

Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.
SECTOR 6 — CHART INFORMATION

SECTOR 6

SOUTH COAST OF SHIKOKU AND EAST COAST OF KYUSHU

Plan.—This sector first describes the S coast of Shikoku from Kamado Misaki (33°50'N., 134°45'E.) to the W side of the S entrance to Kii Suido, and to Komo Saki (32°54'N., 132°29'E.) on the E side of the S entrance to Bungo Suido. Next the E coast of Kyushu from Tsurumi Saki (31°56'N., 132°05'E.), on the W side of the S entrance of Bungo Suido, to Sata Misaki (30°59'N., 131°40'E.), the S extremity of Kyushu on the N side of Osumi Kaikyo, is described. Osumi Kaikyo, the strait between the S end of Kyushu and the Osumi Gunto group of islands is described last.

Shikoku—South Coast

6.1 The S coast of Shikoku is divided into three parts by Muroto Saki, in the E, and Ashizuri Misaki, in the W; both capes project S. The E part, between Kamoda Misaki and Muroto Saki, forms the W side of the entrance to Kii Suido. The central part, between Muroto Saki and Ashizuri Misaki, is Tosa Wan, to the S of which is the so-called Tosa Offing. The W part, between Ashizuri Misaki and Komo Saki, forms the E side of the entrance to Bungo Suido.

In the E half of this coast there are virtually no coastal indentations and very few safe anchorages. In the W half there are sheltered anchorages for large vessels in such bays as Susaki Wan and Sukumo Wan. Kochi Ko and Susaki Ko, both ranking as important ports, are in Tosa Wan.

Winds—Weather.—This general area often has heavy rains in the spring as the Asian Continental High weakens and high pressure develops over the ocean area to the S of Japan. The rains come when a low pressure system passes on the Japan Sea side of Japan and causes warm humid air to move into the Shikoku S coast area.

Precipitation during the early summer rainy season totals about 3,500mm. Torrential rains, which can register more than 1,750mm in one day, are mostly caused by typhoons and are most frequent during August and September.

When a typhoon is approaching, ocean swells usually begin to appear 3 to 4 days before it arrives.

Radiobeacon and radio direction finding stations at Muroto Saki and Ashizuri Misaki provide weather reports for ships passing along this coast.

Tides—Currents.—Between Kamoda Misaki and Muroto Saki, ocean currents set mainly NE and SW following the coastline. In summer, a SW flow at the rate of 0.6 to 1.0 knot is more frequent, while in winter the flow is more frequently NE at a rate of 0.3 to 0.5 knot.

Inside Tosa Wan the currents are greatly affected by changes in the Kuroshio main current flowing E through the Tosa Offing. Generally during the summer and autumn, when the Kuroshio moves close to the shore at a rate of 4 knots, a counterclockwise current is produced inside the bay. The rate at the Muroto Saki end of the bay is about 1 knot (occasionally 2 knots), but it usually drops gradually to 0.8 knot at the head of

the bay and to a rate of 0.3 to 0.5 knot at the Ashizuri Misaki end of the bay. Surface water temperature during the summer reaches a maximum of 29°C on the E side of the bay, while in a small area in the W part there may be a cold water mass with a relatively low temperature reading. When the mainstream of the Kuroshio swings away from the Ashizuri Misaki area and heads toward Muroto Saki, the counterclockwise current may appear only in the W portion instead of in the bay as a whole. Alternately, a branch of the Kuroshio flowing N from the middle of the bay may split into E and W segments and produce two rotary currents, one circling right and the other left, inside the bay. This phenomenon usually occurs in the spring. In the winter a weak counterclockwise current dominates the interior of the bay flowing at a rate of 0.5 to 0.8 knot. The water is 16°C in the interior of the bay and 18°C at its outer limits.

Between Ashizuri Misaki and Komo Saki, the currents generally set E, however, when the Kuroshio is flowing at a distance from the coast, left-circling currents tend to appear near the entrance to Bungo Suido causing the local current to set W. In the channel between Oki-no-Sima and Oshime Hana, the current usually sets SE when the mainstream of the Kuroshio is flowing near the coast and NW when the Kuroshio mainstream has moved away from the shore. The SE current, locally known as Matanuki, runs strong, especially when it is reinforced by a NW wind. When a S wind is blowing, high waves occur.

In this area, the flood tide flows W and the ebb E. The reversal of flow occurs within 1 hour after HW or LW. Mean tidal velocity during spring tides is less than 0.5 knot. Generally, the tidal flow is complicated by the strong influence of the diurnal tide and when the declination of the moon is great there is frequently only one tide per day.

Off O Shima, both semi-diurnal and diurnal tidal currents are left-circling. At a point 1 mile SE of the island, the semi-diurnal tides set WNW and ESE and reach their maximum velocity (mean velocity 0.5 knot during spring tides) within 1 hour after HW and LW. At a point 3 miles SE of the island tides set NE and SW and reach maximum velocity (mean velocity is 0.5 knot during spring tides) 4 to 5 hours after HW or LW. At the first location the diurnal tides set NE and SW at maximum velocity, while at the latter location their set is NW and SE at maximum. Accordingly, when the declination of the moon is great, the tidal pattern is extremely complex. Generally, the W and SW currents reach maximum velocity within 1 hour after LW, and E and NE currents reach their maximum speed within 1 hour after HW.

Off Muroto Saki, the flood tide sets WNW and the ebb tide sets ESE, with reversals coming at the same time as HW and LW. Mean velocities are 0.5 knot during spring tides. Both the flood and ebb tides are markedly uneven when the declination of the moon increases. One E current and W current following it become markedly stronger than the other, so that when the moon's declination becomes great there may be only one tide a day. This strong E current occurs at noon during spring, in the

morning during summer, at night during autumn, and in the afternoon during winter.

Off Nuno Saki, the flood tide sets W and the ebb tide E. The reversal of direction occurs at the time of HW and LW. Maximum velocities do not exceed 0.5 knot.

Off Ashizuri Misaki the semi-diurnal currents set SW and NE, attaining a maximum rate about 2 hours after HW or LW. Maximum velocities do not exceed 0.4 knot. The diurnal tidal currents set S and N and attain a rate of 1 knot when the declination of the moon is great. This results in a complex tidal pattern in which one S tide and one N tide following it may become unusually strong. Occasionally, when the declination of the moon is great, there is only one tide per day. The strong N tide occurs about noon during spring, in the morning during summer, at night during autumn, and in the afternoon during winter.

The tides in this area are much the same as those of the S coast of Honshu and do not differ much from place to place. Before and after a new or full moon in spring and autumn high tides occur twice daily with a range of 1 to 2m.

Except before and after a new or full moon in spring and autumn, daily tides are irregular in their times and heights. There is greater variation in the times of high tides than in the times of low tides, which is very slight. The heights of high tides are small and of low tides great.

In periods of great differences in tides, during a quarter moon in the spring and autumn and during a full or new moon in summer and winter, the time when the low tide occurs varies according to the season, usually in the afternoon in spring, at noon in the summer, in the morning in autumn, and at night in winter.

Directions.—Local authorities recommended routes for large vessels sailing off Shikoku are generally, as follows:

1. Eastbound vessels sailing from the Bungo Suido area, with Osaka Wan as their destination, should pass 5 miles S of Ashizuri Misaki and Murato Saki as they head toward the Kii Suido area. Vessels should refer to the chart and note the fish haven obstruction 12.5 miles from Ashizuri Misaki on a bearing of 242°. Because this route will intersect that of vessels sailing S in the Tomogashima Suido, along the W side of Kii Hanto, caution is required when arriving off Hino Misaki. To reduce the angle of intersection and to facilitate evasive movement, it is the general practice to take a somewhat round-about course, heading from Muroto Saki toward a point S of Hino Misaki, then head N toward a point 4 miles W of Hino Misaki.

2. Vessels bound for the Tokyo area from S Kyushu should proceed along a route beginning about 10 miles SE of Toi Misaki, passing 15 miles S of Ashizuri Misaki and Muroto Saki, and then head toward Shiono Misaki.

3. The westbound route starts 3.5 miles S of Shiono Misaki and passes 2 miles S of Muroto Saki and Ashizuri Misaki. Because it intersects the route for vessels heading for Osaka Wan from the Bungo Suido area, caution is required.

Kamoda Misaki to Muroto Saki

6.2 This stretch of coast is generally unindented except for several small bays in the central and N parts. A chain of

mountains and hills ranging from 300 to 600m is located 0.5 mile from the shore, with higher mountains inland.

The 20m depth curve is roughly 0.5 mile offshore. The detached island, I Shima, is off Gamado Misaki and in the center portion of the area are the islands O Shima, Tsu Shima, and Deba Shima off Mugi Ko; several dangerous reefs are among these islands. South of Deba Shima, there are no dangerous reefs outside the 20m curve.

Aspect.—Okage Yama (33°45'N., 134°30'E.) in the N, O Shima and Takega Shima in the central portion, and Sembonga Mine, Shozoku Toge, Onimaru Yama and Shijuna San in the S, are prominent. Numerous headlands in the N and central portions of this area serve as good landmarks. Principal lighthouses, about 5.4 miles apart, are situated at I Shima, Kamoda Misaki, Asebino Hana, Deba Shima, Kannoura, Sakinohama (range beacon), and Muroto Saki.

When visibility is poor, radiobeacon and radio direction finding stations are available at Muroto Saki and Hino Misaki.

Caution.—There are numerous dangerous reefs between Kamoda Misaki and I Shima. Shoals are at Yukino Se, off Asebino Hana and in the vicinity of Mugi Ko.

Many fixed fishing nets, some extending as much as a mile offshore, are found along this coast especially in the S part and mainly from October to August.

There are no harbors capable of sheltering large vessels, however, vessels up to 1,000 grt can be berthed at Kannoura Ko and vessels up to 300 grt can be accommodated at Hiwasa Ko, Mugi Ko, and Asakawa Ko.

Tosa Bae (33°05'N., 134°38'E.) is a detached bank about 25 miles ESE of Muroto Saki, with a depth of 139m. In fine weather, with a light wind, tide rips may be observed along its N edge.

6.3 Kamoda Misaki (33°50'N., 134°45'E.), the W entrance point at the S end of Kii Suido, is the E point on Shikoku, has brown cliffs, and is marked by a light.

From Kamoda Misaki to O Shima, the coast is rocky with cliffs and no indentations except at Yuki Ko and Iwasa Ko, in the central portion. The water is generally steep-to but dangerous rocks are found.

I Shima (33°51'N., 134°49'E.), an island 3 miles ENE of Kamoda Misaki, is marked by a light.

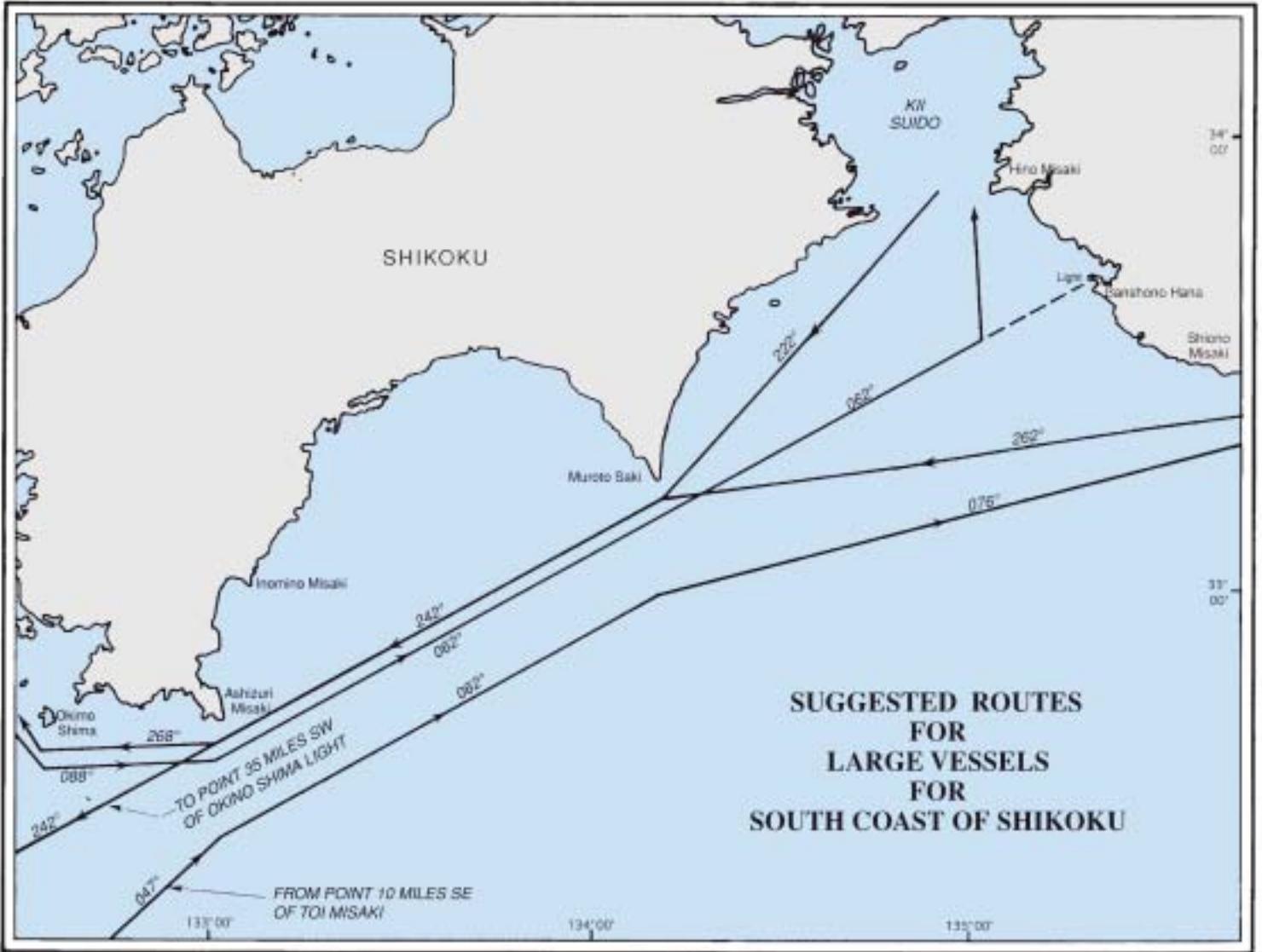
Kanokubi Saki, a brown headland 6.4 miles WSW of Kamoda Misaki, projects S from a sandy isthmus and looks like an island from a distance. A light is shown on the coast close NE of the isthmus. Another light is situated on the coast approximately 1.8 miles NE.

Nuno Shima, a wooded island 2.7 miles WSW of Kanokubi Saki, has a dark color and a sharp peak.

Asebino Hana, a cliffy headland covered with small trees, is 2 miles SW of Nuno Shima. It is marked by a light and two islets are to the E of it; the S islet is tall and steep-sided and the N islet is low and cone shaped. A fish haven lies 1.5 miles SE of the light.

Okage Yama (33°45'N., 134°31'E.), a 460m hill 2.7 miles WNW of Asebino Hana, is tree-covered, helmet-shaped, and visible from a distance.

Caution.—There are many dangerous rocks and reefs in the area between Kamoda Misaki and I Shima.



A ridge extending SSE 0.3 mile from a point on the coast 0.6 mile NE of Kanokubi Saki is marked by several above-water rocks at its outer end.

Okino Bae, a reef 7.2m deep, is 0.7 mile E of Nuno Shima.

Yukino Se, a reef 2.6m deep, is 1.3 miles E of Asebino Hana. It is easy to detect when there are breaking waves, but it is especially dangerous when the sea is calm. Another reef is 0.4 mile to the SE.

A 16m reef is 1.7 miles N of the NW end of O Shima and about 1 mile offshore. There is a reef, with a least depth of 7.8m, 4.4 miles NNE of O Shima. There are fish havens situated here also.

O Shima to Muroto Saki

6.4 There are many small harbors along this coast including Mugi Ko, Asakawa Ko, Nasa Ko, Shiskikui Ko, and Kannoura Ko. Half of the coastline is cliffy shores and the other half sandy beaches. The S 17 miles of the coastline has fairly uniform terrain consisting of narrow sandy or stone beaches backed by highlands pressing close to the shore. There are many detached islets and dangerous reefs along the N portion of this coast, but in the S portion the water is deep close-in and no submerged dangers with depths less than 10m are beyond 0.3 mile from the shore except Muroto Saki.

The waters near O Shima are fishing grounds for boats out of Mugi Ko and many fishing boats may be encountered.

On the W side of O Shima, a small bay provides protection from other than W winds. The bottom is deep, but strong winds may be encountered at times. The fishing port on the N side of Deba Shima is shallow and limited to vessels under 50 grt. Tomoura, at the mouth of the Kaifu Gawa, and its neighbor to the S, Nasa Ko, are used only by local vessels.

O Shima (33°38'N., 134°30'E.) is a wooded islet, 216m high, with steep cliffs. A rocky islet, 23m high, is close N.

Tsu Shima, 1.6 miles W of O Shima, is a wooded islet, 43m high, with two peaks connected by low land.

Kotsu Shima, 0.3 mile SW of Tsu Shima, is actually two small islets connected by above-water rocks. The S islet is 26m high.

Deba Shima (Teba Shima), 1 mile WSW of Tsu Shima, is a sloping island, 77m high, with small trees and cultivated plots on the slope. A light is on its highest point. Submarine cables run from the N side of Deba Shima to the coast. There is a boat harbor on the N side, protected by a breakwater, on which stands another light. Fish havens lie about 0.5 mile and 1.5 miles E of the light.

Kobari Saki, on the E side of the entrance to Mugi Ko, is a red cliff headland covered with trees. Three fishery radio towers and a radio station marked by white lights, are prominent. A detached breakwater lies S of the entrance. When anchoring, care should be taken to avoid submarines cables laid from Magi Ko to Deba Shima. Two fish havens lie close W of the submarine cables.

Hotoke Saki, on the W side of the entrance to Mugi Ko, is a dark headland covered with small trees.

Ajiro Saki, on the S side of the entrance to Asakawa Ko, is a black headland with cliffs; it is 84m high and wooded at the top. Between this cape and the mouth of Kaifu Gawa, about 2.2

miles to the SSW, is a sandy beach, 1.5 miles long covered with dark pine trees.

Asakawa Ko, a small harbor, is entered N of Ajiro Saki. It is protected by breakwaters and a light stands on the head of the E breakwater.

The harbor affords temporary anchorage, in depths of 5 to 20m, sand, except during winds from between NE and SE.

There is a quay to the W of the root of the E breakwater with a depth of 4m alongside.

Nasa Saki, on the S side of the mouth of Kaifu Gawa, is a wooded headland, 99m high. An islet, 68m high, is in front of the headland and is remarkable for its tall trees.

6.5 Chino Saki (33°35'N., 134°22'E.), 0.5 mile S of Nasa Saki, is a narrow 177m headland projecting E.

Takega Shima, 3 miles SW of Chino Saki, is a black, 98m high, thickly-wooded island. From the S it is visible for 20 miles.

Kannoura Ko, the largest port on this part of the E coast of Shikoku, is not suitable for large vessels, but has a quay with depths of 3 to 5m alongside that can berth vessels up to 1,000 grt. Vessels up to 500 grt can use the limited anchorage. Good holding ground, hard mud, is found in depths of 4 to 12m.

Kusu Shima, about 0.3 mile WSW of Takega Shima, is a wooded island 59m high at tree top level.

Senbonga Mine (33°29'N., 134°12'E.), about 7.5 miles WSW of Takega Shima, is a 922m high mountain rising conspicuously above surrounding highlands.

Shozoku Toge, almost 3 miles WSW of Senbonga Mine, is a 1,083m high mountain.

Onsaki Yama, about 2.8 miles SE of Senbonga Mine, is a 692m high wooded mountain. A small depression on its W slope makes it easily identifiable from the S. A large red bare spot, about 1.2 miles NE of the summit, is visible from the E or S.

Shijuji San, about 4 miles N of Muroto Saki, is a 383m high, wooded, cone-shaped hill; an indentation on the W slope makes it easily identifiable from a distance.

Along the coast between Matsuga Hana and Muroto Saki, four lights are shown as indicated on the chart.

Muroto Saki (33°14'N., 134°11'E.), the S point on the E half of Shikoku, is a headland jutting S. A ramark transmits from a light standing on Muroto Saki. A radiobeacon transmits from a mast 0.3 mile N of it.

Caution.—A chain of above-water rocks and rocks which dry at low tides stretches from NE of Tsu Shima to S of the island.

There are numerous submerged rocks dangerous to navigation surrounding O Shima, Tsu Shima, and Deba Shima. There are fish havens E and W of O Shima. Vessels should refer to the chart. There is a stretch of water, 1.2 miles long, between Deba Shima and Hotoki Saki to its N, but the navigable channel, with depths of more than 10m, is narrowed to only about 0.3 by a 0.25 mile long ridge extending S from Hotoke Saki. This makes it unsuitable for large vessels.

6.6 Kobarino Shi (33°39'N., 134°26'E.), a reef 8.7m high, is SE of Kobari Saki at the E side of the entrance to Mugi Ko. There are also many other dangerous rocks along the entire coast to the NE.

There is a scattering of dangerous rocks offshore from Ajiro Saki, at the S side of the entrance to Asakawo Ko.

There are many submerged rocks and rocks which dry at low tide within a 0.5 mile radius of Muroto Saki, but outside of that area the water is deep and safe.

A sunken wreck is 0.6 mile ESE of Matsushitaga Hana, S of Kannoura Ko.

Submarine cables extend from Deba Shima N to the shore at Mugi Ko, and an underwater water pipe extends NW from Deba Shima to the mainland.

Tosa Wan

6.7 Tosa Wan is a large open bay, roughly semicircular in shape, with about 66 miles of shoreline between Muroto Saki and Ashizuri Misaki (32°43'N., 133°01'E.). The NE shore of the bay is fairly smooth, while the NW shore has deep inlets at Kochi Ko, Uranouchi Wan, and Susaki Wan. The W shore has several large and small coves. The land behind the coast, except for a plain in the Kochi area, is generally mountainous, with mountains and hills pressing against the shoreline.

The 20m curve runs generally about 1 mile from the shore E of Shirano Hana, at the head of the bay, except near Muroto Saki. West of Shirano Hana, the 20m curve is generally no more than 0.5 mile offshore except where there are inlets. There are no dangerous reefs in Tosa Wan more than 1 mile offshore, except in the vicinity of Susaki Wan.

Aspect.—Conspicuous mountains in this area are Shijuji San, Shozoku Toge, and Akiba San, on the NE side of the bay; Sekko San, Yahazu Yama, and Irazu Yama, on the NW side of the bay; and Gozaishormori, Imano Yama, and Shirao San, on the W side of the bay.

The principal lights are at Muroto Saki, Hane Saki, Tei Saki, Kochi, Shirano Hana, Okitsu Saki, Ino Misaki, Nishido Saki, Nuno Saki, Kubotsa Saki, and Ashizuri Misaki.

There are only a few dangerous detached reefs in the bay, which include Taka Bae, at the entrance to Aki Gyoko on the NE bay shore; Ishiga Hae and other reefs on the S side of the Ko Shima outside of Susaki Wan; and Asa Bae, off Shiwa Saki.

Radiobeacons and radio direction finding stations are at Muroto Saki and Ashizuri Misaki, and can be used during reduced visibility.

Fixed fishing nets are found (mainly from October through August) between Hane Saki and Tei Saki on the NE bay shore. Numerous fish havens lie up to 5 miles offshore between Kochi Ko and Muroto Saki. Fish havens are also found offshore along the entire bay.

Wave recording buoys are moored in Tosa Wan in position 33°15'N, 133°30'E and position 33°09'N, 133°39'E.

Depths.—Limitations.—Vessels up to 50,000 grt can berth at Susaki Ko, while vessels up to 5,000 grt can be berthed at Kochi Ko. Vessels of 200 to 300 grt can berth at Murotsu Ko and Kamikawaguchi Ko.

Anchorage.—Susaki Ko is the only harbor on the S coast of Shikoku that can provide shelter for large vessels.

Muroto Saki to Simo-Ryuzu Saki

6.8 The 34-mile coast between Muroto Saki and Simo-Ryuzu Saki has few coves or inlets. Between Muroto Saki and

the mouth of Nahari Kawi (33°25'N., 134°01'E.) there is a 13-mile stretch of rocky shores and stone beaches, then W to Simo-Ryuzu Saki there is a series of sand beaches. Except for the fairly broad plain W of Tei Saki (33°31'N., 133°46'E.) and the flatlands near the river mouths, the terrain in this area is mountainous right up to the shoreline.

The 10m curve is close to the shore, generally within about 0.3 mile. There are no dangers outside the 10m curve except for Taka Bae (33°29'N., 133°54'E.), off the mouth of Aki Kawa, and Sambommatsu Reef (33°31'N., 133°37'E.), E of Kochi Ko.

Murotosaki Ko is a small fishing port about 2 miles NNW of the light at Muroto Saki. It is limited to vessels under 100 grt.

Gyoto Saki, 4.5 miles NW of Muroto Saki, is a rocky headland, 120m high, topped by dark woods.

Onigamori, 7.2 miles N of Muroto Saki, is a 650m high mountain. Kasagi Yama, about 2 miles W of Onigamori, is a 598m high mountain.

Hane Saki, about 10.4 miles NW of Muroto Saki, is a headland marked by a light.

Tono Hama, about 16 miles NW of Muroto Saki, is marked by a light.

Kamino Mine, about 17 miles NW of Muroto Saki, is a 632m high mountain.

Aki Gyoko, about 4 miles W of Kamino Mine, is a small fishing port used only by local vessels. Taka Bae, a 2.3m reef, is about 1 mile S of the port.

Tei Saki, about 7.5 miles W of Aki Gyoko, is a headland marked by a light. Taiho San, a wooded hill 106m high and 1 mile to the NE, is prominent.

Akiba Yama, about 5 miles N of Tei Saki, is a wooded hill with a sharp peak. This hill is 509m high at tree-top level.

Kongo San, about 4 miles NW of Tei Saki, is 287m high at tree-top level.

Kochi Ko (33°30'N., 133°34'E.)

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6.9 Kochi Ko (Koti Ko), a port of entry, is at the head of Tosa Wan. Kochi Chi, the center of which is NW of the harbor, is the largest city on the S coast of Shikoku.

The port lies in the estuary of Kagami Kawa and is entered between a breakwater extending E from Kami-Ryuzu Saki and a breakwater extending SE from Tanesaki Hama, which lies on the N side of the harbor entrance. A light stands at the head of each breakwater. A light stands at the E end of a detached breakwater, 0.23 mile ESE of the S breakwater light. Another detached breakwater 0.4 mile N of the S breakwater.

Winds—Weather.—Winds are predominantly between the W and NW at night and in early morning. By 1400, winds between S and E are about as frequent as the westerlies in winter, and in summer the westerlies predominate. The average winds here are light and in July, 81 per cent of those observed at 0600 and 1800 were below 3 knots.

Tides—Currents.—Spring tides rise 2m and neap tides rise 1.5m. Offshore, the flood tide sets SW and the ebb tide sets NE, both at a rate of less than 0.5 knot. At the harbor mouth, the flood tide sets W and the ebb tide sets E, reversing at

approximately HW and LW and attaining a maximum rate of 1.1 knots.

Depths—Limitations.—The least charted depth in the fairway is 7m. Mariners are advised when navigating the entrance channel, because the depths are occasionally less than charted. The fairway is continually being dredged. The entrance is winding, long, and narrow, subject to strong tidal currents, and storms cause drifting sands. The Urati Ohashi Bridge spans the harbor entrance from a point E of Iso Saki to the N side of the port. The height of the bridge is 39m. Three overhead cables run from the mid-slope on Obata Yama, on the E side of the port, to the W side. The lowest cable has a vertical clearance of 45m.

A submarine pipeline is laid across the narrows close S of the overhead cables.

A designated traffic route runs from the entrance at the breakwater to Wharf No. 1 at the head of the port. Kochi Fairway is the S part of this traffic route and navigation control is in effect in this fairway.

Ushioe Wharf has a length of 390m, a depth alongside 7m, and a capacity of 5,000 grt. Higashi Ushioe Wharf has six berths, with lengths of 260 to 315m, and a depth alongside of 7m. These berths can accommodate vessels of 3,000 and 5,000 grt. Nida Logs Wharf has lengths of 130m and 140m, with depths of 5m and 7m alongside. This wharf can accommodate vessels of 5,000 and 2,000 grt. The largest vessel accommodated was 5,000 grt, with a 6.5m maximum draft, at the public wharves.

Aspect.—Simo-Ryuzu Saki, a headland marked by a light, and the white buildings of Katsurahama Health Center to the W, are all good marks for incoming vessels. A white signal station on the summit of Shiro Yama is prominent.

Pilotage.—Pilotage is not compulsory but necessary unless master is well acquainted with the locality. Pilots are arranged for in advance and board in position 33°28.5'N, 133°35.2'E.

Vessels over 1,000 grt, or tankers over 500 grt, intending to enter the Kochi Channel should report its ETA to the harbor-master by noon on the day preceding its arrival. Vessels intending to depart through the same channel should report the planned time of getting underway to the harbor-master by noon on the day preceding the departure.

Signals.—The Katsurahama Signal Station is at the foot of the breakwater at the harbor entrance and guides entering vessels. The Urato Signal Station provides navigation control for departing vessels.

Anchorage.—The quarantine anchorage is 1 mile SSE of Simo-Ryuzu Saki.

Caution.—Shoals close to the Tanesaki shore are marked at their outer edge by lighted buoys. A reef, 3.8m deep, is on the inner side and near the middle of the harbor entrance S breakwater. A lighted buoy marks the reef. Ferries cross the fairway regularly from the mouth of Nagahama Kawa to the shipyard N of Tanesaki. Submerged pipes and cables are inside the harbor. A dumping ground is about 1 mile SE of Simo-Ryuzu Saki.

A wave recorder lies 1.3 miles SW of Shimo Ryuzu Saki and a submarine cable connects it to the shore 0.2 miles W of Shimo Ryuzu Saki.

Simo-Ryuzu Saki to Okitsu Saki

6.10 This 27-mile stretch of coast has many covers and inlets, including Uchiura Wan and Susaki Wan. The shoreline consists mostly of steep cliffs except for a straight sand beach extending 7 miles between Simo-Ryuzu Saki and Hagi Saki. The land behind the shoreline is almost entirely high mountains with a few plain areas.

The water along this coast is generally deep close-in, but there are some dangerous reefs about 1 mile from the shore in some places.

The only good anchorage is at Susaki Wan. Uchiura Wan has shoals across its entrance preventing access and other inlets can only serve as temporary anchorages when the winds are from the W to N.

In many places near the headlands along this coast fixed fishing nets may be found up to 1 mile offshore, especially from December through May.

Shirone Hana (33°26'N., 133°28'E.), 7 miles SW of Simo-Ryuzu Saki, is a cliffy 115m high headland marked by a light.

From Shirone Hana to Ko Shima, at the E side of the entrance to Susaki Ko, there are several rocks and reefs extending up to 1 mile offshore.

Higashi-Kuwata Yama and Nishi-Kuwata Yama, about 3.2 miles N of Susaki Ko, are twin hills, one 675m high and bare and the other 769m high and wooded, are on an E/W axis, have a horseback profile, and are visible from a distance.

Torigata Yama (Yahazu Toge) and Irazu Yama, about 12.5 miles WNW of Susaki Ko, are twin mountains, one 1,459m high with a sharp peak and the other 1,336m high with a double peak, are on a N/S axis and are conspicuous from a distance.

Susaki Ko (33°23'N., 133°18'E.)

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6.11 Susaki Ko is entered through Susaki Wan, which offers the only good anchorage for large vessels on the S coast of Shikoku. The bay interior divides into two inlets, Nomi Wan, extending to the E, and Susaki Ko, extending to the N. Along the E side of the bay is Nomi Hanto, a peninsula extending S. Off the S side of peninsula is Ko Shima with the islands of Nakano Shima and He Shima to the W of the tip of the peninsula. Mountains press close to the shore all around the bay, making the coast a series of cliffs. The center of the bay is quite deep, but the area around the above-mentioned islands and off the headlands of the W shore is marked by extensive reefs.

Susaki Ko, at the head of Susaki Bay, is a port of entry. The port is in a long and narrow inlet extending N. Rimmed with hills protecting it from winds, it is the best harbor on the S coast of Shikoku. In bad weather, most vessels sailing in the Tosa Offing take shelter here. Several times a year strong NE winds give trouble to vessels in port.

Near the entrance to the port and near Ishiga Hae (33°19'N., 133°19'E.), there are many fishing boats.

There are seiches here, with periods of from 18 minutes to 40 minutes and with amplitudes of 0.2m.



Susaki Ko entrance from S

Winds—Weather.—There are many rainy days from April to June and in September. Many stormy days are in August and September. Fog is prevalent in March and April.

Depths—Limitations.—The harbor entrance is 0.8 mile wide, but after passing Yamazaki Hana, marked by a light, the channel suddenly narrows to 250m, then widens again as it penetrates inland. Depths within the port are 6 to 16m, mud bottom; the channel depth limitation is 8.4m. Vessels of up to 15,000 dwt may be berthed at the public wharves. Nittetsu Mining dolphins will berth a vessel up to 50,000 dwt, with a maximum draft of 14m.

A detached breakwater 0.4 mile S of Yamazaki Hana Light. A light is shown from the E end of the breakwater.

The aximum tidal range is 2m; the minimum is 0.25m.

Aspect.—In addition to the mountains discussed above in the port description, Ko Shima, on the E side of the outer harbor, is very conspicuous because of its sharp peak. Kajo San, 143m high and close N of the city, and two radio towers on the S side of the city are good marks for entering the port.

Pilotage.—Pilotage is not compulsory. The pilot boards approximately 2 miles S of the harbor limit.

Anchorage.—Vessels should anchor clear of the reef extending about 0.2 mile NW from Konaga Saki.

Susaki Ko has a good anchorage, in 10 to 12m, with Kajo San bearing 257° and Fujiga Hana, (Hushiga Hana.), at the head of the harbor, bearing 347° .

Directions.—Proceed toward Futanashima Light in Kure Ko on a bearing of 310° from S of the Isshi Haya (Ishiga Hae) Lighted Buoy. Once the latter light bears 054° , change course and head toward the summit of Kajo San, N of Susaki, on a course of 002° . After entering the harbor and passing Yamazaki Hana, change course to 069° and head toward the silo about 0.5 mile NE of that point. When a tank situated 600m NE of the point is abeam to starboard, change course to 045° and head toward a tank 400m NNE of Shibu Saki ($33^{\circ}23'N.$, $133^{\circ}18'E.$). Finally, proceed on a course of 349° toward two silos on Fujiga Hana and enter the anchorage.

Caution.—In the E approach, Tsuboishi Baye, a rock that dries 7m, about 0.7 miles E of Ko Shima, is the outermost danger of a string of rocks that stretches NNE to the shore. Between Ko Shima and Isshi Haya there is a string of several charted dangers.



Kure Ko Light

Coastal Features (continued)

6.12 Hiuchigamori (33°17'N., 133°12'E.), about 7.5 miles SW of Susaki, is a wooded hill, 590m high, with a sharp conical peak. It is highly visible except from S of Otsu Saki.

Shiwa Saki (33°13'N., 133°15'E.), about 10 miles S of Susaki Ko, is a pine-covered 130m high headland identifiable from a distance.

Okitsu Saki (Okitu Saki), 4.5 miles SSW of Shiwa Saki, is a sheer-cliffed headland on the E side of a peninsula jutting to the SE. The highest point is a wooded 218m high hill, Misaki Yama. The peninsula appears as an island from a distance.

Gozaishyo Mori, about 3.8 miles WNW of Okitsu Saki, is a 658m high wooded hill with a sharp peak. It is conspicuous except when seen from N of Okitsu Saki.

Asa Bae, a reef with a depth of 13.9m, lies 1 mile E of Shiwa Saki.

From Okitsu Saki to Ashizuri Misaki the headlands of Okitsu Saki, Ino Misaki, and Nuno Sakijut lie SE from the shore. Each headland has a bay on its SW side. The mountains on this stretch of coast come close to the water's edge and the coast is mainly cliffy and rocky. Rocks and reefs lying close to the shore are numerous along this stretch of coast, but dangerous reefs less than 10m deep are not found more than 1 mile offshore. Good ports and harbors are few. Kamo-Kawaguchi Ko can only handle vessels up to 200 tons. Shimonokae Ko, Iburi Ko, Tanoura Gyoko, and Kubotsu Gyoko are used only by local vessels.

Ishi, a detached rock 7.1m high, is 0.6 mile SSW of the W side of Okitsu Saki. Rocks, 4.2 and 17m high, lie 0.6 mile ENE and 600m W, respectively, of Okitsu Saki.

6.13 Ino Misaki (33°01'N., 133°05'E.), 10 miles SW of Okitsu Saki, is a headland marked by a light. A 152m hill is 900m WNW of the light. Inland, mountains become gradually higher N of the point.

Naidanoshi, a rock 17m deep, is about 4.3 miles SW of Ino Misaki.

Ishimiji Yama, just over 7 miles W of Ino Misaki, a 411m high hill with a sharp peak, is a good mark for coastal shipping.

Shimanto Kawa, the largest stream on the S coast of Shikoku, empties into the sea about 7.5 miles SW of Ino Misaki.

Tsurura Yama, about 9 miles SW of Ino Misaki, is a conspicuous 471m high hill.

Nuno Saki, about 11 miles SSW of Ino Misaki, is a 96m high headland marked by a light.

Kubotsu Saki, about 4.5 miles S of Nuno Saki, is a headland marked by a light with an auxiliary light which illuminates Yუსuga Bae, a reef 440m to the ENE.

Ashizuri Misaki (Ashizuri Misaki) (32°43'N., 133°01'E.), the S tip of Shikoku, is a black-cliffed headland marked by a light; a marine weather broadcasting station is at the light. A temple, with a thick grove behind it, is at the summit of the point. The point is reported to be a good radar target at 26 miles.

A floating fish haven lies about 14 miles SE of the light. Another light is shown close W of the lighthouse.

Many rocks and reefs are found in the vicinity close offshore of Ashizuri Misaki.

Shirao San (Siao San), about 1.5 miles NNW of Ashizuri Misaki, is a 433m high wooded hill with a round top.

Shirataki San, about 2.3 miles NNW of Ashizuri Misaki, is a 451m high hill. Seen from a distance, it appears to combine with Shirao San above into a remarkable saddle-shaped prominence which, on a clear day, can be seen 30 miles offshore.

There are many fish haven obstructions along this part of the coast that extend as far as 4 miles offshore. Vessels should refer to the chart and navigate with caution.

Ashizuri Misaki to Komo Saki

6.14 In the central part of the 30-miles stretch of coast between Ashizuri Misaki and Komo Saki, Kanae Saki bulges out S and Oshime Hana juts to the SE. West of Oshime Hana is Oki-no-Sima and a scattering of other islands. Between these islands and Komo Saki, to the N, is Sukumo Wan, a bay which penetrates deeply inland. The land behind the shoreline is made up of thickly-forested mountains, but there are few peaks to serve as good landmarks. The coastline generally has deep water close-to, but dangerous rocks are found outside of Shimizu Ko and on both sides of the entrance to Sukumo Wan.

Aspect.—Shirao San (Sirao San), Shiratiki San, Imano Yama, Ohora Yama, and Oki-no-Sima are good marks when viewed from the S.

Principal lights are at Ashizuri Misaki, Usubae Saki, Tosa-Simizu Ko, Kanae Saki, Kashiwa Shima, Tosa-Oki-no-Sima, and Komo Saki.

Caution.—There are many dangerous reefs outside of Simizu Ko and numerous islets and rocks are scattered among the islands on the S side of the entrance to Sukumo Wan. Many dangers are also found in an area stretching for 2 miles SE from Komo Saki, at the N end of this segment of the coast.

A fishing ground extends from Simizu Ko to Oshime Hana. Outside of Sukumo Wan, fishing boats using purse seines and lights operate at night all year.

Vessels up to 450 grt can berth and ships up to 1,000 grt can find anchorage at Simizu Ko, which is a good shelter port. Ashizuri Ko lies approximately 1 mile NW of Simizu Ko, though caution is necessary in entering the harbor as its central and interior portions are fraught with dangers. Sukumo Wan offers shelter from N and SE winds for large vessels and several smaller bays afford shelter for smaller craft.

6.15 The coast between Ashizuri Misaki and the island of Okina Shima faces the Pacific Ocean to the S and is well-indented with many small inlets, including the fishing port of Shimizuko and the Komome Hakuchi anchorage.

The 20-mile stretch between Ashizuri Misaki and Oshime Hana is washed by ocean surf and is made up mainly of high cliffs, except for some sand and stone beaches in the inlets. High mountains rise immediately behind the shore.

There are many rocks and reefs close-to along this part of the coast, but the water usually deepens rapidly beyond their outer periphery.

Usubae Saki (32°44'N., 132°58'E.), 2.8 miles W of Ashizuri Misaki, is a headland with three peaks; the highest peak is 126m high. The point is marked by a light. Usa Bae, a reef close SW of the light, is illuminated by an auxiliary light. The waters around the reef deepen sharply beyond its limits. When ocean currents move close to shore, the sea becomes very rough at the point.

6.16 Shimizu (Simizu) (32°46'N., 132°57'E.) ([World Port Index No. 61990](#)) is a deep-sea fishery base. Vessels up to 2,000 grt can anchor here and the port is said to accommodate a large number of vessels up to 100 grt. There are many rocks and reefs near the harbor entrance.

Shimizu Ko Koe Breakwater (32°46.6'N., 132°56.7'E.) extends E from the W entrance point of a small bay entered 0.75 mile NW of Oura Hana. A light stands at the E end of the breakwater.

For vessels mooring at the Marine Pollution Prevention Facilities, there is a signal station. When the Designation Flag is being displayed over the International Code Flag F, the vessel should reply with the Answering Pennant over the International Code Flag Y and wait until completion of operations at the Waste Oil Station.

Kurakake Yama, 1.8 mile N of Usabae Saki and at the E side of the entrance to Shimizu, is 116m high and has a sheer cliff on its W side, conspicuous when viewed from the W.

Takatori Yama, just N of Shimizu, is a sharp wooded peak 304m high.

Imano Yama, about 10 miles NW of Usabae Saki, is an 865m high conspicuous hill.

Kanae Saki, midway between Ashizuri Misaki and Oki-no-Sima, is a red-cliffed headland marked by a light at this tip and backed by forested mountains. A light is shown about 4 miles NE of Kanae Saki.

There is a small harbor protected by N and E breakwaters S of Kanae Saki.

Ho Saki, 2.3 miles W of Kanae Saki, is a steeply-cliffed headland with pines growing close to the water. A small 93m high hill is just ENE of the tip of the point.

Ohora Yama, about 6 miles NW of Ho Saki, is a 465m high wooded hill with a sharp secondary treeless peak on its S side; it is highly visible from seaward, reportedly having been seen at a distance 48 miles to the SSW.

6.17 Oshime Hana (32°46'N., 132°38'E.) is a headland at the seaward end of a mountain spur extending SW; a white cliff on the S side is remarkable. Ko Shima, a rocky 51m high rocky islet, is close SW.

Kashiwa Shima, on the NW side of Oshime Hana, is a round-topped 145m high islet marked by a light on its summit; the islet connected to the mainland by a bridge. A crumbling cliff on its S side might cause it to be confused with Oshime Hana.

Biro Shima, about midway in the passage between Oshime Hana and the island Oki-no-Sima, is a cliffy round-topped 141m high islet.

Aka Bae, a reddish odd-shaped 21m high rock, is close SE. A rock, 4.3m high, is located SSW of Aka Bae.

Oki-no-Sima, about 3 miles SW of Oshime Hana, is a highly conspicuous 404m high island, which has been reported to be recognizable from 45 miles to the SE. Except for some pebble beaches, steep cliffs surround the entire island. The island is marked by lights on its N, W, and SW sides

Sukumo Wan

6.18 Sukumo Wan is a large bay between Kashiwa Shima, Oki-no-Sima, Hime Shima, and Uguru Shima to the S, and

Komo Saki to the N. The bay shore has many curves and inlets and is backed by mountains.

Depths within the bay are more than 50m for the most part, and even at the head of the bay between Shira Saki (Shiro Hana) and Kuro Saki, there are depths of 70m in places. Depths in most of the bay's head range from 11.4 to 24m. The bay has been swept of mines.

Channels between the islands S of the bay entrance are generally deep and safe, but when visibility is poor, care should be taken to avoid the islets and rocks fringing the channels.

Winds—Weather.—West to NW winds prevail during the winter, resulting in many days during which the handling of even small boats is difficult. In summer S winds prevail, resulting in high waves which reach the head of the bay. Fogs are infrequent, and even when fog moving S through Bungo Suido reaches N of Sukumo Wan, little of it appears within the bay and entry is not hindered.

Tides—Currents.—The flood tide sets NE and the ebb tide sets SW. Reversals occur within 1 hour after HW or LW, with velocities seldom exceeding about 4.5 knots.

Anchorage.—The area at the N head of the bay provides good anchorage for large vessels. Inlets between Hanazura Saki and Kuro Saki provide good shelter for smaller vessels.

6.19 Eboshi Saki (32°45'N., 132°33'E.), at the N end of Oki-no-Sima, is a wooded cape which appears black from a distance. A light is shown on the NE side of the island.

Hadaka Shima, just ENE of Eboshi Saki, is a 28m high rock islet with pine trees.

Futanarabi Shima, 1 mile NE of Eboshi Saki, is a 49m high rock islet with twin peaks.

Hime Shima, 2 miles W of Oki-no-Sima, is a 157m high wooded cliffy islet with a sharp peak.

Rocks lie up to 1.3 miles NNW of Hime Shima; the highest is 25m high.

Sannose Shima, midway between Oki-no-Sima and Hime Shima, is a 51m high island surrounded by rocks.

Uguru Shima, 3.5 miles NW of Oki-no-Sima, is a 251m high island with a sharp peak visible for a considerable distance. A light is shown on the cape.

Many reefs, rocks, and other dangers are between the above islands and islets and Oki-no-Sima.

Underwater cables extend from Oki-no-Sima NE to the Shikoku mainland and NW to Uguru Shima.

On the E side of Sukumo Wan, **Shira Saki** (Shiro Hana) (32°51'N., 132°40'E.), about 5.5 miles NNE of Kashiwa Shima, is an 87m high white rock headland with grass-covered round top and marked by a light.

6.20 Sukumo (32°56'N., 132°44'E.) ([World Port Index No. 62000](#)), which is the local port for Kozukushi Ko, is about 3.5 miles NE of Shira Saki. The harbor penetrates inland for 1 mile and has a sand and mud bottom with depths of 10 to 39m. Protected from winds by the surrounding hills, the harbor provides good anchorage for vessels up to 1,000 grt. Vessels up to 300 grt can be accommodated at a pier with a depth of 3.5m alongside.

Kuro Saki, about 5 miles W of Sukumo, is a cliffy headland with many rocks at its foot. A pine-topped 358m high hill, at the rear of the headland, is remarkable from a distance. Several

charted rocks and islets are W of Kuro Saki and front the inlets in the NW part of Sukumo Wan.

Komo Saki, about 6.5 miles W of Kuro Saki, is a steep-sided headland marked by a light; this headland appears black. To the E are fallen cliffs in the middle of which is Hanazura Saki, a high-ridged 75m cape. Several charted rocks, islets, and other dangers extend S and SW from Komo Saki. A dangerous wreck lies 2.5 miles W of Komo Saki.

North of Komo Saki, the W coast of Shikoku and Bungo Suido is described in Pub. 159, *Sailing Directions (Enroute) Japan, Volume II*.

Kyushu—East Coast

6.21 Tsurumi Saki (Turumi Saki) (32°56'N., 132°05'E.) forms the W arm of the S entrance to Bungo Suido. A light, 14m high, stands at an elevation of 196m on Tsurumi Saki. The S side of this headland is mainly sheer cliffs.

Caution.—Caution is necessary because this headland and Sen Saki, about 7 miles to the SW, are easily mistaken for each other.

Yoko Shima, about 2 miles SW of Tsurumi Saki, consists of three conspicuous densely-wooded islets. A light is shown from the N islet of this group.

Hazako Gyoko, the bay about 1 mile W of Yoko Shima, can provide anchorage during N winds; a swell frequently runs into the bay from the SE.

Yonozu Ko, about 2 miles W of Yoko Shima, has two small ports.

Anchorage.—Anchorage can be obtained in about 20m, mud, off the ports with good shelter during the winter North-west Monsoons. Four vessels of about 5,000 grt each have anchored simultaneously in the S part of the bay. Motokoshi Yama, a 582m sharp summit W of the bay, is a fairly conspicuous feature when entering the bay, as are the headlands mentioned above.

Okiguro Shima, just over 2 miles SSW of Yoko Shima, is a cliffy and densely-wooded islet. A light stands at the E end of the island.

Sen Saki, about 3 miles SSW of Yoko Shima, is a precipitous and almost treeless headland which can easily be mistaken for Tsurumi Saki to the NNE. A group of rocks, usually marked by breakers, extends about 0.4 mile E from Sen Saki.

Nyuzu is entered across a bar 2 miles NW of Sen Saki. It is difficult to enter, even for small craft with local knowledge.

Moto Yama, about 10 miles SW of Tsurumi Saki, is a thickly-wooded 270m high hill on Montana Hana, a steep-sided peninsula. A conspicuous wooded islet lies on the reefs extending from the peninsula.

Submarine cables are laid from a position about 1.3 miles W of Montana Hana to Fuka Shirra.

Sehira Yama, about 2 miles W of Moto Yama, is a 392m high double summit on the E slope of the N and lower summit.

6.22 Kamae Ko (32°47'N., 131°56'E.) affords anchorage to small vessels, with local knowledge, in 7.8 to 10m, mud or

sand. A light stands on Suzumegase Hana, the E entrance point.

Inokushi Ko (32°48'N., 131°54'E.), to the W of Kamao Ko, affords anchorage for small vessels with local knowledge, in 10.1 to 20.1m, mud.

Submarine cables run from Fuka Shima NNE to the coast near Sehira Yama and NNW from Fuka Shima to Yakata Shima (32°46'N., 131°55'E.).

Fuka Shima (Huka Shima), about 15 miles SW of Tsurumi Saki and almost 3 miles offshore from the mainland, is an island of mainly sheer cliffs; it is divided into N and S parts by a sandy isthmus. The N summit is 98m high and the S summit is 83m high and is marked by a light.

Tomasu Saki, about 4 miles WSW of Fuka Shima, is a precipitous 92m high headland, densely covered with pine trees; from some directions the headland appears as an islet.

Taka Shima, S of Tomasu Saki and in the entrance to Furue Ko, is a dark wooded islet.

Furue Ko affords anchorage to vessels, with local knowledge, in 5 to 14.6m, mud, sand, and shells.

Shimanoura Shima, just S of Taka Shima, is a relatively large island surmounted by several sparsely-wooded hills; the E and S sides of the island are cliffy. The island is marked by a light.

Caution.—No attempt should be made to pass through the channel between this island and the mainland without local knowledge.

6.23 A light stands on Gojo Se, an islet located about 0.4 mile SW of Shimanoura Shima.

Shimanoura Ko, on the NW part of Shimanoura Shima, can provide anchorage for small vessels up to 1,000 grt, in 11 to 17.8m, mud, in the central part of the harbor. Two radio towers are at the head of the harbor.

Eno Take is a rocky 728m high mountain, about 9 miles W of Shimanoura Shima; from the SE, its summit appears flat, but from E it is steep-sided and of a peculiar shape.

Shimage Bae, about 5 miles SW of Shimanoura, is a detached flat-topped rock usually marked by breakers; it should not be approached within 0.5 mile. It is surmounted by a light.

Totoro Ko (32°31'N., 131°41'E.) ([World Port Index No. 62180](#)), about 32 miles SW of Tsurumi Saki, is the headquarters of a fishing fleet. Anchorage is available for vessels under 500 grt, in about 4.9m, but swells enter the anchorage during strong N winds.

Mi Saki (32°29'N., 131°44'E.) is a conspicuous headland with a precipitous cliff surmounted by a clump of pine trees; two buildings are on its NE slope. There are fishing nets in the vicinity of the headland during the winter.

Tomi Yama, about 1 mile SW of Mi Saki, is the highest grassy hill in the vicinity; it is 308m high and has several radio towers.

Biro Shima, about 1.6 miles S of Mi Saki and about 1.5 miles offshore of the mainland, is a well-wooded islet marked by a light; a conspicuous rock, 52m high, is close off its N side.

A sunken wreck, dangerous to navigation, lies 1.3 miles NE of Biro Shima.

Hososhima (32°26'N., 131°40'E.)

World Port Index No. 62190

6.24 The port of Hososhima is in Ozue Wan, a bay about 37 miles SW of Tsurumi Saki. The port consists of a town and a harbor area in two sections. The N section, known as Hososhima Kayogo Ko, is an artificial basin in the SW corner of the bay. Shirahama Ko lies on the NW side of Maki Shima. Shirahama Ko is sheltered by a breakwater projecting N from the NW side of Yo Shima, which lies close off and is connected to Kannon Saki, the NE extremity of Maki Shima.

Winds—Weather.—The wind is usually S in spring and summer, N in autumn, and W in winter. It is reported that the sea is usually calm from January to July. Local weather signals are displayed at the town.

Tides—Currents.—The MHW interval is 6h 18m. Spring tides rise 1.8m and neap tides rise 1.5m. Seiches, with uniform periods of about 10 minutes, occur in the port. The rise and fall may be 0.2m in calm weather and 0.6m during storms.

Depths—Limitations.—The draft limitation in the channel is 10m. The maximum permissible draft is 9.7m with an loa of 170m.

Depths decrease gradually from 28m in the entrance to Ozue Wan, to about 11.9m in the anchorage area N of the entrance to the artificial basin. The least charted depth in the central part of that basin is 9.5m.

The depth in the entrance of the natural harbor is 18m in mid-channel, and in the middle of the outer part of harbor depths are 13 to 15m. The inner part of the harbor is within the 10m curve and has depths of 6.8 to 9.7m in its central part.

North Port (Industrial Port) can accommodate vessels up to 15,000 grt with drafts up to 10m. South Port (Commercial Port) can accommodate vessels having drafts of up to 6.8m and with 10,000 grt. Shirahama Port has depths alongside from 5.5 to 10m for vessels of 28,000 grt. The largest vessel accommodated was 43,000 dwt, with a draft of 9.8m, length 200m.

Ikui Bae (32°27'N., 131°42'E.), two rocks 6.1m high and marked by a light, is in the middle of the entrance to the bay; Kame Se and Hira Se, 0.25 mile N and 0.3 mile S of it, respectively, have depths of 4.8 and 10.7m. Huna Se, a rock 18m deep, is 0.6 mile ENE of Ikui Bae. Yurugi Bae, 2m high, lies 0.2 mile NNE of Yo Shima.

Takanaga Se, a rock swept to a depth of 13.5m, is the outermost of several dangers extending N from Kannon Saki and is about 0.6 mile N of that point.

The approach channel to the N Industrial Port basin is marked by aids.

Aspect.—Approaching from the N, the cliffs along the coast between Mi Saki and Ozue Wan, Tomi Yama, Biro Shima, and Nab Saki Light are good landmarks. Approaching from the S, Hososhima Ko Light and Komeno Yama, which rises 192m on the S side of the harbor, are the most conspicuous landmarks.

The seaward ends of the two peninsulas that form the natural S or commercial harbor are precipitous cliffs of columnar structure. The shores of the harbor rise to hills from 98 to 198m high, which are covered with coarse grass.

Pilotage.—Pilots are available and board at quarantine anchorage, about 1 mile SE of Kannon Saki, from sunrise to 1 hour before sunset. During adverse weather conditions, the

pilot may board inside the breakwaters. The pilots require a 48 hour and 24 hour advance notice of the ETA. The Hososhima Pilot Association is responsible for pilotage in this harbor.

Anchorage.—Ozue Wan is exposed to the E, but in fine weather vessels with local knowledge can obtain anchorage, in about 14.6m, about 0.4 mile SW of Oto Shima (32°28'N., 131°40'E.).

The outer natural harbor of Hososhima Ko affords anchorage to several vessels, in about 14.6m, but the holding ground is not good and strong NE winds send in a heavy sea rendering this part unsafe.

The E part of the inner natural harbor affords anchorage for small vessels, in 4.6 to 7.8m, sand. This anchorage is somewhat sheltered from onshore winds, but is unsafe during winter when W winds sometimes blow from the head of the harbor with gale force.

Anchorage has been obtained outside the natural harbor, with Hososhima Ko Light (32°25'N., 131°44'E.) bearing 217°, distant about 1 mile. The position was found to be sheltered and safe anchorage from winds between the W and N; however, a typhoon in the vicinity of Okinawa gave rise to a heavy swell and the anchorage became unsuitable.

A quarantine anchorage, a circular area with a 0.2 mile radius, is centered 0.8 mile NE of Hososhima Ko Light.

Directions.—To enter Syogyo-Ko, pass on the N side of the Hososhima Ko port lighted buoy, situated in the middle of the port mouth, and enter the port area passing along the center line of the entrance channel. Mid-channel courses to the inner harbor are recommended.

To enter Kyogyo-Ko, pass to the N of Lighted Buoy No. 1, situated about 0.5 mile S of Gto Shima. From there, change course to the SSW to proceed between Lighted Buoy No. 3 and Lighted Buoy No. 4, then proceed mid-channel between Lighted Buoy No. 7 and the embankment, situated N of the lighted buoy.

Caution.—There are many fixed fishing nets in the bay, especially in the vicinity of Take Shima and Otu Shima. Vessels should note the plotted positions of the fish havens on the chart are approximate.

When berthing at the wharves it is advisable to use the bow anchor in case it becomes necessary to leave the harbor during strong NW winds.

6.25 Taka Mori Yama, about 5.5 miles SW of Kannon Saki, is 342m high and has a sharp peak.

Osuzu Yama, 823m high, about 12 miles WSW of Kannon Saki, 823m high, is the highest mountain in the area and forms a good landmark from E.

Toriyama (32°10'N., 131°32'E.), a village with houses on the beach and on a cliff, is visible from seaward.

Omaru Kawa, about 2.5 miles SSW of Toriyama, has a large barn-shaped factory and several chimneys near its mouth. The river can be entered by small vessels in calm weather.

The tower at position 31°57'N, 131°25'E is 36m high and conspicuous.

Miyasaki Ko (31°53.5'N., 131°27.9'E.) lies at the mouth of Oyodo Kawa. Lighted buoys are moored E of the entrance.

Aspect.—An aero light is shown 1.5 miles SSW of the entrance to Oyodo Kawa, and a conspicuous stone tower, 36m

high, stands 4.5 miles NNW of it. There are a large number of oil tanks situated 0.5 mile NNW of the river mouth.

Shirio Ko, a new harbor, is entered 1.5 miles N of the river mouth. It is protected by two breakwaters. A lighted tower stands at the head of each breakwater. The fairway into the harbor is marked by light.

6.26 Oryuzako Byochi (31°48'N., 131°29'E.) affords anchorage to small vessels, in charted depths of 5.5 to 11.9m; it is safe and comparatively calm with winds from S, W and NW, but dangerous with winds from any other direction.

There are numerous fish haven obstructions in this area and a submarine cable runs E from the coast about 2.8 miles above Oryuzako Byochi.

Uchiumi (31°45'N., 131°28'E.) ([World Port Index No. 62200](#)) is a small natural harbor with berthing facilities for small vessels. The E side of the harbor is protected on its E side by a chain of reefs. A breakwater has been constructed along this chain of reefs, and a light stands on a spur extending SW from near the S end of it.

Odon Se, a shallow reef with a dangerous submerged rock, is about 4.5 miles ENE of Uchiumi and about 3.5 miles offshore of the mainland.

Kinchaku Shima (31°44'N., 131°28'E.) is surmounted by a conspicuous clump of trees.

6.27 Aburatsu (Aburatu) (31°35'N., 131°24'E.) ([World Port Index No. 62210](#)) has a very small outer and inner harbor protected by breakwaters. The largest vessel that has entered the harbor and berthed alongside is 1,300 grt, but anchorage for larger vessels can be obtained outside the harbor.

Winds—Weather.—With the exception of S winds during the summer, NW or WNW winds of low velocity are prevalent throughout the year. However, from July to October, the port area is frequently affected by storms including typhoons. WNW wind velocities of 45 knots in December and SSW winds of 79 knots in September during the typhoon season have been recorded.

From March to June, the sea is reported to be generally calm. Bad weather occurs at times, particularly in August and September. From October to December, the sea is usually calm unless the wind is NE.

Precipitation is highest from April to June, the rainy season, with about 500mm.

The average temperature in August, the warmest month, is 27°C and the lowest in January, the coldest month, is 8°C.

Local weather signals are displayed.

Tides—Currents.—The MHW interval at Aburatsu is 5 hours 58 minutes; spring tides rise 1.8m and neap tides rise 1.5m.

The tidal currents in the approaches to the harbor flow N on the rising tide, between O Shima and the coast to the W, and passes between the N end of that island and Obushi Hana; during the falling tide, the tidal current flows in the opposite direction; the rate is about 0.5 knot. The direction of the current is sometimes influenced by the direction of the wind.

Depths—Limitations.—The approach to the harbor from the E and S has depths of about 10.1m. The outer harbor has depths of 4.9 to 8.5m in its central part. The outer harbor anchorage depths are from 11.9 to 15.5m; inner harbor anchorage depths are from 6.1 to 7m.

Aspect.—The hills on the peninsula forming the E side of the harbor are conspicuous because of their serrated appearance. Radio towers on the summit of a hill about 0.6 mile N of Obushi Hana are also conspicuous.

Pilotage.—Pilotage is not compulsory, but pilots can be obtained at Hososhima.

Anchorage.—Anchorage for small vessels can be obtained, in depths of 6.1 to 7m, sand, N of the E breakwater.

Deep-draft vessels must anchor outside the harbor, in 11.9 to 15.5m, either between Obushi Hana and I Saki or between I Saki and the N extremity of O Shima; in either case, E winds send in a heavy swell and render these anchorages unsafe.

Directions.—A vessel approaching from the E, with the range lights on I Saki in line bearing 263.5°, should continue on this course to pass between Jako Se on the N and Nanatsu Bae on the S. After clearing these dangers, alter course N toward the light on the head of the E breakwater.

A vessel approaching from the S, between O Shima and the mainland W, should steer with the light on the E extremity of I Saki and the light on Nagasaki Hana in line bearing 002°, which leads between Yabe Se and a 8.2m patch about 0.4 mile E of Kozumi Se. A vessel of deep draft should navigate with caution.

Caution.—Care should be taken when entering the harbor, as there is a danger of being set towards the W breakwater.

6.28 O Shima (31°33'N., 131°25'E.), a relatively large island 206m high, affords some shelter to Aburatsu Ko and the small bays to the S. The E side of the island is cliffy. Mizu Shima, consisting of three rocks almost joined together, is about 0.8 mile SE of Kurasaki Hana, the S extremity of O Shima.

Yaba Se, a reef with a depth of 4.6m, is about 0.2 NW of the W extremity of O Shima. A light stands on the summit of Kurasaki Hana. It is a good mark for vessels heading S.

No Se (31°30'N., 131°24'E.), marked by a light, is the E of a line of dangers extending ENE from **Gion Saki**, which rises 191m.

Tonoura Ko, entered N of No Se and Gion Saki, affords sheltered anchorage, in 6.9 to 11.0m, mud.

There are several off-lying islands extending as far as 1 mile offshore between O Shima and Toi Misaki.

Toi Misaki (31°22'N., 131°32'E.) is a hilly headland with bare slopes; it is marked by a light with a radiobeacon transmitting from it and is reported to be a good radar target at 18 miles. A light stands at the head of a breakwater projecting ENE from the shore about 2 miles NNW of Toi Misaki Light.

Takabatake Yama (31°26'N., 131°20'E.), 5 miles N of Toi Misaki, is 517m high.

Sibusi Wan (Ariake Wan)

6.29 Sibusi Wan (Ariake Wan) (31°22'N., 131°10'E.), a relatively large bay, is entered between Toi Misaki and Hi Saki, about 12 miles to the SW. The head of the bay is a sandy beach on which the sea breaks almost continually.

Caution.—Fixed fishing nets may be encountered along the coast near the entrance to Sibusi Wan.



Toi Misaki Light

6.30 Northwest side of Subusi Wan.—Anchorage, sheltered from W and N winds, can be obtained by vessels with local knowledge, in 18.3 to 25.6m, in the bay on the W side of Toi Misaki.

Shira Se, a reef with a depth of 5m, lies about 0.4 mile from the E coast of this bay.

Fukushima Ko (31°26'N., 131°12'E.) affords anchorage, sheltered from N winds, outside the mouth of Fukushima Gawa, in 18.3 to 20.1m, but local knowledge is essential. Fukushima Ko is entered between two breakwaters, with a light on each head.

Depending on the height of the tide, vessels up to 500 tons can berth in Fukushima Ko. Local weather signals are displayed at the town of Imamachi on the N side of the entrance to the river.

A light stands on Bindare Shima, situated 1.3 miles S of the entrance to Fukushima Ko.

6.31 Southwest side of Sibusi Wan.—**Hi Saki** (31°17'N., 131°08'E.) rises to a 238m high treeless summit; the point is marked by a light. The Tokyo University Space Observatory, from which rockets are fired for observation several times yearly, is 3.25 miles SW of Hi Saki. Details of the firings and impact area forecast are published in Notice to Mariners and are also broadcast.

Uchinoura Wan, a small bay on the SW side of Sibusi Wan, is entered between Hi Saki and Ko Saki, a headland 3.25 miles NNW. The bay is exposed to NE winds and the depths in its center are quite deep for anchorage, but vessels with local knowledge can obtain anchorage, in 23.8 to 25.6m, near its head. Local weather signals are displayed at the town of Uchinoura Ko, which overlooks the bay. Uchinoura Ko is a small fishing port, which is protected by two breakwaters. A light stands at the head of the E breakwater.

Sekiyu Bichiku Kichi Sea Berth (31°21'N., 131°03'E.) consists of a platform flanked by dolphins and oriented E-W; there is a depth of more than 20m alongside. The berth is con-

nected by a pipeline laid WNW to an oil storage area. Lights are shown from the platform and from the extremities of the berth.

The oil storage area, about 1 mile square, is situated offshore almost 1 mile WNW of the berth. A light stands at the SE corner of the storage area. A bridge, marked by a light, connects the SW corner of the storage area to the shore to the W.

6.32 Biro Shima (31°26'N., 131°07'E.) is a conspicuous islet in the NW part of Sibusi Bay. A submarine cable and wave meter lie NW, W, and SW of Biro Shima. Fish haven obstructions also lie W of this island.

Shibushi (31°28'N., 131°06'E.) ([World Port Index No. 62224](#)), in the N part of Sibusi Wan at the mouth of Mae Gawa, consists of a town, a small inner harbor having depths of up to 5.2m, and an outer harbor consisting of three large concrete jetties. A light is shown near the entrance to Mukogawara. Additional berthing was scheduled for completion in 1987, as Shibushi is being developed as a major port for grain import.

Jetty No. 1 and Jetty No. 2 have been constructed on the SE side of the mouth of the Mae Gawa. Jetty No. 1 is the northernmost and has depths of 4 to 9.2m alongside, suitable for vessels up to 15,000 grt. Jetty No. 2 has depths of 6 to 7.4m and lies SW of No. 1 Jetty. There are eight berths along the third jetty, SW of Mae Gawa. Berth No. 1, on the NE section of the jetty, has a depth alongside of 4.5m. Berth No. 2 has an alongside depth of 5.5m. Berth No. 3 has a dredged depth of 7.5m. Berth No. 4 has a charted depth of 7.5m. there is a dredged depth of 9m alongside Berth No. 5. the deepest berth is Berth No. 6, having a dredged depth of 12m (1984). Berth No. 7 has a depth of 7.5m alongside. Berth No. 8 has a depth of 5.5m alongside. The approach to Jetty No. 3 has been dredged to a depth of 13m (1984).

Pilotage.—Pilotage is compulsory, but recommended. Pilots are available at position 31°25'N, 131°05'E. There is no night berthing or unberthing.

Aspect.—Biro Shima is a good landmark for vessels approaching Shibushi. A railroad bridge and a white chimney in the town are conspicuous.

Anchorage.—Sibusi Wan has depths at its head, W of Biro Shima, suitable for anchoring, but, being exposed to winds between the E and S, it should be avoided during winds from those directions; moreover, because a swell frequently runs into the bay, vessels usually ride uneasily. A quarantine anchorage is situated about 0.5 mile W of Kuchiwano Hana, the N extremity of Biro Shima.

East Coast of Kyushu (continued)

6.33 Koyamada Wan (31°13'N., 131°01'E.), about 7 miles SW of Hi Saki and with a beach of white sand at its head, is exposed SE, but in calm weather it affords anchorage with local knowledge, in about 18.3m, sand.

To Saki, a small bay about 4 miles SW of Koyamada Wan, is suitable for temporary anchorage only.

The mountains between Kannon Saki and O Ura, about 11 and 14 miles SW, respectively, from Hi Saki, are conspicuous. O Ura has a conspicuous white sand beach.

Haya Saki (31°02'N., 130°43'E.), about 4 miles NE of Sata Misaki, is a rocky headland; one of the above-water rocks lying within 0.3 mile of it has a pointed summit.

Odomari Wan (31°01'N., 130°41'E.), about 2.5 miles NE of Sata Misaki, is a small harbor affording anchorage to a small vessel with local knowledge, in about 7.3m, sand, good holding ground. Shelter is good in winter, from April to October, because it is exposed SE and a vessel should put to sea at the first indication of a SE wind. Tidal currents are strong in the approach.

At the head of Odomari Wan, there is a dip in the range of hills extending S, so that from a distance the land to the S may appear as an island.

Sata Misaki (30°59'N., 130°40'E.) is a cliffy point backed by hills; it has been reported to be a good radar target at a distance of 12 miles. There is a light and a ramark here.

Osumi Kaikyo

6.34 Osumi Kaikyo is a wide strait separating the N of the Osumi Gunto islands from the S end of the Kyushu mainland.

Approaching the strait from the E, the Kyushu coast between Hi Saki and Sata Misaki are radar conspicuous, as is the N end of Tanega Shima and Mage Shima, although they are low.

Approaching the strait from W, **Kaimon Misaki** (31°11'N., 130°32'E.) and the N islands of O Sumi Gunto are conspicuous.