Pangga, is 10 feet high. The rock is steep-to on all sides, and, because of its darker color, is visible 7 miles. Three detached rocks lie close offshore within 1 mile eastward of Tandjung Pangga, and are always visible.

A ½-mile-long, narrow tongue of land, with broken summits, terminates 1¼ miles eastward of Tandjung Pangga. A rock awash, not always marked by surf, lies ¼ mile eastward of the tip of the tongue; other rocks lie closer offshore.

5B–8 TELUK BLONGAS, which affords good anchorage, is entered between the narrow tongue just described and Tandjung Sara, described below, 3¼ miles eastward. The bay shortly constricts to a width of 1¼ miles between Tandjung Pengampus on the west and Tandjung Polak on the east, and terminates in a western and eastern arm, namely, Teluk Sawar and Teluk Sepi.

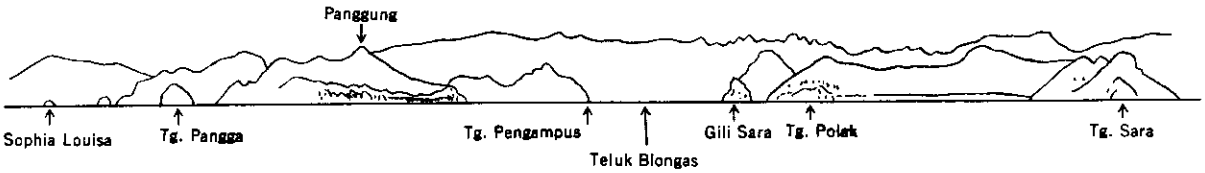
Gili Sara, a rock 253 feet high, lies in the middle of the entrance of Teluk Blongas, in a position 1⅔ miles westward of Tandjung Sara.

Tandjung Sara, the east entrance point of Teluk Blongas, is the south end of a narrow neck of hilly land, which, though overgrown, is conspicuous because of the red rock underneath. Near the end of the neck is a 469-foot, sharp peak. A 174-foot-high rock lies close southward of Tandjung Sara, being joined to the point by a partially drying reef. An above-water rock lies ¼ mile southwestward of the 174-foot rock, and the intervening passage is clear. Teluk Sara, the bight between Tandjung Sara and Tandjung Polak, has a white sand beach on its north side.

Teluk Sawar, the west arm of Teluk Blongas, is bordered by drying reefs and is suitable only for praus. A 2-fathom patch lies 400 yards from the south shore of the arm. A conspicuous, green, pointed hill rises 863 feet ½ mile northward of Teluk Sawar.

Teluk Sepi, the east arm of Teluk Blongas, shoals gradually from 9 fathoms to 5 fathoms. The arm affords ANCHORAGE for large vessels but is only 600 yards wide. A drying reef fringes both entrance points. Gili Lawang, 600 yards westward of the south entrance point, is a rather bare islet 82 feet high. The depth between the islet and the point is less than 2 fathoms, rocky bottom. Depths of less than 4 fathoms north of Gili Lawang and of about 3 fathoms extending from the north shore restrict the entrance of Teluk Sepi to a width of about 250 yards. The shores of Teluk Sepi are bordered by a drying mud flat.

DIRECTIONS.—Pass either north or south of Sophia Louisa Rock. When south of the narrow tongue eastward of Tandjung Pangga, keep the white beach of Teluk Sara behind Gili Sara in order to clear the rock awash eastward of the tongue. The 863-foot hill on the north side of Teluk Sawar in range 329° with Tandjung Pengampus leads to the entrance of Teluk Blongas. There is good anchorage in 16 fathoms in the middle of the bay.



SOUTH COAST OF LOMBOK, GILI SARA 6 MILES, 350°

FROM TANDJUNG SARA TO TANDJUNG TAMPA, 7¼ miles east-by-southward, the coast indents in Teluk Pengantap and Silung Belanak. These bays are scarcely separated from each other by Tandjung Kaju Bele, 2⅓ miles northeastward of Tandjung Sara. Tandjung Kaju Bele is steep and has a beach on either side of it. Soundings are sparse within the 10-fathom curve in both bays.

An islet 177 feet high lies in the southwest part of Teluk Pengantap, in a position ½ mile northeastward of Tandjung Sara; a flat, above-water rock lies almost 1 mile northeastward of the islet.

A sand beach and fringing drying reef fronts the north side of Silung Belanak. In the northeast end of the bay, Batu Balinsomo, a conspicuous rock, stands on the drying reef.

Tandjung Mareseh, a steep point on the east side of Silung Belanak, lies 2¾ miles eastward of Tandjung Kaju Bele. An above-water rock lies just off the drying reef which fringes the point. Gili Nusa, a tree-covered islet, lies almost ⅔ mile west-southwestward of Tandjung Mareseh. Vessels should not pass southward or eastward of Gili Nusa.

ANCHORAGE.—Except in the change of monsoons, neither bay affords good anchorage. Small craft are fairly protected in the northeast part of Silung Belanak, in 6½ fathoms, sand.

Tandjung Tampa is steep, as is the shore extending westward from it. A dangerous 2-fathom patch lies 1¾ miles west-by-southward of the point, in a position nearly ⅔ mile offshore.

From Tandjung Tampa to Tandjung Bungkulan, 12 miles east-by-southward, the coast is steep and is indented by several bays having sandy beaches. Teluk Gumbang, a bay on the west side of the Tandjung Bungkulan peninsula, is reported inaccessible to ships. A drying reef projects southeastward from the west entrance point of the bay, and on it is Gili Batu, a conspicuous rock about 150 feet high.

5B–9 TELUK AWANG, which affords anchorage, is entered between Tandjung Bungkulan and Tandjung Sangula, almost 3¼ miles northeastward. Tandjung Bungkulan is the southeast end of a peninsula, which, on its south side, rises perpendicularly from the sea. Three above-water, steep-to rocks lie near the point. Gili Saja, the farthest offshore, lies ⅔ mile west-southwestward of Tandjung Bungkulan, in a position 325 yards offshore. Tandjung Sangula is steep and high.

LANDMARKS.—Much of the outer, west side of Teluk Awang is steep; farther in, this shore is broken by sandy beaches and low, swampy stretches. The conspicuous, wooded Kelor Hill rises 282 feet close to the northwest shore of the bay, distinct from the mountains inland; a broad crowned tree stands on the hilltop. Gunung Linus, an islet ½ mile eastward of Kelor Hill, stands on the drying reef and is easily discerned from the shore behind because of its light color. The southeast side of Teluk Awang is steep, and the high coast here has a marked whiteness.

FOUL AREA.—Northward of the parallel drawn 1⅔ miles northward of Tandjung Sangula, Teluk Awang is encumbered with sunken and drying reefs. This inner portion of the bay is known as Teluk Batu Nampar.

ANCHORAGE.—Southward of the reef area good anchorage may be taken almost anywhere in Teluk Awang in less than 20 fathoms, mostly mud. Southerly to south-southwesterly swell does not enter the bay.

FROM TANDJUNG SANGULA TO TANDJUNG RINGGIT, 10½ miles east-northeastward, the coast comprises the south shore of the sizeable peninsula forming the southeast end of Lombok. The peninsula slopes eastward as a vegetated plateau of around 200 feet in height, the vegetation thinning at the east end. Long, white sandy beaches are found between Tandjung Sangula and the unexamined bay 4½ miles eastward. Short beaches occur here and there between

Tandjung Tjina and Tandjung Pokki, at the east end of this stretch.

The drying coastal reef at Tandjung Sangula gradually advances seaward, till at the west entrance of the unexamined bay it extends almost 1 mile from shore. The rock, Gili Kalimantan, lies on this reef 1 mile eastward of Tandjung Sangula; two bright, white cubical rocks lie on the same reef 2½ and 3½ miles eastward, respectively, of the same point.

Gili Batu, a low dark rock, lies 4 miles east-southeastward of Tandjung Sangula, in a position 1½ miles offshore. Close southwestward of Gili Batu is a breaking rock dry only at LWS. An 8-fathom ridge extends 600 yards southwestward from the breaking rock.

Gili Melaju, a rocky islet with a level top, lies almost ⅔ mile north-northeastward of Gili Batu, in a position ¼ mile off the drying reef at the entrance of the unexamined bay.

Eastward of the unexamined bay, the drying coastal reef disappears and the coast is steep-to. The currents in and out of Selat Alas are fairly strong around the southeast end of Lombok. (See section 5B–4 for a discussion of the currents in this area.)

Tandjung Tjina lies 2¼ miles southwestward of Tandjung Ringgit. Pillar Rock, ⅔ mile southwestward of Tandjung Tjina, is 197 feet high, and is joined to the coast by a drying reef. Tandjung Pokki lies 1½ miles north-northeastward of Tandjung Tjina.

TANDJUNG RINGGIT is described in section 5B–12, with the east coast of Lombok.

SELAT ALAS

5B–10 SELAT ALAS, about 35 miles long, lies between Lombok and Sumbawa. Selat Alas is about 4½ miles wide at its north end and 8¼ miles wide at its south end.

ANCHORAGE can be obtained almost anywhere under both the Lombok and Sumbawa shores.

Information on the currents in Selat Alas is given at the beginning of this part (Part B); general information about the strait is also given there. There now follows a coastal description of the east coast of Lombok and the northwest and west coasts of Sumbawa, which coasts together comprise the shores of Selat Alas.

LOMBOK–EAST COAST

5B–11 The east coast of Lombok from Tandjung Bondek to Tandjung Gali is generally low. The coast is backed by gently undulating hills which soon merge inland with the eversteepening Gunung Rindjani mountain complex. From Tandjung Gali to Teluk Pidjut the coast is generally low with intermittent cliffs. The hinterland consists of low, rolling, fruitful hills which extend to the desolate higher hills of the south coast of Lombok. The coast from Teluk Pidjut to Tandjung Ringgit is high and rocky. ANCHORAGE is afforded almost anywhere off the east coast of Lombok.

From Tandjung Bondek to Tandjung Gali, 13 miles south-southwestward, the coast is fronted by islands and dangers. Gili Petagan, a brush-covered islet fringed by an above- and below-water reef, lies 4½ miles south-southeastward of Tandjung Bondek. A LIGHT is shown ¼ mile off the southeast end of the islet, at the edge of the fringing reef.

Rocky Islands, lying within 1½ miles south-southwestward of Gili Petagan, consist of fonr islets barely above water. Above- and below-water reefs fringe the Rocky Islands but between most of them are depths of 5 fathoms or more. Shoals extend more than ½ mile westward and almost the same distance southward from the southwesternmost islet. Three of the Rocky Islands have a sparse cover of vegetation.

Tandjung Prepee, 5⅔ miles southward of Tandjung Bondek, lies abreast the Rocky Islands. The channel width between Tandjung Prepee and the shoals off the southwesternmost of the Rocky Islands is ¾ mile. Surat Castle Shoal, of 3¾ fathoms, lies about ¾ mile south-southwestward of Tandjung Prepee, in a position ⅓ mile offshore. Atje Shoal, of 2¼

fathoms, lies 1½ miles south-by-westward of Tandjung Prepee, in a position ⅞ mile offshore. A 5-fathom patch lies 1¼ miles east-southeastward of Atje Shoal, and ⅔ mile northeastward of this patch is a 5½-fathom patch.

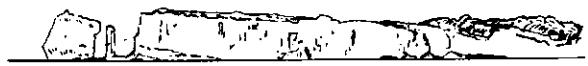
A clear, 11-fathom channel passing westward of the Rocky Islands leads around the northeast end of Lombok and joins Selat Sungian (sec. 5B–6). The channel is used by vessels desiring to anchor while navigating Selat Alas.

DIRECTIONS.—After passing through Selat Sungian, steer 199° when the east extremity of Gili Sulat bears 357°. The 199° course can be laid so as to pass westward of the outermost Rocky Islands shoals, and eastward of Atje Shoal.

TELUK LOMBOK, 3½ miles southwestward of Tandjung Prepee, is of no importance to navigation because the entrance channel has a depth of only 2 feet. Large praus, however, find safe anchorage here in both monsoons. The white sand islet of Gili Lebur, surrounded by a drying reef, lies ⅞ mile eastward of the east entrance point of Teluk Lombok. ANCHORAGE in 9 to 12 fathoms is afforded west-northwestward of Gili Lebur, off the entrance of Teluk Lombok.

TANDJUNG KAJANGAN, is rather high and steep, and has a conspicuous, small knob. The 754-foot peak 2¾ miles westward of Tandjung Kajangan is a conspicuous cone. A 2¾-fathom shoal lies ⅔ mile southeastward of Tandjung Kajangan, and from the shoal depths of less than 6 fathoms extend ⅔ mile northeastward. A 4¼-fathom patch lies ¼ mile eastward of Tandjung Kajangan.

Teluk Segara is an open bight between Tandjung Kajangan and Tandjung Gali. Shoals encumber the midportion of the bight, but off the village at the south part good anchorage is afforded. With a heavy swell in Selat Alas, it is relatively calm here. The beach is steep and landing is difficult in any swell. The ANCHORAGE is approached by steering 257° toward the village; anchor when Tandjung Gali bears 177°.



Tg. RINGGIT 150°

Tandjung Gali is a low point.

From Tandjung Gali to Tandjung Ringgit there are no dangers outside the 10-fathom curve, which, along this coast, lies at most 1½ miles offshore.

5B–12 LABUAN HADJI ROAD can be recognized by the red roof of the harbor office at the village. Large vessels anchor in about 8 fathoms eastward of the village. The anchorage is not safe in the Southeast Monsoon, however, because of the stiff southerly wind that blows from 9:00 a.m. to late afternoon; working cargo often becomes difficult.

CAUTION.—About 1¾ miles northward of Labuan Hadji the 5-fathom curve advances to more than 1 mile offshore; close within the curve is a 3-fathom patch.

Praus and launches have safe anchorage in front of the village of Labuan Hadji in a basin formed by a break in the drying coastal reef. BEACONS mark the entrance of the basin.

The village of Labuan Hadji has a lively copra trade. Fresh provisions can be obtained. The village is connected to the general telephone network, and an auto road leads to Ampenan via Selong and Mataram.

TANDJUNG KUANG WAHE, 3¾ miles southwestward of Labuan Hadji, is a low, sloping point between two rocky areas, and is not particularly prominent. More noticeable, especially from Labuan Hadji, is Tandjung Batu Belajar, 1 mile farther southwestward. Just behind the beach of this point is a conspicuous tree; a rock 16 feet high lies close offshore. The 3-fathom curve passes almost ½ mile off Tandjung Batu Belajar.

The bight between Tandjung Batu Belajar and Tandjung Ringgit, is encumbered with

large drying reefs within the 10-fathom curve, and ships without local knowledge should not enter the area. The bight is separated from the northeast part of Teluk Awang (sec. 5B–9), on the south coast of Lombok, by Pangorossang, a low, 2-mile-wide isthmus. The spurs of the desolate hill land which occupy the south side of Lombok from west to east approach the coast northward of this isthmus. The sizeable peninsula extending southward from the isthmus is a 200-foot high plateau with steep sides; it forms the southeast end of Lombok.

ANCHORAGE is afforded in 6½ to 8 fathoms off Tandjung Luar, a village situated in the north part of the bight between Tandjung Batu Belajar and Tandjung Ringgit. The anchorage here is better than at Labuan Hadji Road. A 4-fathom shoal lies 8/10 mile southeastward of the point near the village.

Teluk Pidjut, close westward of Tandjung Luar village, is a shallow lagoon with an entrance only 100 feet wide.

The islets of Kera, Maringki, Bembe, Kurapu, Datang and Gili Besar lie on large drying reefs southward of the Tandjung Luar anchorage. Maringki and Gili Besar have steep, rocky sides; the rest of the islets are low.

Southward of the islets and reefs lying southward of the Tandjung Luar anchorage is a clear, westward-leading channel with depths from 12 to 22 fathoms. The channel affords safe anchorage at all times. A 3-fathom patch at the channel entrance lies 4/10 mile east-southeastward of the east extremity of Maringki.

The southward continuation of the above channel leads 1½ mile to the uninhabited embayment of Lehok Djukong. Drying shore reefs narrow the passage, and it is used only by small fishing praus. Pulau Dua, on the west side of the entrance, are two bare rocks 132 feet high; Oppa, well within the reef on the opposite side, is a low islet.

Lehok Sunuh and Lehok Pulu Tiga are two small bays within 3 miles westward of Tandjung Ringgit that afford ANCHORAGE in around 12 fathoms.

TANDJUNG RINGGIT, the very conspicuous southeast extremity of Lombok, is lower than its plateau to westward. Batu Milalang, comprising a rock pillar and a large rock close by, lies close off Tandjung Ringgit. The pillar and the rock are 59 and 69 feet high, respectively.

SUMBAWA–NORTHWEST COAST

5B–13 LANDMARKS. — The northwest coast of Sumbawa from Tandjung Perappat (sec. 5C–11) southwestward to Pulau Belang is relatively low with gently rolling hills behind. The hills soon merge with a range whose most conspicuous peak is the sharp Ropang, 14 miles southeastward of Tandjung Perappat. The most conspicuous peak in the foreground is Planen, 7⅓ miles southeastward of Tandjung Perappat. Additional prominent landmarks of this coastal stretch are the low, scrub-covered, uninhabited islands fronting the coast close inside the 100-fathom curve.

OFF-LYING ISLANDS.—The islands lying within 5 miles of the northwest coast of Sumbawa are in two groups: the 15-mile chain extending westward from Tandjung Perappat to the Tandjung Labu Beru peninsula (sec. 5B–14), and those islands closely disposed around the Tandjung Labu Beru peninsula.

In the former group are the islands of Kramat, Kamudong, Airtawar, Bungin, Kelat, Saringi and Pandjang. These islands are low, and, with the exception of Pandjang, are united on a steep-to, drying reef; the 100-fathom curve passes less than ½ mile northward of the reef.

Pulau Kramat lies 1½ miles westward of Tandjung Perappat, and is the easternmost in the 15-mile chain. A solitary, small tree, with a conspicuous round grove farther westward, stand on the edge of the reef at the east end of Pulau Kramat. Pulau Bedil, ¾ mile south-southwestward of Pulau Kramat, is a conspicuous sand flat. A drying reef extends ⅓ mile

from either end of Pulau Bedil. A 2¾-fathom patch lies 1,200 yards westward of Pulau Bedil, and patches with lesser depth lie the same distance eastward and southward of it.

Pulau Pandjang, 7¼ miles long, is the longest island in the 15-mile chain. Two white sand islets lie within 1⅛ miles southward of the west end of the island. The waters off the south coast of Pulau Pandjang eastward of these islets and within the 5-fathom curve are reported dangerous because of less water and uncharted rocks and reefs. A narrow, 2½-fathom shoal extends 1½ miles southwestward from the west end of Pulau Pandjang.

The channel between Pulau Pandjang and Saringi, the next island eastward, is almost ¾ mile wide between the fringing reefs, but a 3¼-fathom shoal head lies in midchannel. Less water than charted was reported (1947) in this channel.

Eight islands are closely disposed around the Tandjung Labu Beru peninsula. Within 3¼ miles east-northeastward of the peninsula are Pulau Kalong and Pulau Namo, both hilly. Pulau Kenawa, 157 feet high, lies ⅞ mile northward of the peninsula and is the highest island of the three. Pulau Genang and Pulau Ular lie within 1⅔ miles north-northwestward of the peninsula. Both are small, rocky islets, the former bare and the latter vegetated.

Pulau Paserang, 1½ miles westward of the Tandjung Labu Beru peninsula, is flat and heavily vegetated, as is Pulau Belang close south-southwestward of it. Both islands lie on a shoal of less than 10 fathoms; depths of less than 5 fathoms extend 1⅔ miles southwestward from Pulau Belang. Closely joined by a drying reef to the northeast end of Pulau Belang is Pulau Songi, 233 feet high. This islet is rocky, has vegetation and is a good landmark.

ISLAND NAVIGATION.—There is a good channel for vessels having local knowledge inside the islands described above from Tandjung Perappat to beyond Pulau Belang. Anchorage may be taken everywhere; strong currents have not been reported. Ships enter between Tandjung Perappat and Pulau Kramat, and pass northward of Pulau Bedil. They steer a midchannel course toward Selat Alas, and enter the strait northward of Pulau Genang. The 2¼-fathom patch westward of Pulau Bedil must be avoided, as must the reefs lying under the Sumbawa coast, and the reported shoal water southward of Pulau Pandjang.

Ships also enter the island channel by passing between Pulau Saringi and Pulau Pandjang, but this passage is encumbered with the 3¼-fathom midchannel patch. Ships may use the channel between Pulau Namo and Pulau Kenawa, exiting into Selat Alas northward of Pulau Paserang or eastward of Pulau Belang.

5B–14 From Tandjung Perappat (sec. 5D–1) to Tandjung Labu Beru, the coast is fringed with drying and sunken reefs. Pulau Bedil, 2¼ miles west-southwestward of Tandjung Perappat, and the shoals eastward and southward of it, has already been described. Teluk Baju, 2½ miles southwestward of Tandjung Perappat, is a reef-fringed inlet affording good shelter to small craft in 4 to 7 fathoms.

Between Teluk Baju and Teluk Bungin, 6½ miles southwestward, shoals lie as much as ⅞ mile offshore. Pulau Burung, 3½ miles southwestward of Teluk Baju, is low and has vegetation of uniform color. Pulau Kaun, at the east entrance of Teluk Bungin, is conspicuous for its many isolated, broad-crowned trees. Teluk Bungin is heavily encumbered with drying reefs, though a deep, 400-yard-wide channel may be navigated by small craft. A shoal with a least depth of 1½ fathoms lies 1¼ miles northward of the bay's western entrance point.

Tandjung Gontar lies 1⅔ miles west-southwestward of the west entrance point of Teluk Bungin. From Tandjung Gontar to the Tandjung Labu Beru peninsula the coast is clear at 1,200 yards, and fairly steep-to. Teluk Labu Beru, a bight on the east side of the peninsula, is sheltered by the islands of Kalong, Namo and Kenawa, previously described. The bay offers

good ANCHORAGE in 6 to 12 fathoms, and is easily entered.

Tandjung Labu Beru, bluff and steep-to, is the northwest point of a hilly peninsula about 2 miles long northwestwardly. The peninsula is marked by four peaks, the outermost being 436 feet high.

SUMBAWA—WEST COAST

5B–15. LANDMARKS.—From the Tandjung Labu Beru peninsula southward to Tandjung Benete, the west coast of Sumbawa is almost entirely a high, hilly region blocking the view of the higher hinterland. The many steep, rocky points—spurs from the hilly region—are good landmarks. The 541-foot hill on the north side of Teluk Kertsari is in the shape of a sugarloaf. The 1,578-foot Putuh Batu, near Teluk Taliwang, is the highest peak of the hilly coastal region.

Pulau Dua and Pulau Sasait rise steeply from the sea 1⅓ miles southwestward and 5½ miles south-southwestward, respectively, of Tandjung Belusun, described below. Pulau Dua comprises two wooded blocks of rock; Pulau Sasait, 148 feet high, has vegetation. The islets are steep-to.

From Tandjung Benete southward to Tandjung Mangkum (sec. 5C–1), the high hill land continues. The spurs of the hills end at the coast in steep, rocky points between which are bights with sandy beaches.

FROM TANDJUNG LABU BERU TO TANDJUNG BELUSUN, the coast is clear at ⅔ mile offshore. Immediately southward of Tandjung Labu Beru is a wide bay partly inclosed by Pulau Paserang and Pulau Belang, previously described. The bay has a couple of 5-fathom patches but is otherwise clear. With southerly to southwesterly winds there is comparatively little swell. Tandjung Belusun is a sharp point.

From Tandjung Belusun to Tandjung Benete the coast has several bays and is fronted by Pulau Dua and Pulau Sasait, previously described. Teluk Kertsari affords ANCHORAGE in 6 to 10 fathoms, mud. Southerly and southwesterly winds quickly bring in a high swell.

Teluk Taliwang, the next bay southward, is entered between the bluff Tandjung Balat and the steep-to Tandjung Bero. A 4¼-fathom shoal lies ¼ mile southward of Tandjung Balat. Teluk Taliwang is easily recognizable by its bluff north entrance point, and by the mountain, Putuh Batu, on the southeast shore. There is seldom any significant current within the entrance points of the bay.

In the south part of the bay are two islets: Pujung, 1 mile east-northeastward of Tandjung Bero, and Kerata, almost 1½ miles eastward of the same point. A reef extends ¼ mile northeastward from Pujung, and a drying reef joins Kerata to the shore.

Vessels ANCHOR in the north part of Teluk Taliwang, off the village of Labuan Balat. Although this anchorage is open to southerly winds, it has been observed that the swell is less troublesome here than southward of Pujung. A landing pier at the village extends over the coastal reef. An unofficial LIGHT is shown from the root of the pier.

Tandjung Djelengnja lies 2 miles southwestward of Tandjung Bero. Between Tandjung Djelengnja and Tandjung Benete is a low coastal area with a broad fringing reef. The shoaler area fronting the reef is not recommended as an anchorage because of swell and breakers.

From Tandjung Benete to Tandjung Mangkun, the coast is bold and free of dangers. The bays on either side of Tandjung Maloh, 2½ miles southward of Tandjung Benete, afford ANCHORAGE in more than 10 fathoms. When entering the northern bay, the north shore should be held to avoid the drying reef extending from the south shore.

Tandjung Amat is 397 feet high. The point may be recognized by the yellow stone on the west side and by Geli, the 492-foot peak on the northeast side.

Tandjung Mangkun is described in section 5C–1.

PART C. SUMBAWA, SOUTH AND NORTH COASTS

5C–1 TANDJUNG MANGKUN (9°01′ S., 116°44′ E.), bold and steep-to, is the southwest extremity of Sumbawa. The point is conspicuous for the 906-foot table mountain close northward. This mountain, with the lower hills northeastward, merges with the Sumbawa range. Three small peaks are situated on the south slope of the table mountain.

COAST–GENERAL

5C–2 SUMBAWA is chiefly composed of volcanic, irregularly formed and moderately wooded mountains having a parched appearance during the east monsoon. Because of the similarity of the peaks, the island offers few or no landmarks for offshore navigation.

The west half of Sumbawa is mostly a 1,600- to 2,300-foot high plateau on which are higher ridges and peaks (some more than 6,000 feet) cut by deep depressions. The east half of the island, including the peninsula at Teluk Saleh on the north coast, has more isolated mountains and mountain groups which are largely composed of extinct volcanoes.

Gunung Tambora, a volcanic mountain 9,353 feet high, is situated on the Teluk Saleh peninsula and is the highest mountain of Sumbawa. Last erupting in 1895, Gunung Tambora is believed to be the only active volcano on the island. Its chief advantage as a landmark is its comparative isolation. On the southeast slope of Gunung Tambora are two conspicuous, conical craters. Tahe, the north crater is 2,848 feet high; the south crater is 1,955 feet high. The four craters on the northeast slope (of which Kadiendinai is the highest) are difficult to discern from seaward.

The rivers of Sumbawa are of no importance to navigation. Though most of the rivers still have water during the dry season, only the mouths are navigable at any given time, and then by praus alone.

DEPTHS

5C–3 Except for Selat Alas (Part B) and Selat Sape (Part D), and the entrance of Teluk Tjempa on the south coast, the 100-fathom curve nowhere lies more than 3 miles off the coasts of Sumbawa. The island's coasts are nearly all steep-to so that there are few suitable anchorages. In little frequented area of the coastal sea it should be noted that continuing volcanic activity has been reported.

CURRENTS—TIDAL CURRENTS

5C–4 There is no information about inshore currents along the south and north coasts of Sumbawa. It may be significant that strong currents have not been reported. At either end of both coasts, the influence of the tidal currents in Selat Alas (sec. 5B–4) and Selat Sape (sec. 5D–2) should be considered. These currents are sometimes felt for great distances, especially southward of the entrances.

On the south coast of Sumbawa, strong rotary currents and counter-currents have been observed near Selat Alas, and to a lesser degree (but noticeably enough) near the Tandjung Talonan, Tandjung Gerantah, near the entrance points of Teluk Tjempi, and the south point of Teluk Waworada. On the north coast, a powerful current can arise in and out of the entrances of Teluk Seleh.

SUMBAWA—SOUTH COAST

5C–5. The rather high, desolate mountain area of the south coast offers few landmarks for offshore navigation. The few peaks that are conspicuous are difficult to find because of the constantly changing appearance of the

mountains as the coast is passed. Since the coast is without offshore danger, it can be navigated close-to and the points of land can be identified. Attention must be paid, however, to the ocean swell as a heavy surf always breaks on this coast.

From Tandjung Mangkun to Tandjung Gerantah the coast trends about 25 miles eastward. Tandjung Tatar, 11 miles eastward of Tandjung Mangkun is steep, and close to shore is a rock awash. Tatar peak, close inland of the point, is a complex with two peaks, the western rising 1,516 feet and the eastern 1,706 feet. Sekongkang, eastward of Tatar, is 2,480 feet high but is not readily distinguishable from the encircling mountains. Between Tandjung Tatar and Tandjung Talonan, 7½ miles east-southeastward, the coast forms the wide bight of Teluk Tatar.

Tandjung Talonan is a steep but not a high point. Vessels can anchor off this point but the bottom is very steep within the 20-fathom curve. Vessels lie badly here because of the backwash of the sea against the point.

Tandjung Gerantah is a steep but not a high point. The point is conspicuous from westward because of an above-water rock close offshore. The rock can be seen from 5 miles off.

From Tandjung Gerantah to Tandjung Sebu the coast trends 11½ miles east-by-northward forming the broad bight Teluk Lampui. A small bay just eastward of Tandjung Gerantah affords ANCHORAGE during the west monsoon in 8½ fathoms, sand, close off the beach. At the head of the bay is a sand beach with a few streams. Vessels entering the small bay must be careful of a whirlpool whose edges are usually rippled. Teluk Lamar, just eastward of the mentioned small bay, affords anchorage in calm weather. In the west monsoon, vessels at anchor in 10 fathoms feel a ground swell.

The shore of Teluk Lampui consists of an uninterrupted sand beach at the foot of mountains covered with low vegetation. The mouth of the Sungai Amok (a stream entering the northwest part of the bight) is marked by a white rocky point on its west bank. It is possible to anchor off the mouth but the swell is usually troublesome.

Tandjung Sebu is a steep point, westward of which is Teluk Lampit, and eastward Teluk Sarang. A stream enters Teluk Lampit. Ships should not anchor in Teluk Sarang.

From Tandjung Sebu to Tandjung Mata the coast trends 35 miles east-northeastward. Tandjung Dodo, 2½ miles eastward of Tandjung Sebu, is steep and has an above-water rock close offshore. Eastward of the point is a white sand beach. An unnamed bight 5¾ miles eastward of Tandjung Sebu affords good ANCHORAGE in the change of monsoons. The east entrance point of the bight is hollowed out to form an archway, open southwest and northwest. Two awash rocks, not always marked by surf, lie southward and westward, respectively, of this entrance point. The anchorage position is in 12 to 15 fathoms with the points on the coast westward in range and the archway open.

5C–6 TANDJUNG LESSEK, 7 miles east-by-northward of Tandjung Sebu, is marked by the mouth of the Dodo rivulet; the Sungai Lessek's mouth is 1⅓ miles farther eastward. Both streams flow through deep ravines, conspicuous from close offshore. A rock awash, close offshore, lies ½ mile eastward of the mouth of the Sungai Lessek. About 5 miles eastward of Tandjung Lessek is a sharp, pyramidal rock. The rock lies on the narrow, drying coastal reef and has vegetation at its top.

Ten miles east-northeastward of Tandjung Lessek is a steep and somewhat bare point. A drying rock, close off the drying reef lies ½ mile northeastward of the point. The Sungai Panas enters the sea 3½ miles northeastward of the same point. The 1,135-foot hill close westward of the Sungai Panas is prominent for its pointedness when viewed from the south or east.

A stream enters the sea close eastward of Sungai Panas, and just eastward of the stream a break in the coastal reef leads to a sand beach on which there is no surf.

TELUK PANAS is entered between a point 2 miles eastward of Sungai Panas and a point 4¼ miles farther eastward. The bay penetrates less than 1 mile inland, but affords good ANCHORAGE in 15 fathoms, sand. In the northeast part of the bay two steep points stand out clearly from a distance. Satong is a mountain 3¼ miles northeastward of Teluk Panas. When seen from the south, Satong shows a number of peaks, the highest of which is 1,411 feet. Seen from the west, Satong seems to be the easternmost peak of a north to east ridge but in reality is southward of it.

The next bay eastward of Teluk Panas has a steep eastern entrance point located 2¾ miles northwestward of Tandjung Mata. A 49-foot rock stands on the coastal reef at the head of the bay, and coconut palms stand on the shore behind. Tandjung Mata is a very conspicuous steep point.

From Tandjung Mata to Tandjung Baru the coast trends 15¼ miles east-northeastward. The Sungai Baru enters the sea 1½ miles northward of Tandjung Mata. A 2½-fathom patch lies almost ½ mile southward of the river mouth.

TELUK TIRO (BARU), entered between a point 6¾ miles east-northeastward of Tandjung Mata, and the steep Tandjung Baru 8¾ miles farther eastward, penetrates 2½ miles inland. The highest peak northward of the bay is 2,484 feet. In the hill land near Tandjung Baru, Pantjo, a rounded hill with slopes toward the sea, is highest and rises 1,778 feet.

The land at the head of Teluk Tiro projects somewhat. Off this projection, and clear of the coastal reef, is a drying rock. ANCHORAGE is feasible in the northeast part of Teluk Tiro during the Southeast Monsoon and in the change of monsoons. The anchorage, in 20 fathoms, sand, is marked by a number of coconut palms on shore, and offers some protection from the swell.

5C–7 TELUK TJEMPI, entered between Tandjung Baru and Tandjung Doro, extends 17 miles north-northeastward to its head. The large reef, Batu Kurung Buha, to be described divides the bay into an outer and inner part.

The depths in the outer part of the bay are over 50 fathoms, but in the inner part they are moderate and good ANCHORAGE is afforded. The several rivers entering Teluk Tjempi discolor the water so that in no case can underwater dangers be visually detected. Currents in and out of the bay may be fairly strong, but precise information is lacking.

LANDMARKS.—Mountains that are steeper on the west side of the bay than on the east encircle Teluk Tjempa; the bay shores are alternately high and low, according to whether the mountain spurs reach the sea or not. Doro Rewo, a 2,205-foot mountain with three peaks, overlooks the northwest shore of Teluk Tjempi. Doro Lodo, 6 miles northeastward of the bay, also has three peaks of which the northernmost is conical and 2,428 feet high, the middle is 2,992 feet high, and the southernmost, a sharp peak, is 3,740 feet high. Doro Kangga, northwestward of Tandjung Doro, consists of two peaks 1 mile apart, the northern and higher peak rising 2,375 feet.

SHORES OF THE BAY.—Toro Sahe, 14½ miles northeastward of Tandjung Baru, is a conspicuous red-cliffed point on the west side of Teluk Tjempi. The point separates the two small bays, Teluk Puri to southward and Teluk Somila to northward. Teluk Puri is entirely obstructed by a drying reef. A group of wooded rocks on the coastal reef lies 2½ miles southwestward of the south point of this bay. A 5½-fathom patch lies ⅓ mile southeastward of the same point. Teluk Somila has a sand beach in its north part. A few conspicuous rocks stand on the narrow coastal reef of this bay.

Teluk Dompo, the head of Teluk Tjempi, is nearly all a drying mud flat, and its shores are swampy. Pulau Sura, ¾ mile southeastward of the east point of Teluk Dompo, is a prominent, 266-foot-high islet covered with vegetation.

The reef Batu Kurung Buha projects halfway across Teluk Tjempi from Toro Hu-u, a point on the east shore 7¼ miles south-southwestward of Pulau Sura. Though surf usually marks the reef, it does not indicate the edge. Within the 3-fathom curve the reef has rocks awash and a drying stony patch. At the west end of the reef are scattered shoals up to the 10-fathom curve. Vessels must pass the reef outside the 10-fathom curve.

ANCHORAGE.—Good anchorage is afforded along the west side of Taluk Tjempi. Good anchorage is afforded on the east side of the bay, northward of Batu Kurung Buha; southward of the reef the bottom is too steep and the surf is always high. The cove on the northeast side of Toro Hu-u is the landing place for the nearby village of Hu-u. Several rocks just under water lie in the cove within the 3-fathom curve.

DIRECTIONS.—Pulau Sura in range 053° with the conical north peak of Doro Lodo leads into Teluk Tjempi. When abreast the south point of Teluk Puri, it is advisable to be eastward of the range to well clear the 5½-fathom shoal off the point.

If approaching Teluk Tjempi from eastward, pass Tandjung Doro at a reasonable distance on course 295°. When Toro Hu-u bears 000°, steer northwestward for the middle of Teluk Puri until the 053° range is met. In crossing to the west side of the bay, the possibility of being set toward Batu Kurung Buah by a north-going current must be considered.

5C-8 FROM TANDJUNG DORO TO TANDJUNG LANGUNDU, 29½ miles eastward, the coast indents to a maximum of 3½ miles northward in the form of a long bight. The spurs of the relatively high, desolate mountain land approach the coast almost everywhere as far eastward as the head of Teluk Waworada. Eastward of Tandjung Doro the coast forms a number of steep points with sand beaches between. Except for Teluk Mua, to be described, virtually no good anchorage is afforded along this entire coast. Though ships can anchor in several places as far eastward as Teluk Mua, there is no protection from the swell which causes heavy rolling.

Toro Lu, 2½ miles eastward of Tandjung Doro, is a conspicuous rock on the coastal reef, which rock, from westward, shows a whitish yellow spot. Doro Rasa, 12 miles east-northeastward of Toro Lu, is a particularly noticeable, bare hill rising steeply 1,414 feet from the sea. From the west it is seen as an isolated hemisphere; from the east it appears conical with a spherical-topped peak of a ridge of hills close by on its landward side.

Teluk Mua, 9½ miles east-southeastward of Doro Rasa, affords somewhat better ANCHORAGE than along the coast to westward. The sea usually breaks heavily on the rocks on the coastal reef at the west entrance point of Teluk Mua. In entering the bay, allowance should be made for a possible cross-current.

Nusa Sido, 1¼ miles southwestward of Tandjung Langundu, is a bare islet lying 400 yards offshore on a projection of the coastal reef. The islet has two summits, the northern and higher being 187 feet. Between the summits is a deep cleft with perpendicular walls through which the sea breaks heavily.

Tandjung Langundu, seen from southeastward, is conspicuous for three sharp peaks, each higher than the previous when progressing inland. Eastward of the point are two drying rocks, the outer and larger lying almost ¼ mile offshore. This rock is steep-to, with 11½ and 17½ fathoms against it, though breakers form over 100 yards away from it. The inner rock is seldom marked by breakers, and never by

discoloration. A powerful CURRENT can run near these rocks.

TELUK WAWORADA

5C–9 TELUK WAWORADA, which affords anchorage throughout, is entered between Toro Sido and Tandjung Djampa (Djampang) 2¾ miles north-northeastward. Toro Sido, 1⅔ miles north-northwestward of Tandjung Langudu, is marked by a 155-foot-high hill, a mountain spur; the east side of the hill is particularly steep. Teluk Waworada is surrounded by mountainous land, with generally flat terrain—sometimes of considerable extent—at the foot of the mountain slopes.

Permanent villages are found only on the north side of Teluk Waworada. With the exception of Waworada village, 10½ miles westward of Toro Djampa, the villages lie inland at the foot of the mountains, and are obscured by coconut palms. Rice fields extend from the villages to the marshy coast. The villages on the south side of the bay are temporarily occupied during the rice harvest.

DEPTHS.—Teluk Waworada has general depths from 20 to 30 fathoms to within 5 miles of the head. The 10-fathom curve lies 1¼ miles from the head, and less than 1 mile from the other shores; close within the curve are numerous dangers.

WEATHER—CURRENTS.—During the Southeast Monsoon the easterly wind starts at 0900 and blows until 1700, causing a short, choppy sea. Rain squalls occur despite this being the so-called "dry season". At night a weak northeasterly breeze is felt.

No current of any significance has been reported. The possibility of a cross-current in front of the entrance of the bay must be allowed for.

SOUTH SHORE OF THE BAY.—Toro Tengani, 1 mile west-northwestward of Toro Sido, is marked by a red, conical hill 266 feet high. A bay is formed on either side of the point. Toro Pangkadjarat, 2 miles northwestward of Toro Tengani, is marked by two yellow hills at the end of a spur from a 679-foot conical hill ¾ mile southwestward. The conical hill is sharp when viewed from eastward.

From Toro Pangkadjarat the south shore trends 13 miles westward to the head of the bay. Nisa Dua, 5½ miles westward of Toro Pangkadjarat, are two large rocks on the coastal reef. The rocks are about 46 feet high, and are reddish on their north sides. Reef boulders lie near Nisa Dua. Close eastward of Nisa Dua, and just outside the coastal reef, is Nisa Kekah, a rock 10 feet high. Teluk Langau, the head of Teluk Waworada, is largely occupied by a drying mud flat. Doro Simposai, about 1 mile northward of Teluk Langau, rises 1,365 feet to a sharp, conical peak.

NORTH SHORE OF THE BAY.—From Toro Djampa the shore trends 6 miles northwestward and then curves southward to Toro Tjengeh to form Teluk Tanggah, a bay entirely bordered by a sand beach. The shore of the bay is fringed by a drying, steep-to reef of irregular outline, which extends to a maximum of ½ mile from shore. Toro Tjengeh is the extremity of a narrow neck 213 feet high.

From Toro Tjengeh to Toro Runtjuh, 3 miles southwestward, the coast is mostly high and steep. Close northward of Toro Runtjuh a range of hills extends 1 mile eastward. Doro Ngaduh, the highest hill, is 817 feet. A 3-foot shoal lies close westward of Toro Runtjuh.

From Toro Runtjuh to the head of Teluk Waworada, 9 miles westward, the coast is fronted by islets and forms several bays. The bays are obstructed by drying reefs and are fronted by dangers which in two cases extend beyond the 10-fathom curve.

Nisa Bea, an islet 1⅛ miles westward of Toro Runtjuh, is wooded and 226 feet high. On the west side of the islet is an excellent sand beach. A sunken rock with less than 6 feet over it, lies ⅓ mile northeastward of Nisa Bea. At Toro Kerumbu, 1 mile northward of Nisa Bea, rocks awash lie up to 275 yards off the drying coastal

reef. The rocks are only briefly awash and may otherwise be seen by discoloration only. Nisa Dorah, an islet 2⅛ miles westward of Nisa Bea, is wooded and 213 feet high. A detached ½ fathom shoal lies almost ⅔ mile west-northwestward of Nisa Dorah.

Toro Waworada, 4⅓ miles west-northwestward of Toro Runtjuh, is a high, steep point. A drying reef extends ¾ mile southward from the point. Midway on the reef is Nisa Tanah, an islet 177 feet high. Near the extremity of the reef is Nisa Dongi, 66 feet high, a steep, pointed rock. The detached ½-fathom shoal mentioned above lies ½ mile southward of Nisa Dongi.

Nisa Sura, westernmost islet in Teluk Waworada, lies a little more than 2 miles westward of Nisa Dorah. Nisa Sura is 312 feet high, and wooded. The islet is almost joined by drying reefs to the north side of the bay, 1,200 yards distant.

ANCHORAGE.—As already noted, anchorage may be taken almost anywhere in Teluk Waworada. Good anchorage was obtained in 15 fathoms about 800 yards west of Toro Tengani, in a position ¼ mile offshore.

To anchor in the vicinity of Kerumbu village (located inland, northwestward of Toro Kerumbu) a position in 8 fathoms, mud, may be taken, with Nisa Dua behind Nisa Bea. The sunken rock northeastward of Nisa Bea must be avoided, as must the awash rocks off Toro Kerumbu.

DIRECTIONS.—For running into the bay, the south end of Nisa Bea in range 279° with the north end of Nisa Dorah is a good mark. In clear weather, Doro Simposai will be seen right ahead on this bearing.

SUMBAWA—SOUTH COAST (CONTINUED)

5C–10 From Toro Djampa to Toro Rata, 9½ miles eastward, the coast is chiefly steep and rocky with an occasional sand beach. Toro Baku, 2½ miles eastward of Toro Djampo, is marked by a 1,178-foot hill close northeastward. Seen from east-southeastward, the hill is conical but from southward it is tabular, with the southeast edge higher. A chain of above-water rocks extends from Toro Baku to the 10-fathom curve, 400 yards offshore.

Tano Nggelu (Toro Gelu), 5 miles eastward of Toro Baku, is the west entrance point of a cove which has a drying rock in the middle of its entrance and a sand beach at its head. Toro Rata, the east entrance point of the cove, is a bluff point formed by a spur of Doro Rata, a 1,365-foot peak 1¾ miles north-northwestward. ANCHORAGE is available almost anywhere between Toro Djampa and Toro Rata, but the swell is troublesome. The best anchorage is well up inside the mentioned cove.

Toro Rano, 2⅔ miles northeastward of Toro Rata, is the southeast extremity of Sumbawa. Toro Rano is conspicuous for its sharp, conical hill, 735 feet high. An arched rock, 30 feet high, lies close eastward of the point. In the vicinity of the arched rock is a pair of above-water rocks; southeastward of this pair are two drying rocks. The outermost danger is a depth of 4¼ fathoms ¼ mile southeast-by-southward of the point.

The northward continuation of the Sumbawa coast is described with Selat Sape in Part D of this chapter.

SUMBAWA—NORTH COAST

5C–11 LANDMARKS.—The principal landmarks on the north coast are Gunung Tambora, described in section 5C–2; the coast between Teluk Sanggar and Teluk Bima; and Pulau Sangeang, the island lying close off the northeast end of Sumbawa. The coast between the two mentioned bays is conspicuous for the 4,636-foot Sasah and the 3,822-foot Soromandi; both peaks have two summits. Pulau Sangeang is a volcano whose slopes descend to the sea. Its two peaks are visible from afar: the north peak is sharp and rises 6,394 feet; the south peak is truncated and rises 5,889 feet.

Vessels navigating well off the north coast of Sumbawa usually move along the parallel of

8°S. The only dangers in this route are in the large atoll (see sec. 5E–1) including Sakuntji and Pulau Sadapur.

From Tandjung Perappat to Tandjung Menangis, 19½ miles eastward, the coast has several small inlets, some affording anchorage; at the east end of the stretch is the roadstead of Teluk Sumbawa, open to the west monsoon. The coast near Teluk Sumbawa is a broad plain, but westward the land is hilly, rising to the mountains described with the northeast side of Selat Alas (sec. 5B–13).

TANDJUNG PERAPPAT (8°22′ S., 117° 06′ E.) is the east entrance point of the inner, island channel that leads southwestward into Selat Alas. The point is fringed by a narrow, drying reef, broadening to southwestward, and has a village upon it. Vessels departing the mentioned channel can safely and easily follow the north coast of Sumbawa at close range as far as Tandjung Menangis at the entrance of Selat Saleh, to be described.

Teluk Dalam, 2½ miles eastward of Tandjung Perappat, affords ANCHORAGE in around 20 fathoms toward the head of the bight, ¼ mile from shore. There is no protection from swell. Tandjung Sarokaja is the east entrance point of Teluk Dalam.

Teluk Poto Paddu, entered 2 miles southeastward of Tandjung Sarokaja, affords small vessels ANCHORAGE in 4¼ to 6 fathoms. The bay is entirely inclosed by high hills, and from seaward its narrow entrance is not apparent. Vessels follow a channel about 50 yards wide close along the northwest shore. Swell is not felt within Teluk Poto Paddu.

Teluk Barmang and Teluk Lok, 9½ and 10 miles east-southeastward of Tandjung Sarokaja, respectively, afford anchorage. In the latter cove, the anchorage is in 11½ fathoms and is rated "good".

Tandjung Batu Kuping, 15 miles east-southeastward of Tandjung Sarokaja, is the west entrance point of Teluk Sumbawa, to be described. About ½ mile northwestward of the point is New Harbor, an inlet with a wharf on its northwest side.

NEW HARBOR, which extends ⅔ mile southwestward to its head, has an entrance width of 524 feet between the drying reefs on each side.

A BUOY is moored on each side of the entrance; when a vessel is expected the buoys are lighted. Depths in the inlet are uneven. Scattered soundings show deep water in the entrance, and 6½ to 11 fathoms, and more, to well past the wharf. The inlet is well sheltered from the east monsoon, but in moderate to strong westerly and northwesterly winds seas become quite rough and break over the reefs at the entrance. Within the entrance, however, good shelter is afforded in most winds.

DIRECTIONS.—Enter the inlet in the daytime only. Approach the entrance from well offshore on course 211°. Steer 211° through the entrance, keeping a target on the southeast shore of the inlet dead ahead. Pay strict attention to the steering because of the narrowness of the entrance. Because of limited turning room, only vessels of less than 325-foot-length should enter New Harbor.

FACILITIES.—The wharf is 163 feet long and has a depth of 16½ feet alongside. Custom service is afforded at the wharf. No water or supplies are available.

TELUK SUMBAWA

5C–12 TELUK SUMBAWA is entered between Tandjung Batu Kuping and Tandjung Limong, 1½ miles east-northeastward. Drying and sunken reefs project ¼ mile northward from Tandjung Batu Kuping. Soundings in the bay decrease regularly but rapidly from 40 to 17 fathoms, and then to 7 fathoms a short distance from shore. It is reported that pilots for Teluk Saleh can be obtained in Teluk Sumbawa.

LANDMARKS.—Approaching from northward, good visual bearings can be taken on

Tandjung Batu Kuping, and on the mouth of the Sungai Sumbawa in the southeast part of the bay. At or near low water the mouth is seen as a sharp gully; on the radarscope it is prominent. A white mark on the beach in the southwest part of the bay is a good daymark. The jetty at Po Mandar in the southeast part of the bay has been reduced to rotting pilings (1961).

ANCHORAGE.—As Teluk Sumbawa is open, a vessel cannot be considered safe during the Northwest Monsoon. Some shelter can be had about ½ mile eastward of Tandjung Batu Kuping. With northwest winds, however, the sea often becomes rough. Better anchorage, with good holding ground, is afforded in 30 fathoms with Tandjung Batu Kuping bearing 240°, distant 1,600 yards. A large vessel rode three weeks in the latter position, to 90 fathoms of chain. During this time she experienced northwest winds up to force 7, with rough seas. The sea always calmed quickly after the wind subsided.

SUMBAWA (SUMBAWA BESAR), 4 miles up the Sungai Sumbawa, is the seat of a civil administrator and the residence of the sultan of Sumbawa. It is connected to the general telephone system. The shipping place for Sumbawa is Po Mandar at the mouth of the Sungai Sumbawa. The mouth is navigable by praus at high water only. A jetty about 100 feet long and 22 feet wide is available for berthing.

TANDJUNG MENANGIS, 3¾ miles north-northeastward of Tandjung Limong, is the south entrance point of Teluk Saleh. The point is the end of a high peninsula, which, from a great distauce, appears as an island.

TELUK SALEH

5C–13 TELUK SALEH, little visited, extends 45 miles east-southeastward, penetrating to within 6 miles of the south coast of Sumbawa. The northeast side of the bay is steep-to with depths ranging from over 100 fathoms in the outer part to 10 fathoms at the head. The southwest side of the bay is fronted by islets and shoals; the islets, which can generally be approached closely, are chiefly rocks covered with vegetation rising perpendicularly from deep water. Numerous villages are situated on the southwest side of the bay and at the head.

The large Pulau Mojo lies athwart the entrance of Teluk Saleh, leaving Selat Saleh at the south end of the island and Selat Batahai at the northeast end as the two deep and clear entrances into Teluk Saleh. CURRENTS in these entrances may run up to 2 knots in either direction, but within the bay little or no current is found.

ISLANDS AT THE ENTRANCE.—Pulau Medang (Maddang), 4¾ miles northwestward of Pulau Mojo, is low and thickly overgrown. It is separated from Pulau Mojo by a deep and clear channel in which no strong currents have been reported. Pulau Medang is fringed by a drying reef, which, from the eastern half of the south side of the island, extends more than ½ mile offshore. A good lookout must be kept when in the vicinity of Pulau Medang at night. Passing vessels should stay outside the 100-fathom curve, which at most is 3 miles offshore.

Tandjung Barat (Utara), the west end of Pulau Medang, has shoal patches as far as 1¼ miles southwestward of it. A few 3¾-fathom patches are scattered off the north coast of Pulau Medang. A ½-mile-long east and west shoal with depths of 2½ to 2¾ fathoms, lies ¾ mile off the east half of the same coast. Tandjung Timor, the east end of Pulau Medang, has above-and-below water dangers extending more than ½ mile northward from it.

It was reported (1963) that Pulau Medang was a good radar target at a distance of 18 miles.

ANCHORAGES.—On the north side of Pulau Medang depths decrease gradually within the 20-fathom curve. Anchorage may be obtained here with local knowledge, taking care to avoid the 2½- to 2¾-fathom shoal mentioned above. Vessels with local knowledge (and when the reefs are showing well) anchor between the northeast end of Pulau Medang and the above-water sandbank northward of Tandjung Timor. The villages of Mandar and Badjou are situated

at the southeast end of the island, but no good anchorage is afforded in front of them.

Pulau Mojo, athwart the entrance of Teluk Saleh, is hilly and rises 1,969 feet; it has no noticeable peaks. The low east end of the island appears as a separate island at some distance. Above-and-below-water dangers lie up to 7/8 mile off the shore of a bight between Tandjung Sadjelek, the northwest extremity of the island, and Tandjung Sarahe Tor, a point 4¼ miles southward. A 3¾-fathom sounding is charted within ¾ mile of the north shore of Pulau Mojo. With these exceptions the shores of the island are steep-to and without danger. The village of Labuan Hadji is situated 2¼ miles northward of Tandjung Sarahe Tor.

Pulau Satonda, 4½ miles northeastward of Pulau Mojo, lies 1¼ miles off the Sumbawa coast, at the northeast end of Selat Batahai. The island is saddle-shaped, 1,023 feet high, and is densely overgrown. In its center is a salt-water lake probably formed by a sunken volcanic crater. The shores of Pulau Satonda are fringed by a steep-to, narrow, drying reef which is broader on the southeast side of the island.

SELAT SALEH, a clear channel between the south end of Pulau Mojo and the Sumbawa coast, has a least width of 1¼ miles. A 2-knot current in either direction may be found in the strait. The only possibility of anchorage in the strait is on the south side about 1 mile westward of the village of Penjaringan. Here the 10-fathom curve bends seaward, allowing a ½-mile wide area between the 3- and 10-fathom curves. A small 3¼-fathom shoal lies in the anchorage area. The houses of the village serve as laudmarks.

DIRECTIONS.—If bound along the east coast of Pulau Mojo, keep the east extremity of Tandjung Srae (the east end of the island) a little west of the V in Pulau Satonda. Round the southeast end of Pulau Mojo at about ½ mile off as discolored water is reported to extend about ¼ mile east-southeastward from the point. Discolored water was also reported in 8°22′00″ S., 117°33′40″ E.

SELAT BATAHAI, a clear channel between the northeast end of Pulau Mojo and the Sumbawa coast, has a least width of 1⅓ miles. A 2-knot current in either direction may be found in the strait. Tandjung Brenti, the northeast entrance point of the strait (and of Teluk Saleh as well) has white sand on its northwest side and black sand on its east side. A 5½-fathom coral patch—the only danger in the strait—lies about 1,200 yards southwestward of the west prong of Tandjung Brenti.

5C–14. TELUK SALEH–SOUTHWEST SIDE.—Teluk Praja, close within Selat Saleh, has a least width of ⅓ mile between the fringing reefs, and extends 4¾ miles southward to its head. The south part of the bay broadens to about ¾ mile and affords good ANCHORAGE. Depths shoal regularly from about 30 fathoms in the entrance to 7 fathoms at the head. Three detached shoal heads lie just outside the 5-fathom curve at the head of the bay.

Teluk Tarata, 7 miles southeastward of Teluk Praja, is entered between Pulau Dangar-besar and Pulau Liang on the west, and Pulau Ngali on the east. Pulau Dangar-besar is conspicuous for the 404-foot hillock on its north end. Detached, drying reefs lie more than 1 mile off the northwest side of the island, and a single drying reef lies 1¾ miles off the soutbeast side.

Teluk Tarata extends southward between the mentioned islands and has its head southward of Pulau Liang. Anchorage in 7½ to 8½ fathoms, mud, is taken off the wide mouth of a river at the head of the bay. The village of Kuries, situated on rising land nearly ½ mile up the river, is plainly visible from the anchorage.

DIRECTIONS.—Vessels having local knowledge can pass eastward of the drying reef off the southeast side of Pulau Liang, and westward of Kabo, a high, sharp-pointed islet in midchannel off the southeast end of Pulau

Liang. A 3-fathom patch between the islet and the point may be passed on either side. Pass the south extremity of Pulau Liang fairly close and steer for the mouth of the river. Take care to avoid the shoals with 4 feet and 1¾ fathoms over them respectively, lying 1,200 yards southwestward and south-southwestward, respectively, of the south extremity of Pulau Liang. The portion of Teluk Tarata lying southeastward and southward of the southeast end of Pulau Liang is foul.

Palimpa Asu-ketjil, passing westward of Pulau Liang, and Palimpa Asu-besar, passing southward of Pulau Ngali, also lead to the head of Teluk Tarata. Praus bound from Selat Saleh to points along the southwest shore of Teluk Saleh make much use of these passages.

BETWEEN PULAU NGALI AND PULAU RAKI, 11¼ miles east-southeastward, the southwest shore of Teluk Saleh forms a broad bight studded with islets and shoals and bordered by numerous villages. The shores of the bight are much indented by small bays.

Extending for 7 miles southeastward from Pulau Ngali are the islets of Tengar, Katapang, Dompo and Taikabo, in that order. These islets are hilly and rather high except for low Katapang. Tengar is joined to Pulau Ngali by a drying reef. The channel between Tengar and Katapang is deep and clear. Dompo, the highest islet, is conspicuous for a saddle ridge 830 feet high. The channel between Dompo and Katapang is narrowed by a drying reef projecting from Katapang.

A fragmented, drying reef named Ganteng extends 1 mile south-southeastward from Dompo. Taikabo, 2 miles east-southeastward of Dompo, has a 1¾-fathom shoal ¾ mile southward of it. The channel between Taikabo and Dompo is deep and clear except for the mentioned Ganteng reef on the west side. A wide, clear passage separates Taikabo and Pulau Raki.

Aart van Nes, a detached drying reef close within the 100-fathom curve, lies 3¼ miles northeastward of Dompo. A similar drying reef lies 4 miles eastward of Aart van Nes; about midway between the two is a 1½-foot shoal head. The latter danger shows no discoloration.

Teluk Taru is entered northward of Tandjung Dewa, an elongated point 4 miles southwestward of Dompo, at the north end of the mentioned bight between Ngali and Pulau Raki. Teluk Taru is marked by Djonga, a rocky islet at the north entrance point. The bay is approached via the channel between Tengar and Katapang, and may be entered by passing westward of Djonga. Numerous dangers lie within the bay. The village of Sanggoro is situated on the northwest shore.

A bight, encumbered with numerous dangers, is formed between Tandjung Dewa and Tandjung Sarantok, 6½ miles southeastward. The easternmost danger in the bight is the islet of Lipan, 2⅓ miles north-by-westward of Tandjung Sarantok. Dangers extend in all directions from Lipan except north through eastward. The islet of Baloso lies 1½ miles eastward of Lipan, with a least depth of 6 fathoms in the intervening channel.

DIRECTIONS.—It is very possible to reach the village of Udjung at the head of the mentioned bight from eastward, if it is approached southward of Baloso. The 249-foot hill at the village is a landmark. Ships, having local knowledge, steer directly for Tandjung Sarantok until the hill bears 260°. They then steer for the hill on this bearing. The least depth on this route is 3¼ fathoms.

Pulau Raki, 11¼ miles east-southeastward of Pulau Ngali, lies 1 mile off the south shore of Teluk Saleh. The island is 5¾ miles long north and south, hilly, and is deeply indented by small bays. A small, detached drying reef lies 2 miles northward of Pulau Raki. Scattered above-and-below-water dangers extend 7 miles east-northeastward from the island. Bakau, a flat, bush-covered islet, lies in midchannel between Pulau Raki and the south

shore of Teluk Saleh. Other dangers lie in this narrow channel.

Teluk Santong, entered 4 miles southwestward of the midwestern side of Pulau Raki, affords good anchorage for vessels with local knowledge. Several shoals with a least depth of 2¾ fathoms lie off the entrance. The village of Santong is situated on the west shore of the bay.

Teluk Bangko Lua, entered 11 miles eastward of Pulau Raki, is on the south side of the head of Teluk Saleh. The islets of Besar and Wakakos, plus smaller islets, comprise the north and east sides of the bay. Very good ANCHORAGE is afforded. Vessels must pass ⅓ mile off Tandjung Pekat, the west entrance point of the bay, to avoid a 3-foot shoal head 1 mile north-by-westward of the same point.

5C–15 TELUK SALEH–NORTHEAST SIDE.—Rumah, a hill 840 feet high, is located on the north side of the head of Teluk Saleh. The hill is the south end of a ridge, which, because of its even crest, resembles the roof of a house.

TELUK KEMPANG is entered between the point on which Rumah is located, and Tandjung Kesi 3 miles west-northwestward. An islet lies close off a small projection at the head of the bay. A dangerous sunken rock lies close southeastward of the islet; a 3¼-fathom patch (position approximate) lies ½ mile southeastward of the same islet. Sapudu, a brush-covered rock on a detached drying reef, lies 1½ miles south of Tandjung Kesi. Two or three above-water rocks also lie on the drying reef. Fairly good ANCHORAGE is afforded in Teluk Kempang in 15 fathoms.

TANDJUNG PARANGGAWAU lies 7¾ miles northwestward of Tandjung Kesi; four miles southwestward of the point is a detached drying reef. The northeast shore of Teluk Saleh from Tandjung Paranggawau to the southeast entrance point of Selat Batahai (sec. 5C–13), 30 miles northwestward, is steep-to and affords no anchorage. The only danger off this shore is a 1-fathom shoal head lying 9½ miles west-northwestward of Tandjung Paranggawau, in a position ½ mile offshore.

SUMBAWA—NORTH COAST (CONTINUED)

5C–16 FROM TANDJUNG BRENTI TO TANDJUNG KATUPA the coast trends 25 miles eastward. The volcano Gunung Tambora, dominating this coast, was described in section 5C–2. A local magnetic anomaly has been reported offshore in the vicinity of Gunung Tambora.

Tandjung Pakidjangan (8°05′ S., 117°55′ E.), 12 miles east-northeastward of Tandjung Brenti, is a steep point with a 645-foot hill 1 mile southward of it. From a great distance eastward, when Pulau Satonda (sec. 5C–13) is behind Tandjung Pakidjangan, it is possible to mistake the hill for the island.

From Tandjung Katupa to Tandjung Djuli, 20 miles east-southeastward, the coast indents in a wide bight. Teluk Moti Toi is located close westward of Tandjnng Piun, a high rocky point 14 miles southeast-by-southward of Tandjung Katupa. A shoal ridge extending more than 1 mile northwest to southeast fronts the bay, but a deep, clear channel exists at either end of the ridge. ANCHORAGE is taken inside the ridge in 14 to 16 fathoms, sand and mud.

Teluk Sanggar (Teluk Dompo) is entered between Tandjung Piun and Tandjung Propa, 6¾ miles east-northeastward. Tandjung Matompo lies 3⅓ miles southeastward of Tandjung Piun. The best ANCHORAGE in Teluk Sanggar is in 16 fathoms, mud, in the bight close southwestward of Tandjung Matompo, off the mouth of the Sungai Kambu. The village of Sanggar, the residence of a radja, is situated 1¼ miles westward of the mouth of the Sungai Kambu.

Teluk Kilo, 1½ miles southward of Tandjung Propa, offers good ANCHORAGE in 15 fathoms eastward of a 2¾ fathom patch in the middle of the entrance.

From Tandjung Djuli to Tandjung Paropa, 11½ miles eastward, the coast is conspicuous

SEE SHORT CORRECTIONS

for the mountains described in section 5C–11. Tandjung Wonto, 3 miles southeastward of Tandjung Paropa, is the west entrance point of Teluk Bima.

TELUK BIMA

5C–17 TELUK BIMA, entered between Tandjung Wonto and Tandjung Batu Putih, 3 miles east-by-southward, extends about 12 miles southward to its head. The bay lies between high, hilly land and affords secure, landlocked anchorage. About 4 miles southward of Tandjung Wonto, Teluk Bima narrows to a least width of 600 yards, and the channel becomes somewhat winding for 1½ miles; then the bay widens again and remains so almost to its head. The port of Bima is situated on the east side of Teluk Bima, 2½ miles southward of the narrows.

DEPTHS.—Depths in Teluk Bima from its entrance to the south end of the narrows are 25 fathoms or more. Thence fairway depths shoal regularly from 25 fathoms to 6 fathoms at the head.

WEATHER—CURRENTS.—In the Southeast Monsoon, very strong southerly winds accompanied at times by heavy squalls blow continuously for days on end. The land and sea breezes are, however, usually regular in both monsoons, blowing directly in or out of the entrance.

No significant currents have been noted in Teluk Bima.

SHORES OF THE BAY.—Tandjung Kota Buru, on the west side of the bay, about 4 miles southward of Tandjung Wonto, marks the narrowest part of Teluk Bima. A small native fort is situated on this point and a similar fort stands on a point ¾ mile southward on the eastern shore.

Pulau Kambing, an islet close off the west side of the bay, lies 3 miles southward of Tandjung Kota Buru. The island's south side rises steeply from the water. In the north part of the island is a flat hill used as a burial place for native chiefs; it is considered sacred ground. The Sungai Romo enters the east side of the bay, opposite Pulau Kambing.

NAVIGATIONAL AIDS.—A light is shown from the pierhead at Bima. A white beacon, surmounted by a white triangle, stands on the east side of the narrows, in a position 2½ miles north-northwestward of the Bima pierhead.

CAUTION.—Anchorage in the north part of the inner bay is dangerous because of mines. Mariners should consult DAPAC, H. O. Pub. 110.

ANCHORAGE.—Anchorage can be obtained almost anywhere in the inner part of the bay in 6 to 18 fathoms, sand and mud. Vessels usually anchor eastward of Pulau Kambing in 9 to 10 fathoms. Ships also anchor in 5½ fathoms close off the Bima pierhead. Aircraft mooring buoys are moored in the bight northward of this anchorage.

BIMA (8°27′ S., 118°43′ E.)

5C–18 BIMA is the principal port serving eastern Sumbawa. The town is actually a collection of villages built on a plain through which the Sungai Romo flows. The Sultan of Bima resides here. Principal exports include dried beans, livestock, hides and pearl shells. The town of Raba, east of and adjacent to Bima, is the administrative capital of east Sumbawa, and is the seat of the lieutenant-governor.

PIERS.—A causeway extending over the tide flat at Bima has a T-head about 175 feet long. Praus and lighters berth alongside in a least depth of 16 feet.

A stone pier with a small timber head is located on the east side of Pulau Kambing. The depth alongside the head is 10 feet.

A stone pier with a 150-foot timber head is located 1⅓ miles southward of the Bima pier. The depths alongside the pierhead are 11 to 23 feet.

SUPPLIES.—Fresh provisions and water are always obtainable.

COMMUNICATIONS.—A radio station joins Bima to the general telegraph network. A road leads to Raba and thence to Badjo on the east coast of Sumbawa. Roads also lead

southward to the interior villages in the vicinities of Teluk Waworada, Teluk Tjempi and Teluk Saleh.

SUMBAWA—NORTH COAST
(CONTINUED)

5C–19 FROM TANDJUNG BATU PUTIH TO TANDJUNG NARU, the northeast extremity of Sumbawa, the coast is low, flat and edged by tall trees. Teluk Wera, 5 miles westward of Tandjung Naru, affords the only anchorage. Only at this bight is the appearance of the coast different.

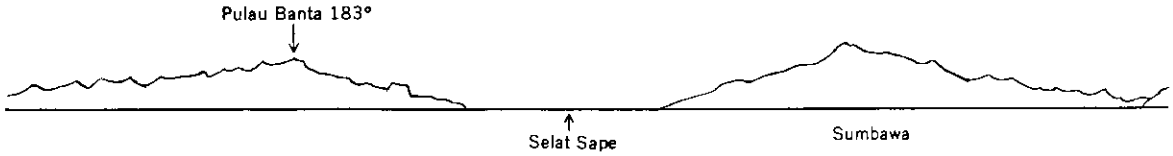
TELUK WERA is marked by the hinterland hills reaching the sea and terminating steeply in both entrance points of the bay. The broad, low valley behind the bay, conspicuous from offshore, leads as a highway up to the hinterland, and is a good mark for making the bay from northward. The shore of the bay consists of a sand beach. The village is screened by coconut palms.

A small river enters Teluk Wera, and a transit shed stands on the east bank at the mouth. Vessels can ANCHOR in about 10 fathoms on either side of the river mouth, but the western anchorage is preferred because the 5- and 10-fathom curves are farther apart there.

Pulau Sangeang, whose landmarks were described in section 5C–11, lies 3⅔ miles north-northeastward of Tandjung Naru; the intervening channel is deep and clear. Pulau Sangeang is circular and about 8 miles in diameter. Because the island is extremely steep-to, anchorage (in 20 to 30 fathoms) is feasible in a couple of places only for medium-sized vessels.

Anchorage may be taken in Labu Djoroh, a small bay on the midwestern side of Pulau Sangeang. The bay is recognizable by the kapok groves laid out on the hillsides. Anchorage is also taken at the north point of the island, and at the village of Bontoh, 1¼ miles southward of Labu Djoroh.

Tandjung Naru, the northeast extremity of Sumbawa, is described with Selat Sape in Part D of this chapter.



NORTHERN ENTRANCE TO SELAT SAPE, BANTA PEAK 12 MILES, 183°

PART D. SELAT SAPE

5D–1 TANDJUNG NARU (8°19′ S., 119°-00′ E.), the northeast extremity of Sumbawa, and the northwest entrance point of Selat Sape, is low, flat and densely wooded. A drying reef extends 600 yards eastward from the point. Even in calm weather a considerable sea is raised by the strong tide rips between the edge of the drying reef and the 10-fathom curve.

GENERAL REMARKS

5D–2 Selat Sape lies between the east coast of Sumbawa and the west coast of Pulau Komodo. It is the usual route taken when proceeding from Sumba Strait to the Flores Sea. Gili Banta, in the north entrance of the strait, divides Selat Sape into two branches, the main route lying westward of the island. The passage eastward of Gili Banta, and along Pulau Komodo, is seldom used as the tidal currents are strong, and there is less chance to anchor off Pulau Komodo than off the Sumbawa shore, especially in the west monsoon.

DEPTHS

5D–3 The 100-fathom curve extends eastward from close off Tandjung Naru, and passes 1 mile off the north side of Gili Banta. It then trends southward through Selat Sape and closes

the coast again at the southeast end of Sumbawa. On the opposite side of the strait, the 100-fathom curve passes within 3 miles of the points of Pulau Komodo.

Numerous above-and-below-water dangers lie between Gili Banta and the Sumbawa coast 8½ miles south-southwestward. Similar dangers lie between Gili Banta and the Pulau Komodo shore 7 miles south-southeastward. These dangers are described in detail later in this part.

CURRENTS—TIDAL CURRENTS

5D–4 The tidal currents in Selat Sape are semidiurnal and are only slightly affected by the monsoon drift in the Flores Sea. The tidal currents are weakest about 5 days after the quarter moons, the maximum north- and south-going currents averaging 3 knots. Tidal currents from 4 to 6 knots occur from 2 to 5 days after full and new moons, and at the moon's greatest declination, an 8- to 10-knot current may be expected. The greater strength, however, only occurs with the north-going current in the west monsoon, and with the south-going current in the east monsoon.

Near Pulau Sentodo (7½ miles southwestward of Gili Banta) and off Pulau Langkoi (off the southwest end of Pulau Komodo) there are frequently very strong tide rips and counter-currents which seriously affect the steering of a vessel. In the large bight in the southwest side of Pulau Komodo, a counter-current frequently runs along the Pulau Komodo shore.

In the west monsoon, in the south part of Selat Sape, and also between Pulau Sentodo and Barsu Panda (3 miles eastward), a north-going current runs from about 4 hours before to 1 hour after the moon's upper and lower meridian transits; the south-going current runs the remainder of the time. In the north part of the strait, the current turns about 1 hour later than along the Sumbawa shore.

In the east monsoon, a north-going current runs throughout the entire strait from about 3½ hours before to 1½ hours after the moon's upper and lower transits; the south-going current runs the remainder of the time.

WINDS—WEATHER

5D–5 The Southeast Monsoon lasts from April to October and is strongest in July and August. During these months southerly to southeasterly winds blow continuously, causing a high southerly swell and turbulent sea, especially when wind and current oppose each other. In November and December, the two transition months, the sea is comparatively calm. In the west monsoon there is also a southerly sea and swell. The change from this monsoon to the southeast monsoon is not particularly notable.

SUMBAWA—EAST COAST

5D–6 From Tandjung Naru to Tandjung Uamba (Wamba) the coast trends 12 miles south-southeastward. The mountainous land lies a few miles back of this coastal stretch. The only recognizable peak is the blunt, 4,853-foot Maria, 8 miles westward of Tandjung Uamba; this is the highest elevation in the vicinity.

From Tandjung Uamba to Toro Mabalang, 7¼ miles east-southeastward, the coast forms a bight which extends 7¾ miles south-southwestward. The west side of the bight is mostly low and flat. Toro Naga Nuri, 3 miles southwestward of Tandjung Uamba, is the E'd termination of a ridge running through the flat land. The bay northward of Toro Naga Nuri has several shoals in it. A 3¾-fathom patch lies ⅛ mile eastward of Toro Naga Nuri.

Nisa Sanai, about 1 mile east-southeastward of Toro Naga Nuri, is a 469-foot-high island, steep-to on its east side. The island is easily seen against the low Sumbawa coast.

TELUK SAPE

5D–7 TELUK SAPE is entered between Toro Naga Nuri and the north end of Nisa Sanai. The south entrance of the bay is ob-

structed by islets and drying shoals extending from the southwest side of Nisa Sanai to the Sumbawa Coast. Nisa Tosso, the northernmost of these dangers, is steep-to on its north side; a 2½-fathom patch lies ⅓ mile eastward of this islet.

ANCHORAGE.—Even the largest ships find safe anchorage in Teluk Sape. Large ships anchor in 10 to 15 fathoms in the area northward of Nisa Tosso; smaller vessels may anchor southwestward of this islet. The 3¾-fathom patch off Toro Naga Nuri must be avoided, but otherwise the anchorage area is clear.

Tandjung Tingeh, 5 miles southward of Tandjung Naru, is 98 feet high and conspicuous. The bight between the two points affords anchorage in the west monsoon, but ground swell and current make it uneasy. The north half of the bight is clear, with the 10-fathom curve passing about 1¼ miles offshore; a 3¼ fathom shoal lies in the south half of the bight.

Toro Lando lies 3 miles southeast-by-southward of Tandjung Tingeh. Batu Kapal, 1 mile northwestward of Toro Lando, is a 66-foot-high rock on a drying reef. Depths of less than 2 fathoms extend ¼ mile northeastward from the drying reef, but it is otherwise steep-to. Very quiet ANCHORAGE is afforded in the small bay southward of Batu Kapal. Good ANCHORAGE is also afforded in the three small bays between Toro Lando and Tandjung Uamba.

Tandjung Uamba (Wamba) has the inconspicuous, low islet Kamara lying close off it on the fringing, drying reef. About 1 mile northwestward of the point is a reef 800 yards in diameter with 3 feet of water over it.

TIDE.—The tide at Teluk Sape is mixed but predominantly semidiurnal. The average range of semidiurnal spring tides is 4½ feet; of neaps, 2 feet. The average range of diurnal spring tides is 2½ feet; of neaps, 0 feet.

The spring low tides of the two systems can coincide. In June and December the lowest water levels may be expected to be about 3½ feet under the mean level (semidiurnal tide).

CURRENTS are insignificant.

FACILITIES.—A stone, T-head pier projects from the southwest side of Teluk Sape into 16½ feet of water. The village of Badjo is situated close northward of the root of the pier. Fresh meat is procurable.

5D–8 BAY SOUTHWARD OF TELUK SAPE.—Immediately southward of the islets and shoals obstructing the south entrance of Teluk Sape, a small, unnamed bay provides good anchorage. A drying bank extends 800 yards northeastward from the south entrance point of this bay, and a drying flat lies ¼ mile farther northeastward. Pulau Radeh, 69 feet high, lies close southward of the south entrance point, on the drying bank; a 49-foot-high rock, also on the drying bank, lies ⅓ mile northward of Pulau Radeh. To enter the bay, vessels steer 267° close along the south extremity of Nisa Sanai to avoid the drying flat northeastward of the south entrance point.

The head of the bight between Tandjung Uamba and Toro Mabalang is 4¼ miles wide between Pulau Radeh and Toro Gaduh to eastward, and affords excellent ANCHORAGE between the 10- and 20-fathom curves. The anchorage is of little commercial importance, however, because of a range of uncultivated mountains running close to the south shore. Lambu, the easternmost and highest peak of this range, rises 3,173 feet.

A 33-foot shoal lies in the entrance of the above anchorage, in a position 1⅔ miles westward of Toro Gaduh. The 49-foot high Pulau Grihi, about ⅔ mile south-southeastward of Pulau Radeh, is a bare islet with a whitish hue. Loho Latoh, a bay on the east side of the anchorage, is encumbered with shoals. A drying

flat lies 7/8 mile north-northwestward of Toro Lambu, the south entrance point of Loho Latoh: the flat is the outermost danger in the bay.

Toro Gaduh is steep-to on all but its north side; 1/3 mile off this side is a shoal with a least depth of 10 feet.

From Toro Gaduh to Toro Lokoh, 3 miles northeastward, the coast forms a bay whose shores are much indented. The two western indentations of the bay are occupied by a drying reef. The bare islet, Nisa Dokoh, 69 feet high, lies off Labuan Dokoh, the eastern indentation of the mentioned two. Good ANCHORAGE is afforded northeastward of Nisa Dokoh, within the 20-fathom curve.

TORO MABALANG, about 1 mile northeastward of Toro Lokoh, is the steep-to north extremity of the peninsula forming the east side of the bight between Tandjung Uamba and Tandjung Mabalang. The peninsula is hilly, and appears barren in the dry season. Toro Djati, 3/4 mile southeastward of Toro Mabalang, is the northeast extremity of the peninsula. A drying reef lies close eastward of Toro Djati.

DANGERS OFF TORO MABALANG.—Several dangers lie between this point and Pulau Banta. Pulau Sentodo, 3/4 mile northeastward of Toro Mabalang, is 197 feet high; the intervening strait is deep and clear. The island rises perpendicularly from the sea but has a gently sloping, wooded upper area on the south side. Close westward of Pulau Sentodo is an islet much worn by the sea; 1/4 mile eastward of Pulau Sentodo, across a deep and clear channel, are two rocks the northern of which is 30 feet high. Strong rips, felt far into Selat Sape, form at each tide between Pulau Sentodo and Toro Mabalang.

Pulau Sapekah lies 6 miles eastward of Toro Mabalang, and is the outermost danger off that point. Pulau Sapekah is 246 feet high and is wedge-shaped, with the lower part of the wedge northward. The high parts of the island are covered with tall grass (alang alang). A 20-foot-high rock lies on a drying reef adjoining the northwest end of the island. Pulau Sapekah is an important bearing point for vessels using Selat Sape.

Barsu Menjerih, 2 1/4 miles north-northwestward of Pulau Sapekah, is a small, sharp rock showing only from time to time in the trough of the waves. It is so steep and pointed that it never breaks, nor does it show much current marking. It is considered the most dangerous rock between Toro Mabalang and Pulau Banta.

Barsu Basso, 1 1/2 miles northward of Barsu Menjerih, is a small group of above-water rocks always marked by breakers. The steep-to shoal surrounding the rocks has a diameter of almost 1/4 mile.

Barsu Panda, 2 miles west-northwestward of Pulau Sapekah, is a bare, lead-gray rock 36 feet high. A shoal ridge, with a least depth of 2 3/4 fathoms, projects 1/4 mile northward from Barsu Panda. The Pulau Kelapa range, bearing 172° (sec. 5D–9) leads westward of Barsu Panda.

Tukoh Mapinka, midway between Barsu Panda and Pulau Sapekah, are two 49-foot-high rocks so close as to be almost indistinguishable from each other. Their flat tops are covered with tall grass.

The passage between Pulau Sentodo and the dangers just described is the main route through Selat Sape. A 7-fathom patch lies in midchannel of this passage, in a position (approximate) 1 1/2 miles westward of Tukoh Mapinka. Strong tide rips have been observed over this patch.

From Toro Djati to Toro Rano the coast trends 9 1/2 miles southward. The several bays along this stretch afford anchorage possibilities according to the existing direction of wind and sea.

5D–9 LABUAN DJATI, between Toro Djati and Toro Wadu Dali, 1 1/2 miles south-

southeastward, is fronted by Pulau Mata Gateh to be described. This bay affords protected ANCHORAGE free of tide rips on its south side in 10 to 20 fathoms. A drying reef extends more than ⅓ mile from the south side of the bay. Both north and south entrances of the bay are deep and clear.

Pulau Mata Gateh (Kamara), forming the east side of Labuan Djati, rises steeply to 246 feet. Sand beaches are found in the bights on the east and west sides of the island. A 1¾-fathom patch lies almost ⅔ mile southward of Pulau Mata Gateh and is best passed on the west side when entering Labuan Djati.

Labuan Botu, entered 3¼ miles southward of Pulau Mata Gateh, affords ANCHORAGE for large vessels. The deeply indented shores of the bay offer good landing possibilities. A rocky islet lies close off the unnamed north entrance point of the bay. A shoal tongue, with depths of not more than 1½ fathoms over its inner half, and less than 4¼ fathoms over its outer half, extends 1 mile east-northeastward from Tandjung Botu, the south entrance point of Labuan Botu. This danger is often marked by breakers. The islet at the north entrance point, in range 359° with a similar islet ⅔ mile northward, leads close eastward of the shoal tongue.

Tandjung Rata lies 3 miles southward of Tandjung Botu. An unnamed point ½ mile northward of Tandjung Rata is marked by an islet close offshore. Small vessels obtain good ANCHORAGE in the cove on the north side of the unnamed point.

PULAU KELAPA, 3 miles offshore, fronts the bight between Tandjung Botu and Tandjung Rata. The island rises to an undulating plateau, 423 feet high, completely covered with tall grass; trees grow only in the lower areas. The coast on all sides is indented with bays. The bay on the north side is occupied by a drying reef, and the bay on the southeast side is deep, but otherwise the bays afford ANCHORAGE.

A drying reef projects ¾ mile from the mid-eastern side of Pulau Kelapa. On the reef are a few rocky islets plus numerous rock pinnacles, 30 to 50 feet high. At a distance the pinnacles resemble tree trunks. From the south extremity of the island a reef with a least depth of 5½ fathoms extends west-by-southward toward Pulau Ilus, to be described.

RANGE LIGHTS.—Two lights in range 172° are shown from Pulau Kelapa from white skeleton towers. The rear light stands on the summit of the island, and the front light stands 794 yards from the rear light. The range marks the main channel of Selat Sape as it passes between Pulau Mata Gateh and Barsu Panda.

PULAU ILUS, 1¼ miles west-by-southward of the south end of Pulau Kelapa is a bare, steep rock 128 feet high. Close northeastward of Pulau Ilus is a rock partially covered with vegetation; the intervening channel has a depth of 3¼ fathoms.

The previously mentioned 5½-fathom reef between Pulau Ilus and Pulau Kelapa is indicated by heaving and tide rips as soon as a current arises. For this reason it is advisable to pass westward of Pulau Ilus.

A bare, steep rock, 98 feet high, lies ⅔ mile south-southwestward of Pulau Ilus; the intervening channel is clear. A detached, above-water rock stands close eastward of the 98-foot rock.

The bay between a point ½ mile southward of Tandjung Rata, and Toro Rano, 1⅔ miles farther southward, has a 2¾-fathom rock about 325 yards off the midnorthern shore. The depth at the head of the bay is around 15 fathoms. Toro Rano, the southeast extremity of Sumbawa, was described in Part C. of this chapter.

PULAU BANTA

5D–10 PULAU BANTA, an uninhabited, chiefly grass-covered island at the north end of Selat Sape, rises 1,312 feet to a flattened

ject) was charted in late 1961 on the westernmost islet in 7°45′30″ S., 117°08′ E. A shoal ridge extends southward from the easternmost islet and forms the east side of the atoll.

ANCHORAGE may be obtained inside the atoll in 16 to 30 fathoms, sand and coral, by cautiously entering from westward. The atoll is steep-to on all sides.

GENERAL REMARKS

5E–2 Island groups northward of Sumbawa extend 130 miles northeastward between 7°50′ S. and 6°30′ S.; of these, the Great Paternoster Islands comprise the southwest group and the Kepulauan Sabalana the northeast group. Both main groups are divided into two lesser groups; Sakuntji and Pulau Sadapur, described above, comprise the southwestern lesser group of the Great Paternoster Islands. Each of the four lesser groups lies on its own submarine plateau, the 100-fathom edges of which are clearly defined by discoloration. Between each plateau is a broad channel safely navigable by day in depths of over 100 fathoms. The islands are low and covered by coconut palms and dense scrub and mangrove. They are seldom visited except that Chinese junks call to collect tripang (sea slugs), and Makasar praus come for copra.

The larger islands have a peculiar reef formation on their seaward sides; a low ridge 50 to 100 yards wide thickly covered with mangrove and coconut palms; between the ridge and the island proper is a drying or sunken reef. In some islands this formation is not fully developed.

NAVIGATION

5E–3 Vessels bound for Selat Alas from Selat Salajar usually pass eastward of the Kepulauan Sabalana. Some vessels from Makasar have passed between the Kepulauan Sabalana and Pulau Bankobangkoang and Pulau Longkoitang, but it is advisable to pass outside the islands, giving them a wide berth, especially at night.

The usual track bound from Selat Sape to Makasar Strait or Selat Salajar is also east of the Kepulauan Sabalana. In the Northwest Monsoon it is advisable to sight the northeastern Kepulauan Sabalana to avoid being driven too far to leeward. In the Southeast Monsoon vessels should keep along the Sumbawa coast till Pulau Sangeang bears 204°, and then steer to northward.

DEPTHS—DANGERS

5E–4 The four submarine plateaus, on which the islands northward of Sumbawa are situated, rise steeply from great depths. The 100-fathoms curve lies directly off the outer reefs and shoals of each plateau, so that soundings give no warning of danger. Additional dangers in this area are the detached shoals and/or islets lying 6 miles westward of the north group of tbe Kepulauan Sabalana, and 7 miles westward of the north group of the Great Paternoster Islands. Detached shoals also lie 25 miles eastward of the Great Paternoster Islands.

Vessels proceeding eastward from Selat Alas will avoid the dangers of the islands northward of Sumbawa by not going north of 8° S.

CURRENT—TIDAL CURRENTS

5E–5 The tidal current runs either east-southeast or west-northwest between and over the four submarine plateaus on which the islands northward of Sumbawa lie. Thus the monsoon current is either strengthened or weakened (even to cancellation) when the two happen to run in the same or opposite direction. A combined rate of 2 knots over the plateaus is not exceptional.

The combined current is usually strongest along the east and southeast edges of the plateaus. Here the current in some places reaches 2½ to 3 knots for about an hour, and is attended by whirlpools and heavy tide rips.

The same peculiarity is sometimes observed in lesser degree along the west and northwest edges of the plateaus.

It is always advisable for passing vessels to give the edges of the plateaus a wide berth.

GREAT PATERNOSTER ISLANDS

5E–6 NORTHEAST GROUP.—Except at its east end, small ships can easily cross the plateau on which this group lies. The passages between the islands are mostly deep and clear, and the reefs show discoloration. Patches from 7 to 9 fathoms are sometimes so clear that an impression of much less water is given. A few of the islands are inhabited—chiefly by Buginese who fish and cultivate coconut trees. The native chief resides on Pulau Sailus-besar.

Pulau Kapoposang Bali, the westernmost island of the northeast group, is situated at the southeast end of its own small plateau. The passage between the island and the main plateau is deep and clear but is too narrow for safe navigation. A tall tree in midisland is especially prominent, except from northward.

Pulau Satengar, largest island of the northeast group, lies 5½ miles eastward of Pulau Kapoposang Bali. Pulau Sailus-besar, 5½ miles eastward of Pulau Satengar, has freshwater wells. Pulau Marabatuang, 2¼ miles northeastward of Pulau Sailus-besar, is exceptional in formation in that its outlying ridge lies on the east, and not the seaward, side of the island. Karang Satunggul, at the east end of the plateau, consists of several small islets on a drying reef.

ANCHORAGE—DIRECTIONS.—Anchorage can be obtained with local knowledge outside the 10-fathom curve either eastward or southwestward of Pulau Sailus-besar. The easiest way to reach these anchorages is from northward. Pass between Pulau Satengar and Pulau Sailus for the southwestern position, or between Pulau Sailus-besar and Pulau Marabatuang for the eastern position.

The anchorage southwestward of Pulau Sailus-besar can be reached from southward by steering between 005° and 010° for the west extremity of Pulau Sailus-besar. This course leads in a least depth of 9 fathoms over a sandy ridge between Pulau Sailus-ketjil (close southward of Pulau Sailus-besar) and a drying reef 5 miles westward. The anchorage eastward of Pulau Sailus-besar can be reached from eastward by steering 270° for the south extremity of that island.

OFF-LYING BANK.—An extensive bank, rising from great depths, lies about 22 miles eastward of Karang Satunggul. The sand and coral bottom is visible in many places. The least depth of 5½ fathoms, coral, lies near the northwest edge of the bank. This edge is marked by a strong eddy.

KEPULAUAN SABALANA

5E–7 SOUTHWEST GROUP.—Nearly all the islands of this group lie on the north part of the steep-to plateau containing them. Most of the islands are inhabited and planted with coconut trees. Sapuka-besar, on the midnorthern side of the plateau, is the most important island and is the residence of the chief civil officer of this group, who is also the owner of the coconut groves.

Sapuka-ketjil, close southward of Sapuka-besar, lies on the northeast part of a 5-mile-long drying reef. Between Sapuka-besar and Pulau Pelokang (the latter near the east extremity of the plateau) is a chain of reefs, plus Pulau Sambardjaga and Pulau Sambargigitang; both these islets have noticeable trees. A noticeable tree stands on the unnamed, easternmost islet of the plateau.

The west side of the Plateau, between Pulau Kambanglamari and Pulau Tokohbatu, 9 miles southward, is free of dangers. A noticeable tree stands on Pulau Lamuruang, the southernmost islet of the plateau; this islet lies 7½ miles southeastward of Pulau Tokohbatu.

ANCHORAGE—DIRECTIONS.—To reach the anchorage off Pulau Sapuka-besar, pass southward of Pulau Sambardjaga, steering 258° for Pulau Sapuka-ketjil. When the west extremity of Pulau Sapuka-besar bears 305°, steer for it on that bearing. Anchor in 20 to 30 fathoms southward of the reef fringing Pulau Sapuka-besar.

NORTHEASTERN GROUP.—All the islands on this extensive plateau lie on its northeast and southeast edges; about 5 miles off the west edge are two detached islets and two detached shoals. Most of the islands on the plateau are inhabited, and are planted with coconut trees. The native chief resides on Pulau Balobaloang-besar, an island near the north end of the group, and an overseer of the coconut plantations lives on Pulau Sabalana, at the east end of the group. Numerous praus fish on the plateau during the fishing season.

Pulau Longkoitang and Pulau Bankobangkoang are the two mentioned islands westward of the main plateau. The intervening channel is very deep, as is the channel between the islands. A 5½-fathom shoal lies about 5 miles northeastward of Pulau Bankobangkoang, and a 5-fathom shoal lies about 9 miles eastward of the same island.

Pulau Sabalana, Santigiang, Pamolikang, Banawaja and Lilikang lie on a large, drying reef which forms the east extremity of the plateau. A LIGHT is shown from the northeast extremity of Pulau Banawaja, the easternmost island of the reef and of the plateau. A basin is formed westward of the mentioned reef between its two westward-projecting arms; the depth on the arms is less than 3 fathoms. Pulau Soroabu lies near the outer end of the south arm, and Pulau Sanane-besar and Pulau Sanane-ketjil lie close northwestward of the north arm. Pulau Meong lies on the west side of the basin, and Pulau Matalang lies about 1¼ miles westward of Pulau Meong.

ANCHORAGE—DIRECTIONS.—The basin described above affords safe anchorage in 4 to 9 fathoms, sand, to vessels with local knowledge. The basin is entered from westward, passing either northward or southward of Palau Meong's fringing, drying reef. During the west monsoon, it is advisable to take the passage between Pulau Matalang and Pulau Meong, thus passing southward of Pulau Meong and over a 4-fathom stony ridge. In the east monsoon, vessels can pass northward of Pulau Meong, where the least depth over the ridge is 3¼ fathoms.

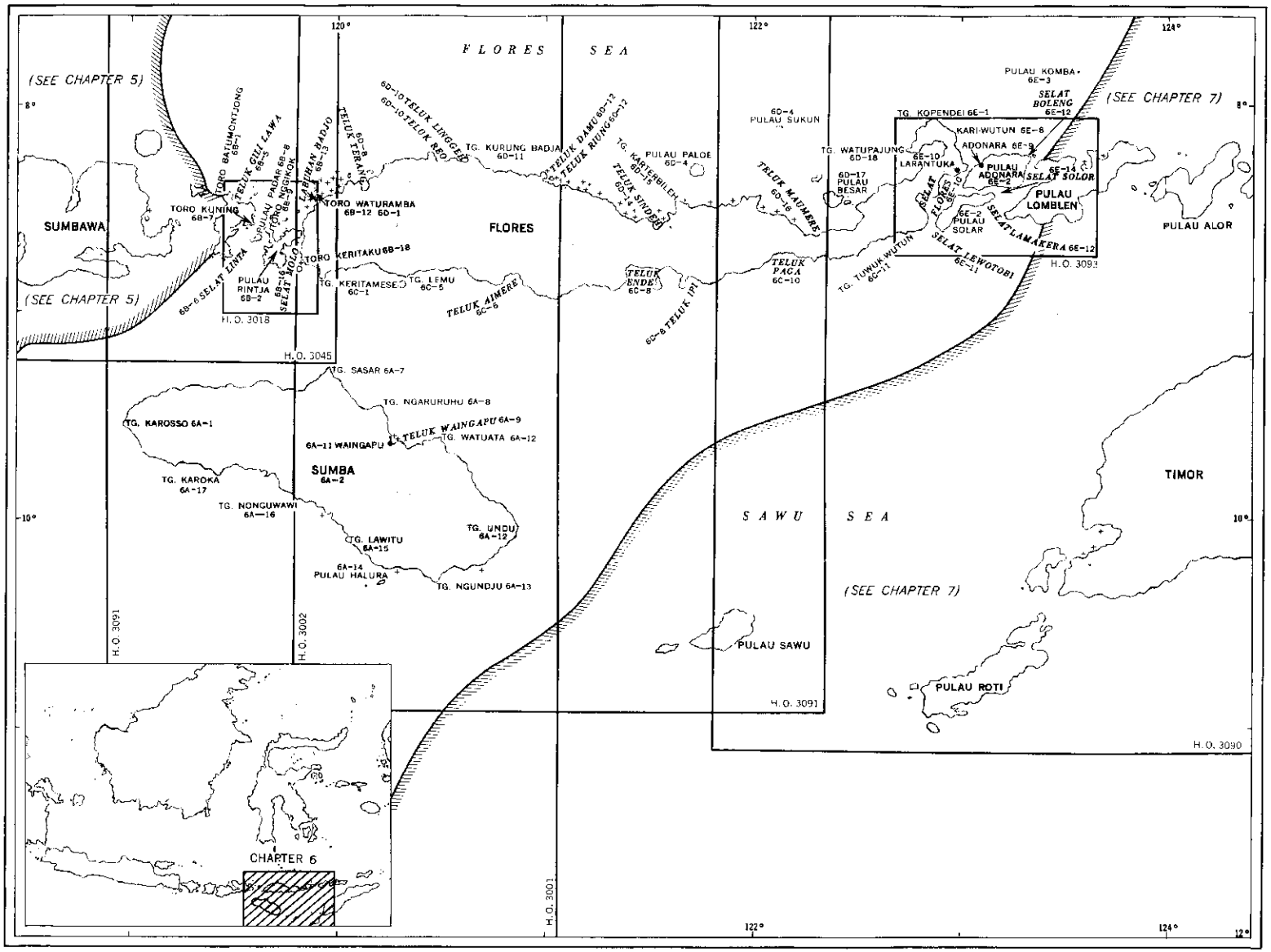


Chart limits shown are of the best scale charts issued to naval vessels by the U.S. Navy Hydrographic Office.
Numbers refer to the section in the text describing a designated locality.

CHAPTER 6—GRAPHIC INDEX

CHAPTER 6

SUMBA; FLORES, WITH ADJACENT ISLANDS AND STRAITS

Part A. Sumba
Part B. Islands and Straits between Pulau Komodo and Flores
Part C. Flores—south coast
Part D. Flores—north coast
Part E. Straits between Flores and Lomblen

PLAN.—This chapter describes the island of Sumba, and then the islands and straits between Komodo and Flores. The south and north coasts of Flores are next described, and finally Selat Flores and Selat Boleng, two straits at the east end of Flores.

GENERAL REMARKS

6–1 THE LESSER SUNDA ISLANDS, which include Sumba and Flores, with adjacent islands and straits, have been described in section 5–1. Sumba is described in section 6A–2.

Selat Linta, between Pulau Komodo and Pulau Rintja is seldom used. Selat Molo, between the latter island and Flores, is navigable only by small handy craft, because of the currents in its narrowest section. Flores is described in section 6B–12. Selat Flores is deep and clear.

There are few ports of importance in the area covered by this section, but vessels can find convenient anchorages according to the prevailing wind.

WINDS—WEATHER

6–2 The general characteristics of the weather in the area covered by this chapter has been given in section 5–3. The climate of Sumba is rather pleasant with temperatures averaging between 80° and 90°. Flores has a rather dry climate.

CURRENTS—TIDAL CURRENTS

6–3 In the Flores Sea the currents generally run with the wind, westward during the east monsoon and eastward during the west monsoon. Both of these currents are on the average a little stronger than those in the Java Sea, with the east-going current somewhat stronger than the west-going current. Maximum rates of 2½ knots, or more, have occasionally been recorded.

The tidal currents in the straits have been discussed along with the description of the straits.

PART A. SUMBA

6A–1 TANDJUNG KAROSSO (9°33′ S., 118°56′ E.) is the west extremity of Sumba. The point is low and sandy, and is fringed by a narrow, drying reef.

GENERAL REMARKS

6A–2 SUMBA OR SANDALWOOD ISLAND is, except for the south side, generally low along the coast and mountainous farther inland. In the north-central part the island rises almost 3,000 feet, and in the southeast part the elevation is a little over 4,000 feet. Volcanic action has never been observed. The central and east parts of Sumba are almost all bare tableland cut by rocky ravines. The grassy

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plains of the tableland provide pasture for countless herds of half-wild horses. The west part of the island is hillier and has more vegetation.

The numerous rivers are all mountain streams of no navigational importance. In the river valleys of central Sumba are a few small villages at great distances from each other. Western Sumba, being more fertile, is more populated, and large villages are found here near extensive rice fields.

The only useful landmark of the north shore visible from well at sea is the 1,460-foot projection of high land that terminates in Tandjung Sasar. Visible landmarks of the south shore are the 2,428-foot Pengader Sasah Mountains located northward of the steep, southernmost point of Sumba, and the Pegunungan Massu farther northwestward. The latter mountains, which rise to 4,019 feet, are the highest in Sumba. Pengader Sasah Mountains have been reported (1957) as identifiable with charted features by radar at a distance of 12 miles.

NAVIGATION

6A–3 Coastwise navigation is simple, but other than in the bays there are few possibilities for good anchorage. Where the coast is less than steep-to, especially along the southwest coast, anchoring is hampered by the generally high sea or swell.

DEPTHS—DANGERS

6A–4 The 100-fathom curve lies 3½ miles or less off the north coast of Sumba, broadening to 6½ miles off the east end and 9 miles off the south part (but only 1½ miles off the outlying islands in this part). Thence to Tandjung Karosso the curve lies 4½ miles or less offshore. All dangers are inclosed by the 100-fathom curve. Sumba Strait is deep and clear.

CURRENTS

6A–5 Little is known of the currents in Sumba Strait. It is probable there is a constant west-going current more or less overruled by the monsoonal drift.

CLIMATE—WEATHER

6A–6 The climate of Sumba is very healthful and there is little sickness reported among the inhabitants.

The average daytime temperature is in the 80°–90° range. November is the hottest month, with the temperature frequently reaching 95°. From mid-June to August the nights are cool and the temperature seldom exceeds 60°.

The annual rainfall is 31 inches. The wettest months are January and February, with a total of 7 inches. In February, during the west monsoon, the rivers become swollen. From June to October it seldom rains near Waingapu, on the north coast, and the land in this district becomes dry and withered.

SUMBA—NORTH COAST

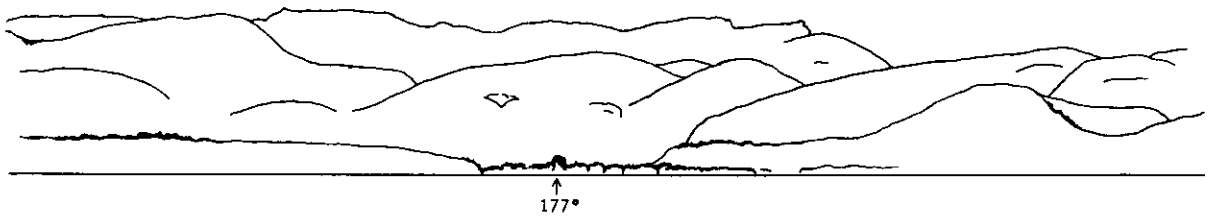
6A–7 FROM TANDJUNG KAROSSO TO TANDJUNG SASAR, the coast trends 65 miles eastward. Between Tandjung Karosso and Teluk Waikalo, the hinterland appears as a horizontal ridge sloping somewhat toward the west. The only landmark along this stretch is the dark Atedalo forest situated eastward of Tandjung Karosso on a somewhat higher ridge; the northernmost tree of this forest is rectangular and higher than the others. Sand beaches are seen here and there along this stretch.

A noticeable sand beach is located at Tandjung Wailakareh, 3 miles northward of Tandjung Karosso; a village, located in the vicinity of the first-named point, is visible from seaward. Ships can ANCHOR off the beach in 16½ fathoms, sand. Wailakareh, affords ANCHORAGE in 12½ fathoms, rock, off its beach.

Tandjung Suma, 9 miles northeastward of Tandjung Karosso, barely projects from the coast but may be recognized by a couple of houses projecting over a ridge just behind the beach. Vessels ANCHOR in 15 fathoms, sand and coral, with the easternmost house in range

156° with the solitary coconut palm on the little beach northward of Tandjung Suma. A 1½-knot greatest current has been observed off the village.

TELUK WAIKALO is a small bay 12 miles east-northeastward of Tandjung Suma. Zadelberg (Saddle Mountain), 5¾ miles southward of the head of the bay, is easily recognizable by its saddle shape. The northwest peak is rounded and heavily wooded, and the southeast peak is somewhat pointed; both peaks are of almost equal height—about 1,670 feet. A LIGHT is occasionally shown at the mouth of a stream which enters the head of Teluk Waikalo. A shed with a galvanized iron roof stands on the seaward side of the light, and a mosque is situated about ¼ mile eastward of the light.



MEMBORO ROADSTEAD, BEARING, 7 MILES, 177°

ANCHORAGE in 35 fathoms, coral, is afforded in Teluk Waikalo with the light bearing 161° and the points on the east side of the bay in range 066°. A moderate CURRENT may be found off the bay, but inside there is no current.

Tandjung Nanga Amba, low and wooded, lies 5 miles eastward of Teluk Waikalo. Tandjung Kerendi, 7 miles eastward of Tandjung Nanga Amba, is a low sandy point. Between the points is the small village of Ketewil at the mouth of a stream. Inland, the villages of Pondokabumbu and Totoka can be seen from seaward. The first is halfway up a mountainside, and the second is on a 1,427-foot peak. Farther inland is Wajewa, a peak 2,411 feet high with a short, conical summit. Talariu, 4¼ miles eastward of Wajewa, is 2,723 feet high and is the highest peak of a gently sloping, east-west ridge.

The rocky Tandjung Batumbaba, 4 miles eastward of Tandjung Kerendi, and the low sandy Tandjung Laramanipa, 5½ miles farther eastward, are the east and west entrance points of a bight at whose head is the village of Memboro. The east side of the bight is conspicuous for its white sand beach, beyond which are red rocks with small, black beaches between them.

ANCHORAGE is taken in 15 fathoms, sand, off the village. The village is of little importance, all products being shipped from Teluk Waikalo.

TANDJUNG TERAPA (Wanda), is rocky and covered with vegetation but is not high; wave action has hollowed out the point below the high water line. Between Tandjung Terapa and Tandjung Palamedo is a sand beach with occasional patches of rock. The many streams entering this coastal stretch provide fresh water only in the west monsoon. Tandjung Palamedo is a rocky spur of a plateau bordering the valley of a stream on whose east bank is the village of Palamedo.

The wooded peak Lenang, 1,302 feet high, rises 4 miles southward of Palamedo, and may be seen from sea when off the coast between Tandjung Terapa and Tandjung Sasar, to be described. Also visible along this stretch is a 2,037-foot peak 5½ miles west-southwestward of Lenang. This peak is the west end of a ridge, which, farther westward, slopes off into a lower plateau. The ridge runs eastward at

an even height to a 2,064-foot peak on which the village of Bolabokat, visible from seaward, is situated.

ANCHORAGE is afforded in 16 fathoms, sand and stones, off the village of Palamedo mentioned above. The village should be in range 165° with the first steep part of the coast westward of the mouth of the river. The current can reach 2½ knots at this anchorage.

Tandjung Wainde, 5 miles east-northeastward of Tandjung Palamedo, is composed of steep, but not high, whitish rock. A conspicuous broad-topped tree stands on the coastal reef at the point. In case of need, ships can anchor on either side of Tandjung Wainde.

TANDJUNG SASAR, the northernmost point of Sumba, is a spur of Datu Sasar, the mountain plateau to southward. The point is limestone, and at its termination is crumbling and perforated. Slides on the west side of Tandjung Sasar have produced perpendicular walls 100 to 130 feet high. The current can flow strongly around the point.

SUMBA—NORTHEAST COAST

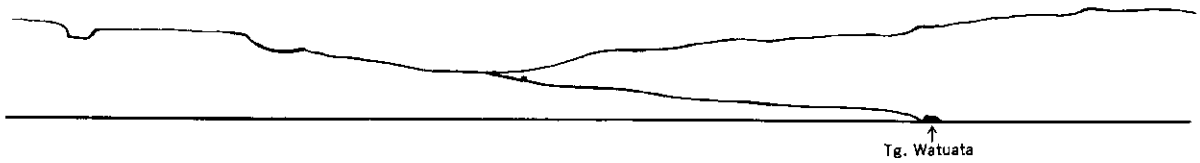
6A–8 THE NORTHEAST COAST OF SUMBA is inconspicuous for offshore navigation save for the projecting Tandjung Ngaruruhu and Tandjung Watuata. Apart from a few rocky sections, the coast is predominantly sand beach fronting a plain with high trees. Behind the wooded section are terraced hills with grassy plains.

From Tandjung Sasar to Tandjung Ngaruruhu the coast trends 18½ miles southeastward. Midway on this coast the Sungai Kadessa has its mouth. About 2½ miles upstream the river flows through a cleft in the rocks which cleft is visible from seaward as the westernmost and plainest of numerous others. Each side of the cleft is 669 feet high, but the southeast side is sharper in outline. The village of Kapunduk, 3½ miles southeastward of the mentioned cleft, is situated on a ridge on whose east slope is a white patch. The village of Kanata, 6 miles farther southeastward, is also to be seen from seaward because of its high location.

The shore of this coastal stretch is fringed by a narrow, drying reef broken only at the mouths of the Sungai Kadessa and the Sungai Kanata, 7 miles farther southeastward, by drying sand flats. There is sand beach extending 1 mile from Tandjung Sasar, followed by a rocky shore to Tandjung Roda and thence sand again to Tandjung Ngaruruhu. Depths within the 100-fathom curve are irregular and anchoring is not recommended. A drying reef lies ½ mile offshore in a position almost 5 miles southeastward of the mouth of the Sungai Kadessa; a 1-fathom patch lies close southeastward of the drying reef.

TANDJUNG NGARURUHU is a low point, close within the point is Laundu hill, 426 feet high, the north end of a steep, crumbling limestone wall forming the edge of a plateau. A powerful CURRENT flows around Tandjung Ngaruruhu.

6A–9 TELUK WAINGAPU (Nangamessi Bay) is entered between Tandjung Ngaruruhu and Tandjung Watuata (Batu Ata), a sandy point covered with vegetation. Tandjung Pasia Manuk, a small projection, divides the head into Waingapu Road to westward and Teluk Kambaniru to eastward. Several streams enter Teluk Waingapu, chief of which is Kali Kambera which enters the head of Teluk Kambaniru.



NORTH COAST OF SUMBA, Tg. WATUATA 270°

Teluk Waingapu is relatively important for Waingapu Road, the chief shipping place of Sumba.

DEPTHS.—The 100-fathom curve lies up to 1¼ miles off the west side of Teluk Waingapu, and up to 3¼ miles off the south side. Depths are irregular throughout. A steep-to, drying reef fringes the south side of the bay to almost ½ mile, and extends to the same distance from the head of the bay at Waingapu Road. On the west side of the bay the fringing reef is narrow. The only dangers in Teluk Waingapu are found in Waingapu Road.

CURRENT.—Strong currents can arise off Tandjung Watuata, and off Tandjung Ngaruruhu, as previously mentioned. The current diminishes to insignificance within the bay.

LANDMARKS—WEST SIDE.—Between Tandjung Ngaruruhu and Tandjung Maudulu, the shore is rocky and has several small sand beaches. The south side of Tandjung Waibubu, 2 miles southeastward of Tandjung Ngaruruhu, is, in part, high and steep, and at low water forms a sharply projecting cutwater. Between Tandjung Maudulu and the village of Utaleumbu, the shore is uniformly covered with mangrove and is backed by a sandy strip. From Utaleumbu to Waingapu Road, there is unbroken sand beach. The sudden change from mangrove to sand beach at the otherwise inconspicuous Utaleumbu affords a good landmark. A prominent white patch is visible on the wall forming the end of the tableland behind Utaleumbu.

SOUTH SIDE.—Between Tandjung Watuata and Tandjung Djumbu, the shore is low with unbroken sand beach backed by trees. Between Tandjung Djumbu and Waingapu Road, the shore is mud, overgrown with mangrove.

ANCHORAGE.—Apart from Waingapu Road and Teluk Kambaniru to be described, the only suitable anchorage off the west shore of Teluk Waingapu is off the sand beach southward of Utaleumbu. Here anchorage is taken in 20 to 25 fathoms, sand and coral. With no easterly or northerly wind, anchorage is possible off the shore from Utaleumbu northward to Tandjung Waibubu.

Anchorage off the south shore of the bay may be taken in several places, by vessels having local knowledge. Ships are exposed to northerly and easterly winds, however, and to westerly winds as Tandjung Watuata is approached.

TELUK KAMBANIRU is entered between Tandjung Pasia Manuk and Tandjung Sudu, 3 miles eastward. Kali Kambera, the principal river of Sumba, enters the head of the bay, but its mouth is blocked by near-drying sandbars. Depths in Teluk Kambaniru are irregular but ANCHORAGE is possible in several places off the river mouth in about 25 fathoms.

6A–10 WAINGAPU ROAD, at the head of Teluk Waingapu, is the general area between Tandjung Tai Manuk (2⅓ miles southward of Utaleumbu) and Tandjung Atu, 1⅓ miles farther south-southeastward. Drying reefs project fully 700 yards from shore in this vicinity. Teluk Melala is an indentation in the reef on the east side of Tandjung Atu. The village of Maudjawa is situated on a point of land, which, with its projecting reef, divides the inner portion of Waingapu Road into two arms; the village of Waingapu is situated on the eastern arm. Vessels lie securely in the road, but the anchorage is confined by the projecting reefs.

DEPTHS — DANGERS. — A 1½-fathom reef, marked by a BEACON surmounted by a white ball, lies 600 yards eastward of Tandjung Tai Manuk. A detached 1-fathom rock lies 300 yards north-northwestward of the beacon, and a 5-fathom coral head, not marked by discoloration, lies 400 yards eastward of the beacon.

A drying reef, forming the east side of the inner Waingapu Road, extends 700 yards northward from Tandjung Atu; close northward of its edge is a detached ½-fathom reef. A drying reef, forming the west side of the inner

road, extends ¼ mile from the shore southward of Tandjung Tai Manuk. The width of the passage between the drying reefs is 300 yards; depths are from 12 to 18 fathoms. A drying reef projects 300 yards northward from the point forming the east and west arms of the inner road. The arms have depths of 7 or more fathoms.

NAVIGATION AIDS.—Two white, stone pyramidal beacons, about 400 yards apart, stand on the point forming the east and west arms of the inner road. The beacons in range 188° lead between the projecting reefs and into the inner road.

A light is occasionally shown from the head of the stone pier at Waingapu village.

ANCHORAGE.—The best anchorage is in 16½ fathoms, mud and sand, on the line of the range beacons, with Tandjung Atu bearing 106°. Small vessels can anchor in either arm of the inner road in about 12 fathoms. The west arm is larger but has a hard bottom; the east arm has firm mud. An anchor, imbedded in the north end of the reef which forms the arms of the inner road, may be used as a landfast.

Anchorage is also afforded in 19 fathoms in the outer road, a little west of the line of the range beacons. In this position, the north pyramid of the range bears 183° and Tandjung Himbu Baku (a low, mangrove point 1¼ miles west of Tandjung Pasia Manuk) bears 116°.

Anchorage is not advisable between the northwest edge of Tandjung Atu's projecting reef and the ½-fathom shoal to northward.

TIDES.—The tides at Waingapu village are mixed but predominantly semidiurnal. The average range of spring tides (semidiurnal) is 8.2 feet; of neaps, 2.6 feet. The average range of spring tides (diurnal) is 2.6 feet; of neaps, 0.7 feet. Neither the spring high tides nor the spring low tides of the two systems can coincide.

6A–11 WAINGAPU (9°38′ S., 120°16′ E.), the seat of a civil administrator, is an important shipping place for cattle. In the so-called lower village, there are some fairly large houses. The Sumbanese live on a rising slope to southeastward, as does the civil administrator. The customs official for the port is also the harbormaster.

PIER.—A stone pier at the village has a depth of 7 feet alongside the landing stage. A flagstaff is located at the root of the pier.

SUPPLIES.—Provisions and fresh well water are obtainable in limited amounts. Waingapu is connected by radio to the general telegraph network.

SUMBA—NORTHEAST COAST (CONTINUED)

6A–12 FROM TANDJUNG WATUATA TO MELOLO VILLAGE, the shore is an unbroken sand beach and ANCHORAGE may be taken almost anywhere. Kali Kadumbul, 5½ miles south-southeastward of Tandjung Watuata, enters the head of a broad bight whose south entrance point is Tandjung Maudjawa. The river mouth is blocked by a sand bar. The bight affords protected ANCHORAGE on its either side according to the direction of the wind.

Tandjung Tuak is a flat, grass-covered point marked by two tall coconut groves. Tandjung Petawang is wooded and fairly conspicuous.

MELOLO ROAD, indicated by a white pyramid BEACON on shore behind Melolo village, is an open roadstead not recommended in northerly and easterly winds. The Kali Melolo has its mouth at the village. Vessels ANCHOR in 17½ fathoms, mud and sand, with the pyramid bearing 220°. It is not advisable to approach the shore closer because the bottom rises sharply near the coastal reef.

The river mouth dries at low water. The village has a lively trade with Mima on the southeast coast of Sumba, and with Ende and Buton. Small amounts of provisions are obtainable. The larger village of Kedanga Buko is situated about 1 mile northwestward of Melolo.

FROM MELOLO VILLAGE TO TANDJUNG UNDU, there is in general no suitable anchorage because of the steep bottom and exposed coast. At Tandjung Rendi the even sand beach changes to a muddy coast with mangrove.

Tandjung Wara Djangga is an inconspicuous, wooded point. The village of the same name, westward of the point, is visible on some bearings. Praus are often seen in the drying bight 1¾ miles westward of the village.

TANDJUNG TAPI is a rocky point with vegetation and with broken rocks on the coastal reef. Between the points the uniform mangrove shore is interrupted by Pasir Tapi, a sand beach. From Tandjung Tapi southeastward the drying coastal reef advances gradually seaward until, at Tandjung Undu, it extends about 1½ miles from shore. Southward of Tandjung Tapi the coast is again sandy, with sparse vegetation. At Tandjung Matawaitembulu, 3¼ miles southeastward of Tandjung Tapi, the sand beach is interrupted by a small rocky area.

Kalimbuwara village, 1 mile southeastward of Tandjung Matawaitembulu, is recognizable by a few fairly high roofs. Praus pass over the coastal reef at high water. Nusa Manuk, 1½ miles southeastward of Kalimbuwara, is an islet lying midway on the drying, coastal reef; it has a few trees. Close westward of the islet is a large tree, which, from a distance, resembles another islet.

TANDJUNG UNDU, the east extremity of Sumba, is low and sandy. The river Menanga Bodi, which has its mouth on the north side of Tandjung Undu, is entered by large praus at high water.

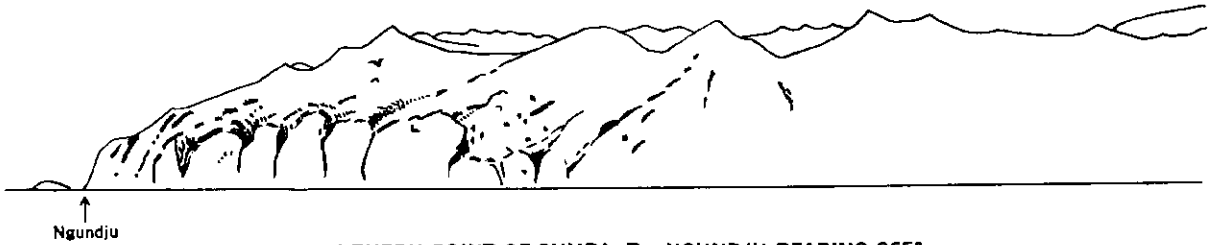
ANCHORAGE.—Reasonably protected anchorage in both monsoons is afforded eastward of Tandjung Undu in the mile-wide area between the costal reef and the lengthy coral bank rounding the east end of Sumba. Depths in the anchorage are over 10 fathoms. The coral bank's least depth of 3¼ fathoms, showing only slight discoloration, lies 3⅓ miles northeastward of Tandjung Undu; remaining depths on the bank are 6 fathoms or better. Depths of less than 6 fathoms lie close within the 10-fathom curve off the village of Kalimbuwara, mentioned above.

SUMBA—SOUTHEAST COAST

6A–13 FROM TANDJUNG UNDU TO TANDJUNG NGUNDJU, the coast is chiefly sand beach with occasional rocky stretches. Behind the beach are extensive grass-covered plains, sparsely wooded. The hinterland is terraced, with the seaward front around 500 feet high.

Except at Tandjung Ngundju, this coast is without mark to the passing vessel. The coastal flat land and the low tableland merge gradually into the mountains. There are no completely protected anchorages. Especially is there no protection from the southeast wind which is particularly strong in May and June. At this time of year even the lively coastal traffic is suspended.

TANDJUNG WATULAGA (Batu Laga) lies 8½ miles southwestward of Tandjung



SOUTHERN POINT OF SUMBA, Tg. NGUNDJU BEARING 265°

Undu. On the south side of the point an opening in the drying coastal reef affords temporary ANCHORAGE in 6½ to 9 fathoms to small ships awaiting cargo. The village of Benda is mostly invisible from the anchorage. Local knowledge is essential for using this anchorage.

TANDJUNG WARADJANGGA (Nangu Wara) is low, flat, bare and rocky. Commencing about 1 mile southward of the point a coral reef parallels the coast northeastward for 1⅓ miles. The reef has principal depths of 3¾ fathoms or more, and a least depth (about in the center) of 8 feet. At times the reef is plainly marked by discoloration; at other times the whole area is discolored by river water. About a mile westward of this reef is a shorter coral reef with a least depth of 4¼ fathoms.

TANDJUNG WARUMANGGIT (Ngaru Mangeh) lies 4 miles west-southwestward of Tandjung Waradjangga. The 3-mile-wide bight on the east side of the point affords partially protected ANCHORAGE. The drying coastal reef projects ¾ mile from shore in the area of Tandjung Warumanggit. At the west end of the drying reef is the landing place, Watu Libu, an indentation in the reef. Heavy southwesterly swells break on both sides of the indentation.

WATU LIBU landing place is not easily found, but the opening in the reef may be seen when the slope in the plateau behind Tandjung Warumanggit bears 059°. At high water, praus can pass along the shore at Watu Libu to the village of Mima about 2 miles eastward.

TANDJUNG WATUPARONU (Watu Perono) is a small projection at the head of the wide bight between Tandjung Warumanggit and Tandjung Ngundju. Tandjung Watuparonu is conspicuous for its white limestone cliffs and its low, fairly level hills marked by tall reeds and a few groves. The hills are joined to the higher land northwestward by a somewhat lower ridge. The limestone cliffs, which are first noted at Tandjung Watuparonu, recur westward for the next 2½ miles.

Vessels ANCHOR with some protection in the bight on the east and west side, respectively, of Tandjung Watuparonu, according to the wind. The east bight is clear and slopes evenly, but coral reefs, which break at low water, front the west bight just within the 10-fathom curve as follows: a 5-fathom coral patch a little more than 1 mile southeastward of Tandjung Watuparonu; a 2¾-fathom patch, with depths of 5 fathoms eastward and westward, 2 miles southward of the point; and a 2-fathom patch, with a depth of 5 fathoms ⅓ mile north-northwestward, 2½ miles south-southwestward of the point.

The Wai Djelu river, which enters the east bight 1½ miles eastward of the point, has the village of Baing, not visible from seaward, situated 2 miles upstream.

TANDJUNG NGUNDJU, the south extremity of Sumba, is a striking landmark when approached from eastward or westward in that it is a mountain spur ending in a steep cape. The cape itself ends in a short neck, partly submerged at high water, on whose end is a 151-foot hill. Close eastward of the neck is a group of high white rocks. The spur forming Tandjung Ngundju is the southerly extension of the Pengadu Sasah mountains, which, at the point, are 1,575 feet high. The spur is covered with vegetation, but several patches of white rock show through.

CURRENT must be reckoned with when navigating near Tandjung Ngundju. Eddies and weak rotary currents have been observed close southward of the point.

SUMBA—SOUTHWEST COAST

6A–14 For passing vessels, the rather conspicuous hilltops and the off-lying islands of the coastal area southeastward of Tandjung Malanggu offer good landmarks. The coastal hills northwestward of Tandjung Malanggu continue without noteworthy landmark to the west end of Sumba. The hinterland, though rising

almost 3,000 feet, is also so little varied as to offer no mark.

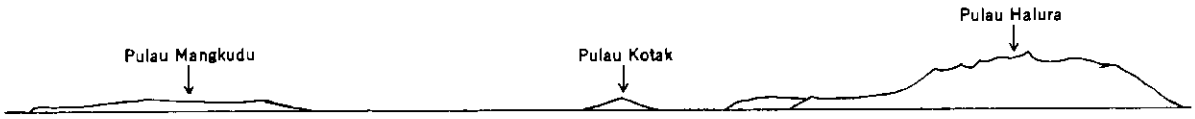
The 10-fathom curve closely follows the coast. Outside the curve (except for the off-lying islands southeastward of Tandjung Malanggu) there are dangers only 2½ miles on either side of the entrance points of Teluk Lasipu (Sipu). Although ships can ANCHOR anywhere along this coast they are not completely protected anywhere from the continual heavy swell. The bays of Malikabam (Malekaba) and Mambang (Lamombang) afford partial protection, and in them communication with the shore is almost always certain.

The CURRENT, as a rule, parallels the coast with the prevailing monsoon, at 1 mile or more offshore. The maximum rate is 1½ knots.

OFF-LYING ISLANDS.—Midway between Tandjung Ngundju and Tandjung Malanggu (Melangu), 29 miles west-northwestward, and between 3 and 6½ miles offshore, are the uninhabited islands of Halura, Kotak and Mangkudu. A drying reef joins Pulau Kotak to Pulau Halura.

PULAU HALURA (LAHALURA), rocky and covered with tall reeds and palm trees, is 1,043 feet high at its east end. The 978-foot peak in the middle of the island is a smooth cone. The west end of the island is a low, narrow point with sand beach; the point covers at high water. A drying reef fringes the south shore and west end of Pulau Halura, and on the reef is a conspicuous pillar rock close southward of the west end of the island. The reef breaks heavily.

Praus find satisfactory anchorage along the north and east coasts of Pulau Halura.



SOUTH COAST OF SUMBA, PULAU HALURA 12 MILES, 056°

PULAU KOTAK, on the west edge of Pulau Halura's drying reef, is a 217-foot-high dome, with sunken rocks close off its northwest side. Pulau Mangkudu (Mangudu), 2⅔ miles westward of Pulau Halura, is relatively low, and has a sand beach on all sides. A drying reef, which breaks heavily, fringes the south and west side of Pulau Mangkudu. Trees grow in the central and west part of the island.

CURRENTS.—Eddies and weak rotary currents have been observed around these islands. A strong current frequently runs between Pulau Mangkudu and the west end of Pulau Halura's fringing reef.

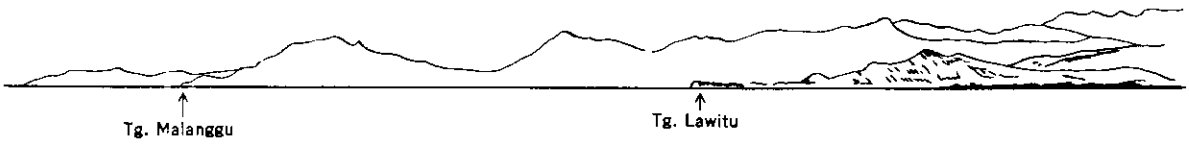
FROM TANDJUNG NGUNDJU TO TANDJUNG MALANGGU (MELANGU) the coast trends 29 miles northwestward. Tandjung Karera, 10 miles west-northwestward of Tandjung Ngundju, is rocky and steep. Two high rocks, almost adjoining the shore, stand in front of the point; the east rock is rectangular and the west one is pointed. Close eastward of Tandjung Karera is a sand beach at the mouth of a stream.

Tandjung Wunu, close westward of Tandjung Karera, is rocky and steep. A shoal head with less than 1 foot of water over it lies 1½ miles westward of Tandjung Wunu, in a position ¾ mile offshore. Tandjung Kahangaela (Kahanga Eia) is a bare hill fronted close offshore by two high rocks.

TELUK TARABA is entered between Tandjung Kahangaela and Tandjung Hauli, 3¼ miles west-northwestward. The latter point rises 230 feet to a bare plateau with whitish sides. Teluk Taraba is of some importance because it has easy communication with the hinterland over a plain which extends to the foot of the Pegunungan Massu. Sungai Taraba flows through the plain and has its mouth

at the head of the bay. The mouth is broad but is occupied by a very shoal bar over which there is always heavy surf.

Teluk Taraba offers the possibility of ANCHORAGE in 6½ to 10 fathoms, especially in its west part where depths shoal gradually. The anchorage is somewhat protected (more so in the west monsoon) by the high, protruding Tandjung Hauli. The islands off-lying this part of the coast afford some protection from southerly swell. In bad weather, protection can be sought behind Pulau Halura.



Tg. LAWITO 5 MILES, 330°

6A-15 TANDJUNG LAWITU (Lewitu), 6¼ miles northwestward of Tandjung Hauli, is red rock and sparsely wooded. Close behind the point the land rises to two adjacent hills, 236 feet and 630 feet high respectively. A drying rock lies a little less than ⅓ mile west-by-northward of Tandjung Lawitu. A cleft in the rocks on the west side of the point opens to a sand beach. Here, protected from breakers, landing is made at high water or half tide.

The coast between Tandjung Lawitu and Tandjung Malanggu is rather bare and rises gradually; there is continuous surf.

TANDJUNG MALANGGU (Melangu), with the ridge behind it, is one of the best marks for piloting along this coast. The point has a projecting knob close off which are two rocks, the higher rising 384 feet. The knob is joined by a sharp ridge to the darker land immediately behind, which land rises 1,594 feet. About 1½ miles eastward of this summit, and joined to it by a low saddle, is the relatively isolated, sharp peak Hawela, 1,722 feet high. The peak Hambai, 2,385 feet high, 2 miles northeastward of Hawela, is also noticeable.

FROM TANDJUNG MALANGGU TO TANDJUNG LAIKAMENI (Lahikememe), 30½ miles west-northwestward, the mountains offer no marks save for an occasional coastal hill. Teluk Wahang, on the northwest side of Tandjung Malanggu, has a sand and rock shore on which there is almost continual surf. Larger villages are to be seen in this vicinity. The 1,102-foot hill 6¼ miles northward of Tandjung Malanggu has an almost bare top. Tandjung Laparuno is marked by three sharp pillar rocks close offshore; the rock farthest offshore is conspicuous for its needle shape.

TELUK MALIKABAM (MALEKABA) AND TELUK MAMBANG (LAMOMBANG), entered about 1½ and 4⅔ miles northwestward of Tandjung Laparuno, offer the best possibility for ANCHORAGE on the southwest coast of Sumba. Shielded by the fringing reef on the southeast side of both bays, protected anchorage in the Southeast Monsoon is afforded. In the west monsoon, this is less the case although communication with the shore is generally assured. Both bays have a sand beach behind which the ground is marshy. During the last of the west monsoon, landing is easiest near the stream entering the northwest part of Teluk Malikabam; a prau shed stands nearby.

The coast between the above-mentioned bays consists of steep, but not high, limestone hills partially fronted by sand beach. Occasional bare, white cliffs are to be seen. Watu Bakul, midway on this coast, is an 89-foot-high limestone rock sparsely vegetated; it lies on the fringing coastal reef.