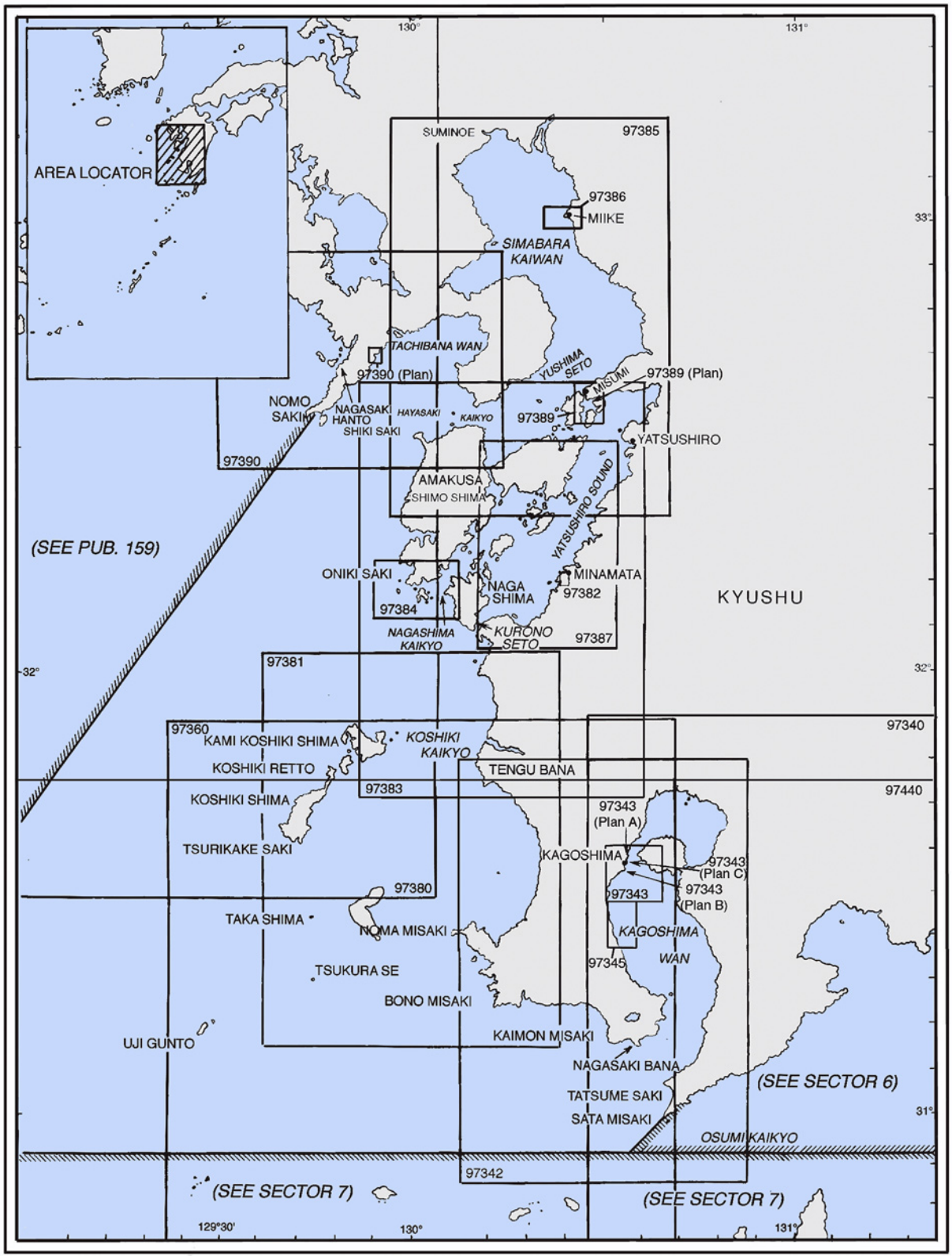
Click on "See Sector" to be hotlinked to that Sector.



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR **8** — CHART INFORMATION

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SECTOR 8

SOUTHWEST COAST OF KYUSHU, INCLUDING OFF-LYING ISLANDS

Plan.—This sector describes the SW coast of Kyushu, from Sata Misaki (30˚59'N., 130˚40'E.), the S extremity, NW to Nomo Saki (32˚34'N., 129˚45'E.), at the SW end of Nagasaki Hanto. Uji Gunto and other off-lying islands and dangers, which are in the W approaches to Kagoshima Wan, are described prior to the coastal features.

Off-Lying Islands

8.1 **Uji Gunto** (31˚11'N., 129˚27'E.) is comprised of four conspicuous islets, namely, Uji Shima (Muko Shima), Ie Shima, Suzume Shima, and Same Shima.

Uji Shima rises at its N end to a conspicuous conical hill, and off its SE end is a small cone shaped island 57m high. Several pointed rocks, the largest of which is Nishitategami, 97m high, extends from the NW extremity of Uji Shima. There is a channel between Uji Shima and Ie Shima, which is sometimes used by fishing vessels for shelter during the summer. Suzume Shima consists of twin islets of equal height that open only from the N or S. Same Shima is a precipitous islet, whose summit, a white rock, rises in its NW part. By day, the positions of almost all the dangers in this vicinity can be identified, but at night this group should be given a wide berth. Vessels should not approach within 1 mile of these islands.

Tsukura Se (31˚18'N., 129˚45'E.) consists of four detached above-water rocks. From the N or S, the group appears as two pointed rocks; from the E or W, three are visible.

Sata Misaki (30˚59'N., 130˚40'E.) is a conspicuous point, 85m high; it is the southernmost point of Kyushu. This point, from which a light is shown, is backed by lofty hills. Owa Shima, a rocky islet, lies 0.1m S of Sata Misaki, and is connected to the point by reefs. Biro Shima, a wooded islet, 54.9m high, lies about 0.3 mile offshore, about 0.8 mile ENE of Sata Misaki.

The coast, 4.5 miles N from Sata Misaki to **Tatsume Saki** (Tachime Saki) (31˚04'N., 130˚39'E.) is fringed with rocks, but is comparatively steep-to.

Kagoshima Wan

8.2 Kagoshima Wan is a lengthy inlet entered between Tatsume Saki and Kaimon Misaki, about 9 miles NW. At its head, there is a landlocked bay that is separated from the S part of the inlet by Sakura Shima. Entry to this bay may be gained through, Nishi Suido, a deep channel to the W of Sakura Shima. Depths of over 180m are prevalent over a large portion of the inlet S of Sakura Shima.

Tides—Currents.—Enter into Kagoshima Wan on the rising tide and out of the inlet on the falling tide, turning within 0.5 hour before HW and LW. At the entrance, the turn occurs about the time of HW and LW and the N current attains a speed of 1.5 to 2 knots at springs. However, on the NW side of the entrance, within about 3 miles SE of Kaimon Misaki, the current flows NE on the rising tide and SW on the falling tide, maximum rate about 1.3 knots.

Caution.—Kan Se, an isolated rock with a depth of 1.5m, lies on a small shoal near the middle of the entrance of Kagoshima Wan, about 4 miles NNW of Tatsume Saki. The vicinity of the rock has been swept to a depth of 18m. It should also be noted that in calm weather the rock can be detected from a distance by discoloration; in bad weather, it breaks.

Due to the considerable size of the bay, the Caldera hills provide insufficient shelter to vessels seeking refuge from the frequent typhoons affecting the Kyusu coast. Yamagawa Ko affords refuge for small ships.

Kagoshima Wan—East Side

8.3 **Tatsume Saki** (31˚04'N., 130˚39'E.), located on the SE side of the entrance, is a steep, distinctive headland, 94m high. This point, from which a light is shown, and the coast on either side, is fringed with above-water and sunken rocks.

Tanisaki Bana (31˚06'N., 130˚41'E.), about 2.5 miles NE of Tatsume Saki, is a grassy headland, surmounted by trees and fringed with rocks. Small vessels with local knowledge can take anchorage in an area on the SW side of the headland, in a small bay, which affords shelter from winds from the E to S. On the NE side of the headland is a shallow cove with a sandy beach. Izashiki is a village at the head of the cove; local weather signals are shown here.

Ukitsu Bana, located about 1.8 miles NE of Tanisaki Bana, is a thickly wooded headland. Anchorage for small vessels with local knowledge may be taken in Okawa Byochi, on the NE side of the headland, sheltered from winds between the E to S. The village of Okawa (Ogawa), on the E side of the bight, is fronted by a stoney beach. Vessels should note the location of the fish haven obstructions in these areas.

Koneshime Saki lies about 6 miles NNE of Ukitsu Bana. The O Kawa flows into the sea on the N side of Koneshime Saki. A shallow spit, whose edges are steep-to, extends about 0.8 mile NW from the N side of the river mouth. A breakwater extends WNW from the S of O Kawa.

The E coast of Kagoshima Wan, from the mouth of O Kawa, N about 14.5 miles to a white cliff near the village of Suwa, is fringed with reefs and shoals. The edges of these shoals are steep-to, extending about 1 mile offshore in places.

Oneshime Ko (31˚15'N., 130˚47'E.) is located about 2.3 miles NE of the mouth of O Kawa. Tidal currents are, for the most part, usually weak near Oneshime. Takasu Ko, is situated about 6.3 miles N of Oneshima Ko, and is a small port utilized mainly by local traffic.

8.4 **Furue Ko** (Kanoya Ko) (31˚24'N., 130˚46'E.), protected by breakwaters, within which the port area is shallow and narrow. A new port is under construction on the N side of the N breakwater. It is reported that the waterway has already been dredged to a depth of 7.5m.

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A submerged oil pipeline extends ENE to the shore, from a position 0.15 mile SW of the light on the S breakwater. The seaward end of the pipeline is marked by a buoy, near which are three mooring buoys.

Between Furue Ko and Suwa, about 3 miles NW, the coast is fronted by shoals. From Suwa the coast leads NW to Kazusa Bana, then about 5.5 miles N to the mass of lava that connects Sakura Shima to the E shore of Kagoshima Wan. Tarumizu, a village, lies 3.5 miles NW of Suwa. A light is shown from the S breakwater at Tarumizu Ko, the small harbor of Tarumizu.

Sakura Shima (31˚35'N., 130˚40'E.) became joined to the E side of Kagoshima Wan by a stream of lava as a result of an eruption in 1914. It has at its center an active volcano, 1,116m high, which is conspicuous from S.

Okoga Shima (Oki-Ko Shima), 37m high, lies about 0.6 mile SW of Mo Saki, the SW tip of Sakura Shima. A rock, which dries, 0.9m, lies close off the S end of the islet. In addition, a shoal projects 0.15 mile from the N side of the islet. There are numerous rocks and shoals surrounding Okoga Shima.

Kan Se, a reef which dries in spots, and has the remnants of a fort just above the water, lies in the narrows between Sakura Shima and Kagoshima Ko at the S end of Nishi Suido. Kan Se lies about 1.8 miles NW of Okoga Shima.

Nishi Suido is the channel heading between Sakura Shima and the mainland to the W, ultimately leading to the head of Kagoshima Wan. The shallowest part, with depths from 16.5 to 23.8m, lies between Kan Se and the mainland SW. The recommended channel through Nishi Suido lies to the W of Kan Se.

Submarine cables are laid across the N end of Nishi Suido.

Kagoshima Wan—West Side

8.5 Kaimon Misaki (31˚10'N., 130˚31'E.), the NW entrance point of Kagoshima Wan, is the steep-to SW tip of a rounded projection. This projection is crowned by Kaimon Take, a conspicuous, extinct, cone-shaped volcano, 924m high, the sides of which are densely wooded.

Shoals are scattered within 1.5 miles along the coast of the W shore and anchorage in the inner bay, N of Sakura Shima, is impractical if available.

The coast from Kaimon Misaki, 3.5 miles ESE to Nagasaki Bana, is indented by a bay. The village of Kawajiri (Kawashiri) is situated at the head of this bay, where local storm signals are shown. Nagasaki Bana, from which a light is shown, is the S extremity of a striking projection. A reef extends about 0.1 mile S of the point. Also a detached reef, with a depth of 2.7m, lies about 0.5 mile ENE of the same point.

Akamizu Bana is located 0.65 mile NE of Nagasaki Bana. It is marked by a hill on the slope of which is a prominent, single pine tree. A rock, which dries 1.8m, lies about 0.13 mile SE of the headland.

Chugamizu Wan (Chigogamizu Wan) is located between Akamizu Bana and Torinokuchi, about 2 miles NE. This bay has depths of less than 9.1m about 0.4 mile offshore. **Katchika Se** (31˚10'N., 130˚36'E.), with a depth of 2.7m, is located about 0.6 mile N of Akamizu Bana.

Torinokuchi is an abrupt headland, 205m high, about 0.3 mile NW of which is Take Yama (31˚11'N., 130˚37'E.), a hump-shaped, conspicuous hill 210m high. Matagoshi (Matagusu), a rock with a hole in it, and with some vegetation on its summit, lies about 0.4 mile ESE of Torinokuchi.

Kaigara Su (Kaigara Se) is a sandbank with depths of less than 5.5m. This extensive sandbank, which fringes the coast, projects about 1 mile offshore, and extends about 2.3 miles NE from a position about 0.4 mile E of Matagoshi. Kuchino Se, a detached rock, with a depth of 6.7m and steep-to on all sides, lies about 1.8 miles NE of Matagoshi.

8.6 Yamagawa Ko (Yamakawa) (31˚12'N., 130˚38'E.) (World Port Index No. 62230) lies on the W side of Kagoshima Wan, about 13 miles N of Sata Misaki.

Yamagawa Ko is entered between the N edge of Kaigara Se and Uno Se, which is at the S extremity of a shallow spit, extends about 0.3 mile S from the S side of the projection that terminates in Uyama Saki. The port consists of a town and a small natural harbor with anchorage and berthing facilities for small vessels. An L-shaped breakwater shelters the harbor; lights are shown from the head and elbow.

Winds—Weather.—Yamagawa Ko is a harbor of refuge. The velocity of the wind during a typhoon is lower in the inner part of the harbor. West winds of gale force enter the inner part through the valleys in the vicinity. Local weather signals are shown from a telecommunication tower standing about 0.2 mile S of Bandokoro Bana Light.

Tides—Currents.—The MHW interval at Yamagawa is 7 hours; spring tides rise 2.5m and neap tides rise 1.8m.

Depths—Limitations.—Due to the shoals in the approach to Yamagawa Ko, passage during bad weather or when there is a swell is dangerous. Local knowledge is necessary at all times.

The channel S of Uno Se is about 0.2 mile wide, with a least depth of 5.9m. On the E side of the inner port of the harbor, there is a quay, with a depth of 4m alongside.

Vessels of 1,000 grt or less can obtain shelter in the inner part of the harbor.

Aspect.—Identifying the entrance of the harbor from the S is difficult due to the lack of prominent features and the heavily-forested land surrounding the harbor.

Pilotage.—While pilots are not available, vessels entering for the first time may obtain advice from the harbormaster at Kagoshima.

Anchorage.—The inner part of Yamagawa Ko is nearly a landlocked basin; the bottom, mud and sand, affords excellent holding ground, in depths of 36.6 to 41.2m.

Directions.—Vessels approaching from the S should steer with the W shoulder of a plateau 109m high, about 0.5 mile W of Uomi Take which is about 2.5 miles N of Uyama Saki, in line with Uyama Saki, bearing about 345.5˚ leads toward the entrance of the harbor. This course passes about 0.3 mile E of Kuchino Se. When nearing Uyama Saki, change course W and bring the light structure on Uno Se in line bearing 285˚ with the E entrance of the railroad tunnel. From a position about 0.3 mile from Uno Se Light, course may be shaped for the inner harbor. Vessels should navigate with caution as depths of 2.7m lie ESE of Uno Se.

Uyama Saki (31˚13'N., 130˚40'E.) is a low, wooded point. Kasa Se, with a depth of 1.2m and Naka Sone, with a depth of 4.9m, lie about 0.7 and 0.6 mile E, respectively of Uyama Saki. Several shoals are scattered between these rocks and the mouth of the port.

The coast, N from Uyama Saki to Tara Misaki, about 2.8 miles, forms a bight at the head of which is the village of Minato. Uomi Take rises to an elevation of 215m, about 0.8 mile WSW of Tara Misaki. Tarano Se, a detached shoal, with a depth of 2.1m, lies about 1 mile SE of Tara Misaki. There are a group of three conspicuous radio towers near Uomi Take; a prominent radio mast with a parabolic antenna, stands near the shore about 1.3 miles further SW.

Chirin Shima (31˚16'N., 130˚41'E.) lies about 0.5 mile NE of Tara Misaki, to which it is joined by a narrow spit that dries. The island is low on its W side, gradually rising to a height of 103m to the top of a group of pine trees, and ends abruptly in a steep cliff, which forms the E side of the island. Ko Shima, a small islet, lies 0.35 mile N of Chirin Shima and is 24m high. A submarine cable extends 1.5 miles SW of Chirin Shima ESE across Kaga Shima Wan, to Oneshima Ko. A reef projects 0.1 mile WNW from the islets NW side. A reef ledge extends about 110m N from the N side of Ko Shima.

From Tara Misaki, the W coast of Kagoshima Wan trends about 9.5 miles NW to Kiire Ko and is fringed with shoals that project up to 1.3 mile offshore in places.

8.7 **Kiire Ko** (31˚23'N., 130˚33'E.) (World Port Index No. 62225) is the site of a major oil staging terminal. The fairway leading to the port is well-marked and has depths over 50m. The facility consists of four T-headed piers, which extend about 0.2 mile from the NE side of reclaimed land. At the head of each pier is a dolphin berth for a tanker, numbered 1 to 4 from the N. A line of dolphins, connected by catwalks, joins the berths and extends 0.15 mile NW of Berth No. 1 and the same distance SE of Berth No. 4. All berths are protected by submersible oil booms and Berth No. 1 and Berth No. 2 are used only for loading. Also there is a pier, with a dolphin head on the NW side of the reclaimed land. Due to a steady SE current of 0.5 knot at the berths, tankers berth port side to.

Depth—Limitations.—There are four berths that can accommodate vessels up to 500,000 dwt. Berth No. 1 and Berth No. 2 can accommodate vessels of 33,000 to 150,000 dwt, with a maximum length of 300m and a draft of 16.2m. Berth No. 3 can accommodate vessels of 33,000 to 450,000 dwt, with a maximum length of 400m and a draft of 25.2m. Berth No. 4 can accommodate vessels up to 500,000 dwt, with a maximum length of 458m and a draft of30.6m..

Pilotage.—A berthing master boards about 5 miles SE of Kiire. Only vessels in ballast may berth after sunset.

Anchorage.—There is an anchorage about 3 miles N of Berth No. 3, in a depth of about 45m. There is a quarantine anchorage about 1.3 mile N of Berth No. 1, in 40 to 69m, moderate holding ground. Vessels should refer to the chart and note the location of the fish haven obstructions in this area.

The coast NW from Kiire Ko to Kagoshima Ko, about 4 miles, is fringed with shoals that extend up to 1 mile offshore in places.

Kagoshima Ko (31˚35'N., 130˚34'E.)

World Port Index No. 62220

8.8 Kagoshima Ko, a principal port, is divided into various parts, all of which lie within a 9 mile section of the W coast of Kagoshima Wan.

A bridge 13m wide spans the seaward entrance to Nagata Kawa N of Taniyama.

East Breakwater, 1 mile long, lies parallel to and 0.2 mile E of the reclaimed land, between No. 2 and No. 1 areas. A light is shown from the S head of East Breakwater.

Winds—Weather.—The prevailing winds are SE from April to September, and NW during the remainder of the year. In general, the winter NW winds have the greatest force, especially during January; and the summer winds, usually those of July, are the weakest. The most violent storms occur in early autumn, during which time there are one or two in the average year.

Tides—Currents.—The MHW interval at Kagoshima is 7 hours 5 minutes; spring tides rise 9 and neaps rise 2m.

The tidal currents off the entrances of the inner harbor flow N on the rising tide from about 1 hour after LW to 1 hour after HW, and S on the falling tide from 1 hour after HW to 1 hour after LW. The change of the tidal currents occurs approximately 0.5 hour earlier than it does at the entrance of Kagoshima Wan. Tidal current velocities are strongest in the area between the inner harbor and Sakura Shima, where they attain a maximum velocity of about 2 knots when setting S.

Depths—Limitations.—The sections of the port are described from the N to S. The main harbor, situated in the NW part of the inner port, is about 1 mile long and surrounded by four breakwaters. There is a N entrance and a S entrance. Lights are shown on each side of both entrances. The primary entrance is through the S entrance. Ship Channel No. 1 leads between the outer breakwaters to Fairway No. 1 and then to Hon Ko Basin. This basin is protected by a breakwater on its N side and the N wharf on its S side. On the E side, there is a berth with a depth of 13m alongside.

The main harbor has depths from 3.7 to 7.9m and a quay, with two berths, with alongside depths of 7.8m. The outer harbor has open roads where vessels anchor. There is a ferry crossing from the N entrance across to Sakura Sima.

Shin Ko, situated between the mouth of Kotuki Kawa and the main port to the N, is entered between two breakwaters. It can accommodate vessels up to 10,000 dwt, with depths available to 9m within the basin.

Kamoike Ko, situated about 1 mile SSW of Kotuki Kawa, and protected by breakwaters, is used mostly by ferry boats. It has dredged depths of 4.5m and a pier 150m long.

Minami Ko (South Port) is entered through a channel between two breakwaters, which leads to a basin with quays and piers with depths from 4 to 5.5m alongside. The least charted depth in the entrance is 4.5m. Vessels up to 2,000 dwt can be accepted at the 180m long pier.

Mokuzai Ko (a lumber port), another basin, lies 0.5 mile S of Minami Ko. There are depths of 10m in the entrance and can accommodate vessels up to 19,000 dwt at its 185m long pier.

Taniyamaikku, or the N section, entered between two breakwaters, has quays with depths alongside from 5 to 12m. A pier,

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Kiire Ko

with depths of 5 and 5.6m alongside, lies about 0.6 mile NNE of the N breakwater. Quay No. 1, Quay No. 2, and Quay No. 3 lie on North Wharf, and quay No. 5 lies on the W side of the basin. Vessels with drafts up to 11.3m can berth in this basin.

Taniyamaniku, or the S section, is entered between the S extremity of East Breakwater. On the N side of the entrance is a berth and dolphin for the grain center. Depths here are 5 and 12m, respectively. Pier No. 1, with depths of 5.5 to 5.7m alongside, lies in the NW part of the basin. Pier No. 2, with depths of 5.5 to 7.5m alongside, and Pier No. 3, with a depth of 9m on its S side, lie on the W side of the basin.

Aspect.—The city of Kagoshima has been erected at the foot of Siro Yama, a hill that rises 122m, about 2.8 miles NW of Kan Se. Two radio towers are conspicuous and stand near Shiro Yama. There is a prominent tower, with a height of 46m on the seaward edge of reclaimed land 1.3 miles W of Kan Se. Kotuki Kawa flows through the city on the SW side of Siro Yama.

Pilotage.—Pilotage is not compulsory. Pilots board, as follows:

1. Vessels requiring quarantine bound for Hon Ko (Area No. 1) and Shin Ko (Area No. 2)—in the vicinity of the quarantine anchorage.
2. Vessels not requiring quarantine bound for Mozukai Ko and Taniyama Ko (Area No. 1 and Area No. 2)—about 2 miles E of Taniyakama Ko Area No. 1 North Breakwater Light.

Agents must give 24 hours notice to the port before the vessel's arrival. Berthing and unberthing, during daylight hours only.

Signals.—Storm signals are shown from the harbor police station, about 0.2 mile NW of the S end of East Breakwater.

Anchorage.—Kagoshima Ko provides the best anchorage in Kagoshima Wan.

Large vessels may obtain anchorage off the main harbor, in 34.7m, mud and sand, with the light on the S end of East Breakwater bearing about 298˚, distant 0.7 mile or further N with the same light bearing 247˚, distant 0.35 mile, in a similar depth. Vessels should anchor S of the ferry crossing. During winter, strong winds may make the working of cargo difficult.

In an emergency, large vessels can seek anchorage in a designated area. This area, which is situated SE of Kan Se (31˚34'N., 130˚36'E.), provides anchorage, in depths of 38.5 to 43m, mud and sand. Shelter from winds between the N and E may be obtained in this spacious area. However, vessels should exercise caution due to the strong tidal currents between Kan Se and Sakura Shima. The Quarantine Anchorage lies S of Kan Se and has a general depth of 14m.

When the center of a typhoon passes the N part of this port, rain and wind become extremely severe. Small ships should seek refuge in Yamagawa-Ko and large ships in the N area of the E coast of Kyusyu, Amani-O Shima, or along the W coast of Kyusyu to the N of Yatusiro-Kai.

Submarine cables are laid S and E from the mouth of Kotuki Kawa.

8.9 The head of Kagoshima Wan is nearly landlocked, forming an inner bay which can only be entered through Nishi Suido, the channel on the W side of Sakura Shima. Depths in the central part of the bay range from 128 to 146m, and in an area in the E part, depths exceed 183m. This bay has an uneven bottom with no suitable anchorages, except those off Hamanoichi and Fukuyama; these are only suitable for small vessels.

A submarine cable and water pipeline are laid SW from Shin Shima to Sakura Shima.

Kajiki, a town from which storm signals are shown, lies in the NW part of the bay, 10 miles NE of Siro Yama.

Okiko Shima, 88m high, Benten Shima, 32m high, and Hetako Shima, 124m high, are three islands lying in a N-S direction within 1.25 miles of the shore.

Hamanoichi Hakuchi, an anchorage for small vessels with local knowledge, lies N and E of Hetako Shima.

Fukuyama Ko is a small harbor situated about 5 miles ESE of Okiko Shima. Local storm signals are shown at Fukuyama.

Okinozunbe, a shoal with a depth of 1.8m, lies 1.25 miles off the NE coast of Sakura Shima.

Dora Shima, with a depth of 0.2m, lies on a shoal within 0.7 mile SE of Okinozunbe.

Inoko Shima dries 1.2m, and lies on a shoal between Doro Shima and the NE tip of Sakura Shima, Nishisemari Bana. Shin Shima, 42m high, lies about 1 mile E of Nishisemari Bana. Io Shima and Nakano Shima are two rocky islets, which are 2.7 and 6m high. The water depth between these rocks is highly irregular. Attention must be paid as there are rocks in this area other than the those mentioned here. Lava, from an eruption reaches down to the shore on the E side of Sakura Shima about 2 miles S of Shin Shima. Hama Shima, is a rock pile, extending about 0.2 mile off the coast part of which dries, 1.2m, and is also located about 2 miles south of Shin Shima. Oki Se, is a rock, with a water depth of 4.5m, located about 2.5 miles ESE of Shin Shima.

8.10 From Kaimon Misaki to Bono Misaki (31˚15'N., 130˚13'E.), the S coast of Kyushu trends about 16.5 miles WNW and is indented by but one bay of any size, Makurasaki Wan. Then for about 11 miles NNW to Noma Misaki, the coast is indented by small bays, fringed by numerous rocks.

Tidal currents between Kaimon Misaki and Bono Misaki flow W on the flood and E on the ebb. In calm weather, the Kuroshio and its countercurrent are recognizable, and subsequently the velocity of the flood is increased a bit, but about 2 miles offshore the combined rate is negligible.

Between the entrance of Kagoshima Wan and Bono Misaki, discolored water, caused by fluvial mud and appearing as shoals, may be noticed up to 2 miles offshore.

Akakue Bana (Akakuzure Bana), 123m high, and surmounted by a conspicuous growth of pines, is located about 11.5 miles NW of Kaimon Misaki. Also, near the W side of the point, is a prominent reddish cliff.

Bisanko Iwa, about 0.1 mile W of Akakue Bana, is a conspicuous rock, 18m high, with a somewhat pointed summit. A rock, 2.7m high, lies on the edge of the reefs, about 91m SW of Bisanko Iwa.

8.11 Makurasaki Ko (31˚16'N., 130˚18'E.) (World Port Index No. 62240) is situated on the SW coast of Kyushu, in a position about 13 miles WSW of Kaimon Misaki. The port consists of an outer harbor, with an anchorage, a town, and a small inner harbor entered between two breakwaters. The inner harbor is reported to be dredged to a depth of 4.5m. An outer breakwater projects SW into the harbor, from the S end of the town. A detached breakwater lies close NW of the outer breakwater.

Winds—Weather.—From the end of September to the beginning of June, 70 to 80 per cent of all winds are from the N and NNW. During the remaining months, the winds from the S and SW are the strongest. Local weather signals are displayed at a meteorological observatory on a hill NW of the town.

Depths—Limitations.—An unloading embankment for fishing boats is situated on the N side, with depths from 3.5 to 4.5m alongside. On the S side of the port is a fuel supply embankment, with a depth of 3.5m alongside and Sin Ko embankment, with depths of 4.5m alongside. A fish haven lies 2 miles ESE of Makurasaki Ko.

Aspect.—The meteorological observatory tower, standing on a hill NW of the town area, and the four television towers on the summit of Kurata Yama, about 4.3 miles N of the port, are good landmarks. A crane, whose top is painted yellow, is situated near the root of the S breakwater and is prominent.

Anchorages.—Anchorage may be taken, in 12.8m, rock covered with sand, in a position with the light on the head of the E breakwater bearing 022˚, distance 0.35 mile. However, due to the nature of the bottom, sand over rock, the holding ground is not good.

A comparatively safe anchorage can be obtained in an area E of the N-S line of the S breakwater light when a strong NE wind occurs, and in an area to the W of this line when a strong NW wind occurs.

8.12 Kaku Bana (31˚15'N., 130˚17'E.) is surmounted by a conical hill, 92m high, named Yamatategami, that shows up well from E. Tategami Se, about 0.2 mile SSE of the headland, is a conspicuous rock.

Bono Misaki is a cliffy headland, which rises to a conical hill, 96m high. A hill, with two summits, about 171m high, lies about 0.5 mile NNE of the headland. Tide rips may be encountered in the offing about 2 miles W of the headland, especially during the W current.

Fuko Shima, 41m high, lies about 0.6 mile NNW of Bono Misaki. Unose Shima, 67m high, lies about 0.8 mile N of Bono Misaki.

Bono Tsu is a small bay which lies on the N side of the promontory of which Bono Misaki is the S extremity. Bono Tsu is unsuitable as an anchorage due to rocks which extend as far as 0.1 mile off the E side of the cove. At the head of the bay is the village of Bo.

Minega Saki (31˚16'N., 130˚13'E.) ia a cliffy point, the W side of which is fringed with reefs and rocks extending up to 0.1 mile offshore. This point rises to Muko Yama, which attains an elevation of 134m and is covered with bushes. Minega Saki appears as an island from sea.

Tomura Ura, close N of Minega Saki, affords protection from all winds except from the SW and W. This bay affords the only suitable shelter in the W approach to Osumi Kaikyo, but its entrance should be identified before thick weather sets in. The coast in the vicinity of Tomura Ura is rocky; its N entrance should be given a berth of at least 0.5 mile because of a group of rocks projecting 0.2 mile SW and 0.4 mile S from it. These rocks form a natural breakwater for the bay. Use Shima, the southernmost of the rocks, is 22m high. Yama Shima, the largest of the group, lies midway between Use Shima and the N shore, and is 37m high. Two coves indent the N and S sides of the bay. At the head of the bay, which is shallow and has a sandy beach, is the village of Tomari. Matsu Shima, 15m high,

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the NW of a group of rocks close off the S shore of the bay, is located 0.55 mile E of Use Shima.

Anchorage.—Anchorage can be taken, in depths of 17.8 to 24.7m, about 0.4 mile from the head of the bay, with Use Shima open about three times it own width. This anchorage is situated N of Matsu Shima, which lies about 0.5 mile E of Use Shima. Small vessels can obtain better shelter, in a depth of about 15.5m, S of the above area, off the cove of the S side of the bay with the summits of Matsu Shima and Use Shima in line.

The coast between the N entrance point of Tomari Ura and Noma Misaki, about 9 miles NNW, is rocky and indented in its S part by two bays, namely, Kushi Wan and Akime Wan.

Tsurukui Saki, the NW entrance point of Kushi Wan, is faced with an almost perpendicular cliff and detached rocks extend 0.25 mile W from it. Close off the point is Tategami Iwa, a black rocky islet, 23m high, which is difficult to observe when it is bearing more than 030˚. The farthest N of the detached rocks is pointed and 21m high. About 1.5 miles inland from the point is Ima Take, a prominent conical peak, 270m high, the summit of which is covered by trees.

Akime Wan, a small open bay with deep water, is entered between Tsurukui Saki and Oki-akime Shima an island, about 1.8 miles NNW. This bay is also unsuitable as an anchorage. However, small vessels with local knowledge may obtain shelter, except during strong South winds, off a sandy beach on the E shore or off the village of Akime, situated near the head of the bay. A mountain, with a conspicuous radio tower on its summit, is located about 2.5 miles E of Oki-akime Shima.

Oki-akime Shima is connected to the coast NE by above-water rocks and submerged reefs, but elsewhere it is steep-to. Sengan Se, with a depth of 0.3m, lies 1.5 miles WNW of the S end of Oki-akime Shima. A rock, with a depth of 2.7m, lies 0.2 mile N of Sengan Se. Both rocks lie in the track of coastwise shipping. In calm weather, they are usually marked by tide rips and in rough weather the sea breaks heavily over them.

Noma Misaki to Tengu Bana

8.13 **Noma Misaki** (31˚24'N., 130˚07'E.) is the W extremity of a small peninsula known as Noma Hanto, which from the N appears as an island. A group of radio towers stands on the middle of the peninsula, 0.75 mile NE of its extremity. A light is situated on Noma Misaki.

Ka Se is composed of two prominent rocks about 0.4 mile S of Noma Misaki. The S rock is 18.9m high and its peak is partly white; the N rock is black and low.

The coast 23 miles N from Noma Misaki to Tengu Bana forms a bight. In the S part of the bight are two rocks lying about 5 miles offshore. O Se, the SW rock, is steep-to and has a depth of 2.7m. This rock lies about 4.8 miles NNE of Takasaki Bana (Kosaki Bana), the N point of Noma Hanto. Kuta Shima, located about 3 miles NE of O Se, is somewhat square in shape, barren, and steep-to.

Between Kuro Misaki, the NW tip of Noma Misaki and Takasaki Bana, the coast recedes and forms a bay, at the head of which is Nome Ike, a salt water lagoon. The W shore of this bay is fringed with rocks and the bottom is uneven. Hiro Se, the NW of these rocks is 4.6m high. Kome Shima, a group of islets, lies 0.4 mile E of Hira Se. Close SE of the group is a reef with a depth of 5m.

Caution.—Vessels should not attempt to pass between Kome Shima and the coast S. Reference should be made to the chart for location of the fish haven obstructions in these waters.

A submarine cable lies 1 mile S of Kuta Shima and lands 11.5 miles NE of Kosaki Bana.

8.14 Noma Dake is the summit of Noma Hanto. Its W side is steep, sloping upwards to a peak. When seen from S, the W side appears as a perpendicular cliff.

Takasaki Bana (Kosaki Bana) (31˚26'N., 130˚10'E.), the N tip of Noma Hanto, is the extremity of a treeless spur. Close off the point is a rock, 4.5m high, conspicuous from, E or W. O Se, a detached 4.5m rock, lies about 0.2 mile N of Takasaki Bana.

Tateba Shima (31˚25'N., 130˚11'E.), a wooded 76m high islet, lies about 1.3 miles SE of Takasaki Bana. Tateba Shima is steep-to, except on its S side, where it is almost joined to the mainland by shoals. Its NW side is cliffy and its summit has a rugged appearance when seen from seaward. Kamino Shima, located about 0.4 mile NE of Tateba Shima, is a 54m high islet, fringed with small rocks, with a particularly wooded summit. Kannoshima Sone, a steep-to detached 2.7m rock, lies about 0.3 mile NNE of Kamino Shima.

Kazurase Bana (Sakiyamano Bana) is the N extremity of a peninsula which makes up the E side of Kataura Wan. Between Kazurase Bana and Kamino Shima, about 0.4 mile NW, are numerous reefs and rocks, among which are Matsummura Se, 2.1m high, and Naka Se, 4.9m high. Funako Se, comprised of three rocks, that dries 2.4m on its W side, lies about 0.3 mile NE of Kazurase Bana.

Kataura Wan is entered between Banshono Bana and Matsuga Saki, the NW tip of the peninsula of which Kazurase Bana is the N extremity. The village of Kataura, from which local storm signals are shown, lies close S of Banshono Bana. A breakwater projects about 137m SE from Banshono Bana. Hirayae Yama, which lies on the W side of the bay, attains a height of 219m. The village of Koura lies at the head of the bay.

Anchorage.—With the exception of winds between the NNW and N, Kataura Wan affords shelter from winds from all directions. The islands in the approach prevent the entry of heavy seas; however, squalls descend from the mountains, especially with W winds.

Vessels may obtain anchorage, in a depth of about 18m, off the village of Kataura, with the E extremity of Kamino Shima and Matsugi Saki in line bearing 003˚. Small vessels may anchor on the same bearing, with the summit of Hirayae Yama bearing about 240˚. However, small vessels utilizing this anchorage should proceed no further S due to shoals in the head of the bay. Most of Kataura Wan, except for the head and the few patches in the middle, provides good holding ground in hard mud.

Directions.—The entrance of Kataura Wan is not easily made out due to the backdrop of high land. However, Tateba Shima is conspicuous and should be approached bearing about 180˚. Upon identification of Kamino Shima, vessels should continue S with Tateba Shima open W of that islet to avoid Kannoshima Sone. From abeam of Kamino Shima, a vessel

should pass midway between Tateba Shima and Matsugi Saki, and anchor as above.

8.15 Off-lying islands and dangers.—Taka Shima (31˚27'N., 129˚44'E.), a group of five small islets occupying an area about 0.2 mile in extent, lies about 19 miles W of Noma Misaki and 8 miles N of Tsukura Se. These islets, when seen from the N or S, appear as a group of three. The center islet is shaped like a pillar. The SE has a round summit and the SW islet is triangular and 68m high. The NE islet has two pointed summits and is conspicuous from the NW or SE. Two small rocks are located S of Taka Shima. The rock is located 930m from the group and is 1.9m high. The rock, which is awash at the highest HW is located midway between the rock and Taka Shima. At night, these rocks should be given a wide berth, as various submerged rocks are in the vicinity.

Michiga Saki lies 2.25 miles SE of Kazurase Bana, and between these points is a bight whose NW part contains several islets and reefs. The SE section is comprised of mud flats and sand, which dries.

Shikushi Saki, a small wooded promontory, is located about 1 mile NE of Michiga Saki.

Kimbo Zan, a conspicuous mountain with three summits, lies about 7.5 miles ENE of Shikushi Saki.

Tosaki Bana (31˚40'N., 130˚18'E.) is a small, rocky cape about 13m high, on which there are several pine trees. This area of coastline is sandy and intersected by several streams. Minato Kawa empties into the sea, about 2 miles NNW of Tosaki Bana. Kuro Se, a rock 2.4m high, lies about 137m offshore, 0.4 mile NW of the mouth of the Minato Kawa. Reefs, which dry in places, extend about 0.2 mile W from Kuro Se.

Caution.—Vessels navigating in the waters between Kosaki Bana and Tengu Bana, be aware of the fish haven obstructions in this area. Some are situated as far as 10 miles off the coast.

Naga Saki (31˚42'N., 130˚16'E.), a prominent point, is located 3.5 miles NNW of Tosaki Bana. This point, which is 4.9m high, is covered with pines and appears black. Reefs project W and S from the point.

Teru Shima, an islet 32m high, lies close inshore on the reef fringing the S side of Naga Saki. The village of Shimabira, which is connected to the islet at LW, is situated on the coast N of Tera Shima.

Mitsu Se is a long narrow reef which extends about 750m NE from a position about 0.5 mile S of Naga Saki.

Caution.—Vessels should not attempt to pass between Mitsu Se and Naga Saki.

Nomoto Kawa (Gohand Kawa) empties out into the sea about 0.7 mile NNE of Naga Saki.

Hira Se, a large flat rock about 4m high, lies on a shoal that dries. This shoal projects about 0.4 mile from the coast W of the mouth of Nomoto Kawa. A submarine cable lies about 0.5 mile N and 1.5 miles SE of Hira Se.

A breakwater extends 0.5 mile WSW from the shore, 0.3 mile NE of Hire Se. A quay, with alongside depths of 5.5 to 5.7m and used by ferries, has been completed on the NE side of this breakwater. A detached breakwater extends 0.3 mile NNW from a position 0.5 W of Hire Se. A light stands at the S head of the detached breakwater.

A submarine pipeline lies 1.2 miles NE to an area of reclaimed land on the shore.

8.16 Kushikino Ko (31˚42'N., 130˚16'E.) (World Port Index No. 62245) is primarily a fishing harbor, which is entered between two breakwaters. The port consists of a town, an outer harbor with an anchorage, and a small inner harbor with berthing facilities for small vessels.

Tides—Currents.—The MHW interval at Kushikino Ko is 7 hours 30 minutes; spring tides rise 2.8m and neap tides rise 2.1m.

Depths—Limitations.—The area in the vicinity of the 100m long central quay has been dredged to 3.5m. The end of this pier can accommodate vessels up to 880 dwt.

Aspect.—Conspicuous landmarks include the radio tower on the E side of the harbor, the group of oil tanks on the S side of the basin in the inner harbor, and the breakwater lights.

Anchorage.—Shimabira Byochi, the S anchorage in Kushikino Ko, provides protection for vessels with local knowledge from winds between the N and E.

The best anchorage is in a depth of 10.9m, sand, with Naga Saki bearing 331˚ and Kuro Se bearing 095˚. Small vessels can approach the W tip of Tera Shima to within 0.1 mile.

A quarantine anchorage is situated about 2.1 miles NW of Kushikino Light.

Directions.—From a position about 1 mile bearing 288˚ from Kushikino Light, head between the two breakwaters on a course of 102˚. However, vessels should take care not to approach within 7m of the heads of either breakwater. Immediately after passing through the harbor entrance, course may be altered to port to proceed to a berth. Rocks, awash at LW extend from 5 to 10m off the E side of the N breakwater. Generally, within the harbor depths are greater towards the breakwaters.

8.17 Hashima Saki (30˚45'N., 130˚12'W.) is a prominent headland, 122m high, located about 4 miles NW by W of Naga Saki. Okino Shima, a wooded islet 79m high, lies about 0.7 mile SW of Hashima Saki. Several fish havens lie in the vicinity of Okino Shima. There is a 4m patch, close off the NE tip of the island. Between this patch and Hashima Saki there is a deep channel.

South of Hashima Saki, a W set occurs on the ebb current.

Hashima Ura, on the E side of Hashima Saki, is an open bay whose shores are fringed with drying rocks. At the head of this bay is the village of Hashima. Small vessels with local knowledge may take anchorage sheltered from winds between the W and N, keeping Okino Shima open S of Hashima Saki.

Benzaiten Yama, a conspicuous peak, attains an elevation of 579m about 3 miles NE of Hashima Saki.

Tengu Bana, 3 miles NNW of Hashima Saki, is a promontory, with rocky cliffs, and a thickly wooded summit. About 1.3 miles NNW of Tengu Bana is Kamo Se, a detached, steep-to rock, 8.6m high. This rock lies about 0.9 mile offshore and may be passed on either side.

The tidal currents off Kamo Se usually attain velocities from 0.8 to 1 knot, with the flood current setting N and the ebb current setting S.

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8.18 Koshiki Retto (Kosikizima Retto) is a group of three islands and a number of islets extending about 20 miles in a SW direction from a position about 12 miles WNW of Tengu Bana. The three islands, from S to N, are Shimo Koshiki Shima, Naka Koshiki Shima (Taira Shima), and Kami Koshiki Shima.

Shimo Koshiki Shima is the largest island and its interior is mountainous. O Take, the summit of the island, is 604m high. This mountain, the highest in the group, is wooded, and its summit when seen from the W appears flattened. From NE or E the summit appears pointed and conspicuous. The N part of the island, N of O Take, is a narrow hilly promontory, that, when seen from the E or W, resembles a chain of islets. The W coast of the island is cliffy and the E side is comprised of a number of sand and gravel beaches.

Shimo Koshiki Shima

8.19 South end.—Tsurikake Saki (31˚37'N., 129˚41'E.) is a grassy, round-topped headland, which is conspicuous from the E or W. Teuchi Saki, the SE tip of Shimo Koshiki Shima, has two round summits, 162m high. Kamino Se, a group of rocks, 5.2m high. A light, with a ramark, stands on Tsurikake Saki and storm signals are shown from it. Kamino Se, a group of rocks 5.2m high, lies about 0.2 mile S of Teuchi Saki. These rocks are steep-to, and the sea breaks heavily against them in bad weather.

Teuchi Wan is entered between Teuchi Saki and the E side of Tsurikake Saki. Shimone Se, a rock 3m high, is located off the W entrance point and narrows the navigable width of the fairway to less than 0.5 mile. The village of Teuchi is situated at the head of the bay.

Tides—Currents.—In the vicinity of Tsurikake Zake, the flood runs W and the ebb runs E. The current generally runs between 1 and 2.5 knots, with occasional tide rips in the offing. In the offing, between Taka Shima and Shimo Koshiki Shima, a SE ebb current of 1 to 2 knots has been reported. In the vicinity of Haya Saki, the flood runs N and the ebb S, at a speed of 1 to 2.5 knots. Tide rips occasionally occur off No Saki, a point 1.25 miles NW of Tsurikake Saki. An islet, 1.2m high, lies close S of No Saki. Haya Saki (31˚39'N., 129˚40'E.) is a steep, rocky headland, which rises to a wooded peak, and lies 1.5 miles N of No Saki (Nosakino Saki).

Anchorage.—Small vessels with local knowledge may anchor, in 12.8 or 14.6m, sheltered from N winds, in the middle of Teuchi Wan.

8.20 West side.—The coast between Haya Saki and Kabetachi Bana, about 4 miles NNE, is steep and backed by a number of high peaks. Katano Ura is a small cove, the head which lies about 1.25 miles E of Haya Saki. There is a rock, 4.6m high, about 0.1W of the N entrance point of the cove. Seseno Ura is a small open bay situated NNE of Katano Ura. The bay should not be approached closely, as the sea breaks upon its shore except during E winds. Takanosu, a rock 33m high, lies off the S side of the entrance.

Chu Se, a gray columnar rock, 127m high, is close W of Taka Se Saki, which forms the N entrance to Seseno Ura. This rock is conspicuous from the N or S, but is difficult to distinguish from W due to high ground.

Kabetachi Bana is a steep promontory, located 1 mile NE of Chu Se. On the wooded hillsides in the vicinity of the cape, reddish patches are visible between the trees. Haike Yama, a sharp peak 512m high, is located 1.25 miles ESE of Kabetachi Bana. Yura Shima, which is comprised of two islets, is located about 3.3 miles ENE of Kabetachi Bana. The E and larger of the two islets is 36m high and upon its summit lies a few pine trees. Ikeya Saki, a group of three islets, lies about 2.5 miles NE of Yura Shima.

Tsubura Saki, the N tip of Shimo Koshiki Shima, is located about 3.25 miles NNE of Yura Shima. This steep promontory rises to Yohagi Yama, a pointed wooded peak, 167m high.

8.21 East side.—From Teuchi Saki, the coast leads about 2.5 miles NE to Sebi Saki, which rises to a hill, the N side of which is cliffy and wooded. Close off the point is an above-water rock that is only visible from the N.

Esaki Bana is a rocky, rounded headland, 93m high, which is surmounted by several trees.

Nagahama Ura is a small bay entered between Nagahama Saki and a point about 1 mile farther NE. It was reported that a vessel of 5,000 dwt anchored in Nagahama Ura. The best berth in this bay was reported to be in a depth of 13m, situated about 1 mile SW of Oda Yama, which rises to 426m on the NE side of the entrance.

Caution.—Caution is necessary when anchoring due to submarine cables.

Imuta Ura is a small bay on the S side of Hirase Saki, which is sheltered from winds between the W and N. This bay affords temporary anchorage for small vessels waiting to transit Imutano Seto. When anchoring, care must be taken to avoid submarine cables in the S part of the inlet.

Hirase Saki (31˚47'N., 129˚48'E.) is the NE tip of Shima Koshiki Shima, and is the extremity of a small peninsula. This point, which has three summits, is bordered by shoals extending up to 0.2 mile offshore in places.

Imutano Seto is the narrow strait which separates Shimo Koshiki Shima from Taira Shima to the NE. This strait which can be navigated by vessels with local knowledge keeping very close to the W side of Okinosegami, a rock, 4.3m high, lying 0.5 mile NNE of Hirase Saki.

Tidal rips and strong tidal currents form on the SE of the NW side of the narrows, depending on the direction of the current. Reefs on either side of the strait reduce the fairway to a width of 0.2 mile. Naka Bae, a rocky patch with a depth of 8.2m, lies in the middle of the narrowest part of the fairway.

Tides—Currents.—At springs, the tidal currents can reach a rate of over 3 knots. The flood runs N and the ebb S with about a 15 minute slack water. The sea breaks heavily with the wind against the current. There have also been periods when the NW or SW current continued to flow all day.

8.22 Naka Koshiki Shima (Taira Shima) (31˚48'N., 129˚50'E.) is without tall trees; there are patches of grass and brush and also areas of cultivation. Benkei Shima, a conspicuous islet located on a reef which dries, is 49m high and lies 0.2 mile E of the S tip of Naka Koshiki Shima. A lone pine tree stands atop the summit of the islet. About 137m E of Benkei Shima is another islet, 28m high.

The tidal currents off Benkei Shima run N on the rising and S on the falling tide, at a speed of about 1 knot. There are periods when the N or S current may continue all day long.

Anchorage.—Taira Ura affords temporary anchorage sheltered from all winds from the N, through the W, to S. On the S shore of the bight is the village of Taira, behind which is a large conspicuous temple. Shoals extend as far as 0.13 mile off the E and S sides of Taira Ura and as far as 137m off its head.

Eishi Ura, on the E side of Nakakoshiki Ura, affords anchorage in its central part, but submarine cables greatly reduce the available anchorage space. The interior of Eishi Ura is fringed with rocks within about 0.1 mile offshore.

Caution—There is considerable foul ground between Naka Koshiki Shima and Kami Koshiki Shima to the N, and large vessels cannot pass between these two islands. Naka Shima, the larger of the two islands on the above foul ground, lies SW of Kushi Saki, to which it is joined by drying rocks. Naka Shima is densely wooded and has a flat summit. The passage between the S side of Naka Shima and the N tip of Naka Koshiki Shima is completely blocked by a gravel bank which dries, on which is Maruyama Shima, a bare, round-topped islet. Soemon Se, a 9.1m rocky patch, is located about 0.2 mile NNE of the W extremity of Naka Shima and about 0.15 mile off its N side.

Kami Koshiki Shima is the NE of the main islands which comprise Koshiki Retto. This island is mostly irregular in shape and hilly. Several small bays indent the NE side, and on the SW side are Nakagawara Ura and Nakakoshiki Ura.

Taira Ura, the bight on the W side of Nakakoshiki Ura, is entered close N of Ya Saki.

8.23 **Kayamuta Saki** (31˚48'N., 129˚53'E.), the cliffy S extremity of Kami Koshiki Shima, is the S entrance point of Nakakoshiki Ura. Close off this point is a large black rock, 31.7m high. From this rock, a sunken reef extends about 137m S to Kajikake Se, a rock, which dries 2.4m.

Ko Shima, a wooded islet 20.7m high, lies off the SE side of Kuratsuma Saki, about 350m offshore.

Kuratsuma Saki, on the E side of Nakakoshiki Ura, lies about 1.5 miles NNW of Kayamuta Saki.

Nakakoshiki Ko (31˚50'N., 129˚52'E.), situated at the head of Nakakoshiki Ura, is entered between two breakwaters. Nakakoshiki Ko is exposed to S winds, but good anchorage may be taken in its middle part; the best berth is in 11m to 12.8m, about 0.5 mile SW of the village.

Tidal currents near the entrance of Nakakoshiki flow N on the rising tide and S on the falling tide. Off Kayamuta Saki the current attains a speed of 1 to 1.5 knots. There are times when the N or S current runs all day.

Nakagawara Ura, situated on the SW coast of Kami Koshiki Shima, is entered between Kuchinose Saki and Kushi Saki, about 0.7 mile SE. Soemon Se, on the S side of the approach, is a steep-to, detached rock with a depth of 9.1m, located about 0.1 mile off the N shore of Naka Shima. Nakagawara Chume, an isolated rock, with a depth of 5m, lies about 0.2 mile off the E shore of Nakagawara Ura, 0.6 mile N of Kushi Saki.

Nakagawara Ura, from its entrance, leads 1.25 miles N, and then branches off Unose Bana into two parts, Kuwano Ura, the N part and Oshima Ura, the E part. The S part of the E shore of Nakagawara Ura is fringed with reefs which project about 0.1 mile offshore. Kotatsumaru Shima, 18m high, lies close off the W shore of Nakagawara Ura, 0.35 mile N of Kuchinose Saki. A rock, that dries 0.9m, lies close of the E side of the islet. The village of Kuwanoura is situated on the W shore of Kuwano Ura.

Anchorage.—There is a safe anchorage in Nakagawara Ura, which is situated about 1 mile N of Kushi Saki, in a depth of about 25.6m. Small vessels can anchor, in a depth of 27m, on the W side of the entrance to Oshima Ura or off the village of Kuwanoura, in depths of 16.5 to 18.3m.

A phenomenon, locally known as Abiki, occurs in this region during spring and summer. This condition, where the level of the sea rises 0.6 to 0.9m and then falls to normal, may take place when there is a heavy sea in the offing, or before or after rough weather.

The NW coast of Kami Koshiki Shima from Kuchinose Saki, leads about 1.8 miles NNW to Hirase Saki, and then 1.5 miles NE to Nawase Bana, the NW tip of the island. Sakuiba Se, 2.4m high, is the outermost of the rocks which lie off Nawase.

Tidal currents about 2 miles N of Nawase Bana set E on the flood and W on the ebb, velocity not exceeding 1 knot.

Tomiyama Hanto is the peninsula forming the NE tip of the island and lies about 4 miles ESE of Nawase Bana. Nishino Ura is a small bay whose shores are mostly gravel. The bottom in the middle of this bay is rocky. Higashino Ura, 1.5 miles S of the NE tip of Tomiyama Hanto, is situated on the E side of the peninsula. This bays N part has a bottom of primarily coral.

Koshiki Kaikyo

8.24 Koshiki Kaikyo is the strait lying between Kami Koshiki Shima and Tengu Bana, on the mainland about 12 miles E. The main channel through the strait is about 6 miles wide between Kamo Se, the 8.6m islet NNW of Tengu Bana, and Naka Se, a shoal lying nearly in the center of the strait.

Naka Se, consists of two rocks, the highest of which is 4.3m high. Close off the N and S sides of Naka Se are rocks with depths less than 1.8m. About 0.2 mile S and 0.6 mile SW of Naka Se are rocks with depths of 8.6 and 7.7m, respectively, the latter being steep-to. Heavy overfalls occur in the vicinity of the above dangers, even with only a light wind.

Kurogami Iwa, a conspicuous black rock located in the W portion of Koshiki Kaikyo, about 2.8 miles NW of Naka Se, is 15.9m high. Kurogami Iwa has a pointed treeless summit and is fringed by submerged rocks on all but the W side.

Tides—Currents.—On the E and W sides of Naka Se, the flood current sets N and the ebb S, turning from 1 to 2 hours after HW and LW at Nakagawara Ura. The current reaches a maximum velocity of 1.5 knots off Naka Se. In the center part of Koshiki Kaikyo, during August and September, a current has been observed. Near either side of the channel, the combined velocity of this current and the S tidal current has been found to be as much as 2.5 knots. However, in the center of the channel, the tidal current velocity was less. Tide rips occur E and W of Naka Se.

Directions.—The fairway through Koshiki Kaikyo lies E of Naka Se and should be used instead of that channel W of Naka Se. Koshiki Kaikyo should be, if possible, avoided altogether in thick weather.

Caution.—Vessels should never attempt to pass between Kurogami Iwa and Kami Koshiki Shima, for numerous islets

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and rocks lie between them, and at times heavy tide rips are formed.

Okino Shima, 43m high, is a densely-wooded islet lying about 1.1 miles SW of Kurogami Iwa. The E side of the islet has a steep brown cliff which is conspicuous from the E. Numerous islets and submerged dangers lie between Okino Shima and the E side of Tomiyama Banto. The largest of these islets are Futago Shima, 59m high; No Shima, 95m high; and Chika Shima, 94m high. Vessels heading N through Koshiki Kaikyo at night, or in restricted visibility, should, after having accurately determined its position, take care to avoid being set W by the S current when S of Hashima Saki. When about 4 miles S of Naka Se, vessels should change course to the E to avoid these rocks if depths are found to be greater than 54.9m.

Kyushu-Tenga Bana to Nagasaki Hanto

8.25 The stretch of coast, about 52 miles NNW, between Tengu Bana and Noma Misaki, the SW tip of Nagasaki Hanto, forms a large gulf. This gulf is separated into two sizable inlets by a chain of islands and islets.

Yorita Saki lies 1.25 miles N of Tengu Bana and its summit is thickly wooded. Yoseda Kawa empties out into the sea on the N side of the point of Yorita Saki. Depths of less than 5.5m which project about 0.4 mile offshore and sandbanks that dry, can be found along this section of coast, NNE from the E entrance point of Yoseda Kawa, to the mouth of Sendai Gawa. The N side of Sendai Gawa is formed by a training wall about 2 miles long. Sendai Gawa can be ascended by small craft for about 30 miles. With a wind, the sea breaks right across the entrance, especially during the falling tide. Small craft entering should do so on the flood tide if possible. The discharge from the river gives to the surface water within about 1 mile of the entrance a pale indigo color, which is quite distinct from the dark indigo of the sea in the offing.

8.26 Sendai Ko (31˚51'N., 130˚12'E.), situated off the N side of the mouth of Sendai Kawa, N of the training wall, is divided into an inner and outer harbor. The inner harbor provides a basin for small vessels. The outer harbor is protected by a detached W breakwater about 0.5 mile long. A lighted breakwater is situated 0.75 mile WSW of the S entrance point of Sendai Gawa. A light is shown 0.2 mile SSW of the S end of the W breakwater. Fish havens lie in the approach to and N of the port.

The approach can be made from the N or S of the detached breakwater, ih depths of 8 to 9m.

There is a dolphin berth, 70m long, in the outer harbor, which can accommodate tankers up to 7,700 dwt, with depths of 8.4 to 9.6m.

The channel to the inner port is situated N of the training wall. This channel, with depths from 3 to 5m, is used by small vessels with local knowledge, and leads to a quay within the inner port.

Hachiware, a rock with a depth of 0.8m, lies about 670m WNW of Sendai Ko Light. A sunken rock, with a depth of 2.5m, lies about 100m SSE of Hachiware.

Tides—Currents.—From the mouth of Sendai Gawa and the island of O Shima about 11 miles N, the N tidal current flows from about 2 hours after LW, until about 2 hours after HW. The S current flows from 2 hours after HW until 2 hours after LW. The velocity does not exceed 1 knot.

Aspect.—Landmarks include the chimney with an elevation of 206m in the industrial area and Tsukiya Yama. Tsukiya Yama, a conspicuous roundtopped hill, rises to an elevation of 164m close to the N bank of Sendai Gawa, about 1.3 miles E of the N entrance point; there is a reddish patch on its W side.

Pilotage.—Pilotage is not compulsory; pilots from Kagoshima City board in approximate position 31˚51.2'N, 130˚09.5'E.

8.27 Tate Yama (31˚54'N., 130˚14'E.) is a conspicuous conical hill, 138m high; with a clump of fir trees on its summit. Fish havens lie 3 miles SW, 1 mile WNW and 2 miles NW of Tate Yama.

The coast leads N from the mouth of Sendai Gawa about 8.8 miles to Sakata Saki. Sakata Saki is a small peninsula, 69m high, that ends in a vertical cliff. Ushi Se, a rock 5.5m high, lies about 1.8 miles SE of Sakata Saki. Within 1 mile either side of Ushi Se, sunken reefs project about 0.5 mile offshore.

Akune Byochi provides an anchorage for small vessels, and lies on the N side of Kuratsu Saki, a 42m headland which lies 1.5 miles N of Sakata Saki.

O Shima, located on the W side of Akune Byochi, is 51m high. Numerous reefs, one of which is awash, lie within 0.4 mile S and 0.25 mile SE of O Shima. The entrance channel to the anchorage within Akune Byochi trends between the SE edge of the above reefs and the reefs projecting from Kuratsu Saki.

Kuwa Shima, 63m high, is heavily wooded and lies about 0.3 mile N of O Shima. Between these two islets there is a reef on which are several above-water rocks. A lighted buoy is moored off the N extremity of Kuwa Shima; fish havens lie close W and about 0.5 mile NE.

Akune Byochi is protected from the N by an extensive shoal flat, with depths less than 5.5m, which projects from the NE side of O Shima E to the shore. Ko Shima, 51m high and Moto Shima (Hon Shima), 14m high, lie on the E part of this bank among several other rocks.

8.28 Akune Ko (32˚01'N., 130˚11'E.) is situated in the SE part of Akune Byochi at the mouth of the Takamatu Kawa. This port is entered between two breakwaters and is divided into an inner and outer harbor. A light stands at the head of both breakwaters. A detached breakwater lies 0.5 mile NW of the W breakwater.

Tides—Currents.—Tidal currents in the channel between O Shima and Kuratsu Saki attain a velocity of about 1 knot. Near the NW tip of Kuwa Shima the S current is influenced by the strong flow from Kuro Seto and a velocity of about 2.3 knots may be attained, however, the N current is very weak.

Aspect.—Two radio towers, the NW marked by neon lights situated NE of the inner harbor, are good marks. A group of buildings, about 0.5 mile E of the W breakwater light, also forms a conspicuous landmark.

Anchorage.—Small vessels with local knowledge can take the anchorage outside of the breakwaters in Akune Byochi sheltered from all but SW and NW winds, in depths of 5.5 to 10m, sand.

Directions.—The main channel to Akune Byochi is between O Shima and Kuratsu Saki. Small vessels from the S with local knowledge head for the center of Moto Shima on a course which passes about 100m E of Kajikake Lighted Buoy (32˚00.5'N., 130˚10.5'E.).

The coast N 2.25 miles from Moto Shima leads to **Se Saki** (32˚04'N., 130˚11'E.), and forms a bight called Wakimoto Ura. This bay provides anchorage for small vessels with local knowledge sheltered from W and N winds, in a depth of about 4.6m. On a drying flat at the head of Wakimoto Ura is Tera Shima, an islet 43m high. At the head of the cove, NE of the islet, is the village of Wakimoto, where local storm signals are shown. Reference should be made to the chart for the location of the fish havens in these waters. Seaweed and pearl cultivation facilities are installed along the shores inside this cove.

8.29 Kurono Seto is the channel leading between the mainland and Naga Shima, and then continues into Yatsushiro Kai.

Caution.—Hira Se, on the S side of the seaward approach to Kurono Seto, is 0.3m high, and lies on the outer edge of foul ground, which projects about 0.4 mile offshore.

Tatara Shima, 28m high, lies on the N side of the approach to Kurono Seto. The N side of Tatara Shima is connected to the S end of Naga Shima by rocky ledges and gravel banks, most of which dry. Sone Se, a rock, on which there is a depth of about 0.2m, and Kone Se, a 4.6m shoal patch, lie about 0.32 mile S and 0.74 mile SE of the S end of Tatara Shima.

Naga Shima lies across the seaward entrance to Yatsushiro Kai and is separated from the mainland SE by Kurono Seto. The E side is fairly high and undulating, but the W side is more even and cultivated in places. Gionin Dake (Gyonin Take), a conspicuous peak, with a heavily-wooded summit, 394m high, rises a little N of the middle of a range of hills that extends in a N and S direction through the island. The summit of the island lies about 1.5 miles S of Gionin Dake.

Naga Shima—South and West Sides

8.30 Southwest and west sides of Naga Shima.—Nagasaki Bana is the low SW tip of Naga Shima, which lies about 3.25 miles NW of the S end of the island. Maru Yama, a prominent hill, 183m high, lies about 0.5 mile NNW of the N tip of Tatara Shima. A conspicuous group of pine trees surmount a 189m hill, about 0.8 mile NE of Nagasaki Bana.

From Nagasaki Bana, the W side of the island leads about 3.5 miles NNW to U Saki, a headland on the E side of the S part of Nagashima Kaikyo.

Gesu Shima (32˚11'N., 130˚02'E.) is a horseshoe-shaped island which lies close off the S end of Amakusa Shimo Shima and forms the W side of Nagashima Kaikyo. Gesu Shima rises to a conspicuous wooded summit, 136m high. A light stands at the head of a breakwater close W of the island. Satsuki Ura is entered on the S side of Gesu Shima between O Saki and Futako Saki, about 1.3 miles W.

Futago Shima (Futako Shima), close off Futako Saki, is comprised of two islets, of which the N is 34.4m and the S is 29.6m high and conspicuous, being marked by a single pine tree on its summit. A few above-water rocks lie S of these above islets, the southernmost of which is 1.8m high.

Gan Se, about 1 mile S of Futako Shima, is a small reef on which the highest and westernmost rock is 11m high.

Tsuki Shima (Tsukino Shima), which lies close off the E entrance point of Satsuki Ura, is 65m high and has several dangerous rocks close S which are usually marked by breakers. Kuro Se, the southernmost of these rocks, has a depth of 1.2m. About 0.4 mile NE of the E tip of Tsuki Shima is Oko Se, an islet 13.4m high, from which reefs and shoals extend, about 0.2 mile S and E.

Hoga Shima, close off the E coast of Gesu Shima, is 49m high and lies 0.3 mile N of Oko Se. A detached reef, with a depth of 5.8m that is generally marked by tide rips, lies about 0.2 mile E of the N tip of Hoga Shima.

Ushi Shima, 57m high, lies close off the E side of Gesu Shima, with its SE tip about 0.3 mile NNW of the N end of Hoga Shima. Between these two islands are several sunken rocks.

Shelter can be obtained by small vessels with local knowledge between the above islets and the E shore of Gesu Shima.

Tairo Sho, a detached patch with a depth of 14.6m, lies 0.7 mile E of SE extremity of Ushi Shima.

Idoi Ze, about 0.5 mile E of the NE tip of Gesu Shima, consists of two above-water rocks which can be passed on either side.

8.31 Ushibuka Ko (32˚12'N., 130˚02'E.) (World Port Index No. 62260) is a fishing port situated between the N side of Gesu Shima and the S tip of Amakusa Shimo Shima. This harbor also affords temporary shelter for vessels awaiting the tides in Nagashima Kaikyo. Ushibuka Ko is entered between Tokko Se, a 3.7m rock close off the NE end of Gesu Shima, and Daibano Bana, a headland about 0.6 mile N. Reefs project about 0.3 mile S and SE from Daibano Bana. On the W side of Daibano Bana there is a basin protected by three breakwaters, one of which is detached. Depths in the harbor may be as much as 7m less than charted.

Winds—Weather.—For the most part, throughout the year the N winds are most frequent. However, during winter months winds from the W to N prevail; and summer E to S winds prevail.

Local weather signals are displayed from a signal station on a hill, 60m high, about 0.3 mile SW of Daibano Bana.

Tides—Currents.—The MHW interval at Ushibuka Ko is 7 hours 48 minutes. Spring tides rise 2.5m and neaps rise 2.1m.

In the vicinity of Ushibuka Ko the current flows NE on the rising tide and SW during the falling tide. Due to the many small islands and dangers in this general vicinity the current tends to be complicated.

During the rising tide, the main tidal current flows midway between O Shima and Kata Shima, then S of Gesu Shima and joins the tidal current in Nagashima Kaikyo. A secondary tidal current, after passing between O Shima and Kata Shima, flows toward Kuro Shima, where it divides and flows E and W of the latter island. The tidal current flowing E of Kuro Shima joins the tidal current in Setowaki Seto and attains a rate of nearly 5 knots.

Aspect.—Tomi Yama, nearly 0.5 mile NW of Daibano Bana, is 216m high and conspicuous. A silver-gray iron framework radio tower, 15m high, stands on the summit of Tomi Yama; two red obstruction lights are shown from the top of the tower.

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Some oil tanks near the N end of Gesu Shima are conspicuous. A meteorological station, N of the NE entrance point of the inner harbor, is also conspicuous.

Anchorages.—Ushibuka Ko is well-protected, but the area available for anchorage is small. Anchorage can be taken, in 22.8 to 25.6m, NW of Idoi Ze; small vessels with local knowledge can anchor closer to the head of the harbor.

Anchorage has been obtained, outside the harbor limit, with Daibano Bana (32˚12'N., 130˚02'E.) bearing 295˚, distant about 0.5 mile, in which position the holding ground was found to be good, and the effect of the tidal current small. Anchorage can be taken in Kutama Ura, in depths of 22.9 to 25.6m, with Idoi Ze bearing 154˚, distant 0.75 mile.

Directions.—Vessels approaching Ushibuka Ko should pass about 1.3 miles E of Hoga Shima. When Katsu Saki, the E entrance point of Kutama Ura, bears 315˚, steer for it on that heading. When Daibano Bana bears 295˚, alter course for that point in order to pass between Idoi Ze and the reefs extending off Katsu Saki. Vessels should then alter course for the harbor and anchor as directed above.

Kutama Ura is an inlet located just outside of the harbor limits of Ushibuka Ko and is entered between Diabano Bana and Katsu Saki, about 0.7 mile E. The shores of this inlet are fringed with shoals and reefs extend S from Katsu Saki. A rock, 0.9m high, is located near the S end of the reefs which project S of Katsu Saki. There is a breakwater on the E side of the inlet. Reclamation is in progress along the W side of the inlet.

Amukusa Shimo Shina—Southwest Side

8.32 Amakusa Shimo Shima represents the largest island on the SW coast of Kyushu. This island, which is located between Nagashima Kaikyo to the S and Hayasaki Seto to the N, is very hilly and its coasts are rocky.

Suguchi Ura, a small bay almost completely blocked by shoals, is entered between Nagateno Bana (32˚11'N., 130˚01'E.) and Tsuru Saki, about 1 mile W. Kuro Shima, 76m high, is located on the E side of the entrance. Hira Se, a group of rocks which dry, lie on the E side of the S approach to Suguchi Ura. These rocks project off the SW side of Gesu Shima. A breakwater has been constructed from the NE extremity of Gesu Shima, it extends N for approximately 250m. A light is shown from the head of the breakwater. A wharf built on reclaimed land is situated 0.2 mile E of Kuro Shima. A breakwater extends 30.5m WNW from its head. A lighted buoy marks the limit of a reef extending S from Kuro Shima.

Kata Shima, 66.5m high, lies about 2 miles SW of Hira Se. Reefs extend about 0.19 mile from its S and 0.47 mile from its N end. Kasa Se, a rock, which dries, 0.3m, lies about 1 mile N of Kata Shima. Several rocks, some of which are above-water, lie between Kata Shima and Kasa Se.

O Shima is located about 2.25 miles N of Kata Shima and is 67.4m high. Reefs and shoals extend about 0.25 mile offshore, except on its SW side where they project as much as 0.45 mile offshore. Hira Se, not to be confused with the group of rocks of the name off Gesu Shima, consists of two flat-topped rocks about 2.1m high and lies on a detached reef, about 0.75 mile SW of the S end of O Shima.

Gongen Dashi, a detached shoal with a depth of 3.2m, lies about 0.3 mile E of Hira Se. Nakano Se, a group of rocks, the highest and northernmost being 34.8m high, lies about 0.8 mile WSW of NW tip of O Shima. Two patches with depths of 1.8 and 6.4m, lie about 0.35 mile N of Nakano Se. Okino Se is a rocky islet 21m high, surrounded by rocks and lies about 0.5 mile WSW of Nakano Se. About 0.25 miles SSW of Okino Se is Kujira Baye, a group of rocks which dry 1.5m, lie on a detached shoal about 0.3 mile SW of Okino Se.

Kuwa Shima, about 0.9 mile N of O Shima, is 75m high. Nakae Se, a detached rock, which is located midway between O Shima and Kuwa Shima, has depths of less than 0.4m. Kuwa Shima is impassable to the E due to a large number of reefs between it and Amakusa Shimo Shima.

Caution.—Due to the presence of many islets and dangerous rocks along the S coast of Amakusa Shimo Shima mariners should exercise particular care during poor visibility. The channels between these islands and rocks are used primarily by local fishing vessels and vessels who are without local knowledge should avoid them.

8.33 Oniki Wan is entered between Kuwa Shima and Oniki Saki, a steep-to headland about 2 miles N. Tomi Dake, a conspicuous dark hill 222m high, lies close E of Oniki Saki. The shores of this small bay are mainly rocky and fringed with reefs.

Okinohira Se is a flat rock, about 1.2m high, which lies in the middle of the bay about 1.25 miles NE of Kuwa Shima. This rock, which breaks in any sea, has drying reefs extending about 0.25 mile W of it and a detached rock about 0.15 mile S. A rock that dries, 1.5m, lies 0.25 mile E of Okinohira Se.

Aka Shima, 47m high, lies on the N side of the bay about 0.75 mile ESE of Oniki Saki. Reefs extend SW and SE from it. Gongen Yama, at the head of the bay, rises to a height of 402m.

Oniki Ko is situated in the NE part of the bay and fronts the village of Oniki. Within the port is a small boat basin enclosed by two breakwaters. There is a wharf N of this basin formed by reclaimed land from which two piers project. These piers have reported depths (1974) at their heads of 7m. Vessels up to about 1,000 grt can be accommodated at the coal-loading facilities.

Anchorage.—Entry to Oniki Wan should not be attempted without local knowledge due to the many reefs and shoals.

The anchorage for general shipping is situated NE of Okinohira Se, in a depth of 25m, bottom of grey clay and fine sand, good holding ground. The anchorage space here is restricted by the numerous shoals in the bay. The depth of water is comparatively shallow; it is reported as being insecure when the wind and sea are from the SW to W.

The anchorage nearest the coaling piers in Oniki Wan is in about 11m, sand, but the space is very limited and local knowledge is essential.

Directions.—Because of the numerous reefs and shoals vessels should not attempt entry without local knowledge. Gongen Yama, bearing 085˚, leads between the dangers in the outer part of the bay.

Amukusa Shimo Shina—West Side

8.34 West side of Amakusa Shima.—Sakitsu Wan is entered between **Kurose Saki** (32˚18'N., 129˚59'E.) and an unnamed point about 1.25 miles S. The outer and central parts of Sakitsu Wan are joined, about 2 miles E of Kurose Saki, by a narrow channel, in the fairway of the approach to which the least depth is 8.2m. The central and inner parts are separated by Onizukano Hana, 1 mile further E. A reef, on which there are several above-water rocks, extends about 0.1 SSW from Kurose Saki. The N side of Sakitsu Wan is indented by two coves, named from W, Ikusaga Ura and Sakitsu Ura. Ikusaga Ura is shallow and used by small craft with local knowledge. Sakitsu Ura partially dries at LW, but there is usually heavy junk traffic in its outer part. On the W shore of Sakitsu Ura is the village of Sakitsu, where there is a prominent church. There is a conspicuous lighthouse on top of Naruseno Bana on the E arm of the entrance to the inlet.

Kamena Ura is located on the S side of the outer part of Sakitsu Wan. A shoal projects from the W entrance point of Kameno Ura leaving a channel utilized by small craft.

Ogamuseno Bana is located on the N side of the channel separating the outer and central parts of Sakitsu Wan. On the N side of this channel is a submerged rock, with a depth of 3.2m.

Onizukano Hana (32˚18'N., 130˚03'E.), a long promontory which projects about 0.5 mile N from the S shore, divides the inner part of Sakitsu Wan (Sakitsu Naiwan) into two anchorages. The better of the two anchorages lies between Onizukano Hana and Ogamuseno Hana, with depths of 10 to 23.8m. Ko Shima, a 23.5m islet, lies in the N section of this anchorage.

Hayano Ura is that part of Sakitsu Wan SE of Onizukano Hana. Inu Se, a flat rock, which dries 3m, lies nearly in the middle of Hayano Ura about 0.8 mile SSE of the extremity of Onizukano Bana. Takeno Saki, about 0.3 mile E of Onizukano Hana, is the E entrance point of Hayano Ura.

Anchorages.—Sakitsu Wan provides anchorage in its outer section, in depths of 12.8 to 18.3m, but it is exposed to SW winds and there is usually a swell. Sakitsu Ura affords sheltered anchorage in its S part, in depths of 5.5 to 12.8m, but it is usually crowded with native craft.

Kurose Saki to Shiki Saki

8.35 Kurose Saki to Shiki Saki.—Oe Ko, a small fishing harbor, is entered between Kurose Saki and a point about 0.75 mile NNW, from which drying reefs project. Shimabara Se, the southernmost of these, dries 2.1m.

Koga Se is a prominent group of rocks located about 2 miles NW of Kurose Saki. Two of these rocks are pointed, the highest being 27m. O Sone, a detached 3.2m rock, lies about 0.1 mile S of the group. About 0.1 mile N of the group is a rock with a depth of 1.8m.

Gotsu Yama (32˚17'N., 130˚02'E.) and Kurose Saki, in range 110˚, leads about 0.1 mile S of O Sone.

Oga Se, a group of above-water rocks, located about 1.5 miles N of Koga Se. The highest and easternmost of these rocks, is about 35m high.

Arao Dake, a conspicuous dark peak, rises to a height of 326m, about 3 miles N by W of Kurose Saki.

Takahama Ura, which provides shelter for small vessels, lies about 2.5 miles NE of Oga Se.

Shimotsufukae Ko is a small harbor protected by a breakwater situated about 2.5 miles N of Takahama Ura. However, due to extensive rocks in its approach it can only be entered in calm weather with local knowledge. A lighted beacon stands close SW of an area of reclaimed land; its protecting breakwater lies 3.2 miles NNE of Shimotsufuka Ko Breakwater Light. The coast N, about 6.25 miles to Shiki Saki is fringed by rocks and shoals projecting as much as 0.3 mile offshore in places.

8.36 Shiki Saki (Unose Saki) (Kakise Saki) (32˚32'N., 130˚01'E.) is the W tip of Tomioka Hanto and the NW extremity of Amakusa Shimo Shima. Fuka Se, with a depth of less than 1.8m lies about 1.75 miles SE of Shiki Saki. Byobu Se, a detached rocky shoal with a depth of less than 1.8m, lies about 1.25 miles SE of Shiki Saki.; a detached 2.1m patch lies about 0.15 mile NE of this shoal. Several fish havens lie close offshore between Takahama Ura and Shikisaki Misaki.

Tomioka Wan is an open bay on the E side of Tomioka Hanto. The E shore of the bay is fringed by a shoal bank. Tomoe Saki is situated at the tip of a low, sandy spit about 0.5 mile long which projects S from the E extremity of Tomioka Hanto.

Yagata Sone and Tume Sone, with depths of 3.3 and 3.6m, lie, respectively, about 0.35 mile NE and 0.5 mile ENE of Tomoe Saki.

Tomoe Ura lies on the W side of the above sandy spit, and the channel leading into it has depths of 4.6m. In its N part is a detached rocky shoal with a depth of 1.2m.

Tomioka Ko (32˚32'N., 130˚02'E.), a small port situated on the E side of Tomioka Hanto within Tomoe Ura, consists of a town with berthing facilities for small vessels.

Tomura Ura is protected from swells during strong NW winds. Local weather signals are shown from a sandy hill near the middle of town. Several pine trees stand on the low sandy spit that forms the E side of the harbor.

There is open anchorage E of Tume Sone, in a depth of 10m. Vessels entering the harbor pass close E of the lighted buoy marking Tume Sone and then pass close S of Tomoe Saki.

Nagasaki Hano—Southwest Side

8.37 Nomo Saki (32˚34'N., 129˚44'E.) is the SW extremity of Nagasaki Hanto. Gongen Yama, 214m high, is a conspicuous peak, located on this point. A large number of dangerous rocks fringe Nomo Saki within 500m, including Otategami, which is 26m high and conspicuous.

Nomo Ura is entered between Nomo Saki and the S tip of Kaba Shima about 2 miles SE. This bay's NE shore is fringed with reefs extending about 0.2 mile offshore in places. Waki Misaki is the end of a sandy spit which projects about 0.65 mile SSE from the NE part of his bay. Waki Misaki is marked by a wooded hill, 51m high, from which local weather signals are shown.

Kaba Shima is located about 12 miles W of Shiki Saki and lies close S of the S end of Nagasaki Hanto. Kabashima Suido separates Kaba Shima from Nagasaki Hanto. This island rises to several steep hills, about 128m high, and is conspicuous

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from W and SW. Kabuto Se (Kono Se) is 1.2m high, and lies about 0.35 mile NE of the NE tip of Kaba Shima. Kajikake, a reef with depths of less than 1.8m, lies within 0.4 mile NW of the NW side of the island. Kai Se, a sunken rock, lies about 0.1 mile S of the S tip of the island.

Kabashima Suido is a passage, about 0.15 mile wide, between the N side of Kaba Shima and the S end of Waki Misaki. Nearly in the middle of the E end of the passage is Naka Shima, an islet 39m high, which reduces the navigable width to less than 0.1 mile. At its shallowest part Kabashima Suido has depths of 8.2m.

There are overhead cables suspended across Kabashima Suido. The cable between Kabashima and Waki Misaki has an overhead vertical clearance of 20m. A breakwater connects Naka Shima to Kaba Shima. A submarine cable is laid across Kabashima Suido.

Wakimisaki Ko, protected by breakwaters, lies on the E side of the peninsula that terminates at Wakimisaki. The S side of Wakimisaki Ko is formed by a low point, with Benton Shima, a conspicuous islet 42m high, and some rocks within about 0.15 mile E of its extremity. Hire Se is the easternmost of the above rocks; two detached breakwaters project NE and SW from it.

The village of Wakimisaki lies on the W side of the harbor; about 0.2 mile NW of the village is a conspicuous red house.

Anchorage.—Vessels with local knowledge can anchor in Wakimisaki Ko, in depths of 9.1 to 14.6m, N of Hire Se or, in about 18.3m, E of Hira Se.

Directions.—Vessels approaching Wakimisaki Ko from W should round the S and SE extremities of Kaba Shima at a distance not less than 0.2 mile. They should then pass E of Kono Se prior to lining up for anchoring.

Yatsushiro Kai

8.38 Yatsushiro Kai is the southernmost of the inlets which indents the W coast of Kyushu. Yatsushiro Kai is bounded on the E by the mainland coast and on the W by the E coasts of Naga Shima, Amakusa Kami Shima, and several smaller islands.

The main seaward entrance to Yatsushiro Kai is via Nagashima Kaikyo and its continuation Hachiman Seto. Kurono Seto is the narrow S entrance from sea into the S end of the inlet.

The primary passage between Yatsushiro Kai and Shimabara Wan, the large inlet to the N, is Zozono Seto and its continuation Misumino Seto. However, while the fairway of these channels provide ample depths in their narrower parts, the tidal currents are strong. The next best passage between Yatsushiro Kai and Shimabara Wan leads through Otono Seto, Yanagino Seto, and Michigoeno Seto, but it is more tortuous and narrow than the primary one.

Vessels utilizing Nagashima Kaikyo and Hachiman Seto for entry or exit of Yatsushiro Kai should do so at or near SW to avoid difficulties with tidal currents.

Tides—Currents.—In Nagashima Kaikyo and Hachiman Seto, the current flows N from 1 hour after LW in Yatsushiro Kai to 1 hour after HW there, and the S current flows from 1 hour after HW to 1 hour after LW.

The tidal current, except in the vicinity of Yanagino Seto, flows in a general N direction on the flood and in a general S direction on the ebb, with the turn occurring within 1 hour after HW or LW.

Tidal currents greater than 6 knots have been observed NW of Naruse Bana (32˚13'N., 130˚06'E.).

8.39 Kurono Seto is the S seaward entrance to Yatsushiro Kai between the mainland coast on the SE and the SE side of Naga Shima. Depths within the fairway are not less than 18.3m and it is only about 0.13 mile wide in places. Tidal currents are so strong that vessels can pass through Kurono Seto only at or near slack water.

No Se, which is 0.9m high, lies on the W side of the S part of Kurono Seto about 0.35 mile E of Tatara Shima. No Se is almost joined to the coast to the N by reefs, and from it a spit with depths less than 5.5m projects about 0.15 mile S. Fuchinosiri is a rock which dries 0.3m, and lies about 0.13 mile NE of No Se. Kasa Se, which dries 3m, lies on the W side of the channel about 1 mile NNE of No Se.

Kajiori Saki lies on the E side of the channel about 1.25 miles NE of No Se. An overhead cable, with a vertical clearance of 30m, and a bridge, with a vertical clearance of 24m, crosses the channel.

Ichigo Saki (Itigo Saki), the E extremity of Naga Shima, is located about 3.25 miles NNE of Kajiori Saki.

Kasa Yama, a prominent, dark, cone-shaped peak on the E side of Kurono Seto, rises to a height of 394m, about 2.5 miles E of Kajiori Saki.

Katsura Shima, located on the E side of the N approach to Kurono Seto, is comprised of two islets joined by a drying bank. Okatsura Shima, the N islet, is prominent, round-topped, and densely wooded. Kokatsura Shima, the S islet, is cliffy, and between it and the shore S are three detached reefs. Several fish havens lie within a radius of 1.5 miles around Katsura Shima.

Tides—Currents.—Within Kurono Seto, the tidal current runs N from 1 hour after LW until 1 hour after HW. The S current runs from 1 hour after HW to 1 hour after LW. The maximum rate reaches 5.3 knots.

Nagashima Kaikyo—East Side

8.40 Nagashima Kaikyo is the S section of the main channel which leads from sea to Yatsushiro Kai.

From **U Saki** (32˚11'N., 130˚06'E.), the E side of the passage leads about 2 miles NNE to Naruse Bana, and then about 2.5 miles ENE to Nagase Bana. Many small inlets, available only to small craft with local knowledge, indent this section of shore. A detached 5.9m reef, which is usually marked by tide rips and can be seen below the surface in calm weather, lies about 0.5 mile NNW of Nagase Bana.

Shoura Shima (Syoura Shima), 91m high, lies with its S end close N of Naga Shima, from which it is separated by Chino Seto. This island makes up the E side of the N end of the main fairway through Nagashima Kaikyo, and that of the S end of Hachiman Seto. Take Saki, the NW tip of the S part of Shoura Shima, lies about 1 mile NNE of Nagase Bana and is conspicuous from SW or N. Rocks project about 0.15 mile from this point.

Nagashima Kaikyo—West Side

8.41 To Shima, a conical island, 145m high, lies on the W side of the fairway about 1.25 miles NW of U Saki. About 0.2 mile W of the SW tip of the island, is a detached 5.9m patch, which is usually marked by tide rips. To Shima is visible from seaward, across Gesu Shima. In Se, consisting of two drying reefs, lies on a shoal about midway between the W end of To Shima and the coast NW.

Aka Shima, a cliffy islet, which lies on the W side of Nagashima Kaikyo about 1.25 miles NE of To Shima. A reef, on which there are two rocky islets, projects about 0.15 mile S from the S end. Close off the N end of Aka Shima is a conspicuous pointed rock 8m high. About 0.18 mile NNE of this rock, is a 6.9m rocky patch usually marked by tide rips.

Matsusaki Wan is entered N of Aka Shima, between **Kabuto Bana** (32˚13'N., 130˚05'E.) and a point about 0.5 mile SW. This bay is accessible only to small vessels with local knowledge. A light is shown from a breakwater at the W end of the bay. A shoal, with a depth of 4.6m and on which seaweed grows thickly, is located about 0.4 mile WNW of Kabuto Bana.

Fukami Wan is entered between Otega Saki, about 1.5 miles NNE of Kabuto Bana, and Gyotano Bana, about 0.35 mile further NNE. This small bay is available only to small vessels with local knowledge. On its N side is the village of Fukami, where there is a basin enclosed by a breakwater.

Shimomate Shima is an islet lying on a shoal on the NW side of the fairway, about 1 mile ESE of Gyotano Bana. A rock, which dries, lies on the rocky ledge, projecting about 140m offshore.

Ubu Shima (Ugu Shima), about 1 mile NNE of Shimomate Shima, is a conspicuous cone-shaped island. A reef projects from the N shore of the island, effectively blocking off nearly 0.5 of the width of the channel N of Ubu Shima. Kamimate Shima, a rocky islet 15m high, lies about 0.4 mile off the SE side of Ubu Shima and on the NW side of the junction of the fairways of Nagashima Kaikyo and Hachiman Seto. A lighthouse stands on this islet.

Hachiman Seto is the NE continuation of Nagashima Kaikyo and extends about 7 miles NE from Ubu Shima to abreast Yoka Shima.

Hachiman Seto—Southeast Side

8.42 **Dosaki Bana** (32˚16'N., 130˚11'E.) is the N tip of Shoura Shima. A rock, about 2.6m high, lies on a detached shoal lying within 0.35 mile W of the headland. Kuro Shima, an islet 45m high, lies 0.35 mile SW of Dosaki Bana.

Mate Shima, 16.2m high, lies about 0.5 mile N of Dosaki Bana. Reefs project about 0.3 mile N from this small islet. Ko Sone, a reef with 2.1m, lies about 0.25 mile W of Mate Shima; there are shoals between them.

Oxo Ne (O Sone) is a dangerous detached reef 4.5m lying close to the fairway, about 0.6 mile NW of Mate Shima.

Shishi Shima, the NW side of which forms part of the SE side of Hachiman Seto, lies with its S tip about 1.75 miles SE of Dosaki Bana. Reefs front the NW side of this island extending as far as 0.35 mile offshore in places. The conspicuous summit of this island, Shichiro Yama, rises to a height of 393m, and is surmounted by pine trees.

Hire Se a reef, which dries 2.7m, lies 0.3 mile W of Shishi Shima. Katasaba Ko Breakwater Light stands 0.3 mile ESE of Hire Se.

Hachiman Seto—Northwest Side

8.43 Miyanokawachi Wan indents the NW side of the passage between Medake Bana, about 2 miles NNE of Kaminate Shima and Nihoughi Bana (Nihongi Bana), about 1 mile further NE. The central part of this bay is considered to be a safe anchorage for vessels with local knowledge, in depths of 20 to 40m, with good holding ground. Kajiki Dake, on the middle of the peninsula forming the S side of the bay, is conspicuous and attains a height of 254m.

Tsuno Se, which is comprised of two steep-to rocky patches on which there is a least depth of 0.3m, lies 0.75 mile E of Nihoughi Bana. These patches usually appear as white and can easily be made out in smooth water. During the flood current these patches are marked by heavy tide rips.

Between Tateno Bana, a point about 1.5 miles NE by E of Nihoughi Bana, and Sozu Saki, an 34m, islet about 0.75 mile further NE, the NW shore of the passage is fronted by shoals extending as far as 0.4 mile offshore.

Yoko Shima, 116m high, lies about 2 miles NNE of Sozu Saki and is located on the N side of the NE end of Hachiman Seto.

Nankian Seto is the narrow and deep channel between the W side of Yoko Shima and the E tip of Amakusa Shimo Shima. This channel is used by local traffic with local knowledge.

Nabewari Yama, a conspicuous hill 233m high, is located about 0.8 mile W of the SW entrance point of Nankian Seto.

Directions.—Vessels entering or leaving Yatsushiro Kai via Nagashima Kaikyo and Hachiman Seto should do so at or near slack water. Vessels should, after entering W of Nagasaki Bana, shape a course generally NE to pass to the E of To Shima, Aka Shima, Shimomate Shima, and Kamimate Shima. Vessels should keep to the NW side of the channel until Oxo Ne is cleared, then make good a mid-channel course to clear Tsuno Se.

8.44 Gannoshiri Seto is the continuation of the main channel from the NE part of Hachiman Seto into the W part of Yatsushiro Kai.

Tagui Saki, the N tip of Shishi Shima, is the SW entrance point of the NW end of the channel. From Tagui Saki the SW shore of the strait leads nearly 1 mile to Utsugi Saki (Nata Saki) and then about 1 mile S to Takui Saki (Yuguchi Bana). There is a 3m patch, located about 0.2 mile offshore, midway between Tagui Saki and Utsugi Saki.

Tsuzura Shima (Tsutara Shima) (32˚17'N., 130˚16'E.) on the NE side of the NW end of the fairway through the channel, lies about 1 mile ENE of Tagui Saki. This islet has two summits, with the higher and W of the two being about 49m high. From this islet, a reef projects about 91m NE; at its tip is a rock that dries 2.7m.

Futago Shima is a rock, with two pointed peaks, which lie about 0.4 mile NNE of Tsuzura Shima. A rock, on which there is a depth less than 0.3m, lies about 0.1 mile N of Futago Shima.

Kuro Shima, an islet 53m, lies about 1 mile NE of Futago Shima and has a conspicuous tree on its S end. Reefs project

about 0.1 mile from its SW part. Hiotan Shima is a dark, densely-wooded islet, 29m high, which lies on a drying gravel bank extending about 0.1 mile N from Kuro Shima.

Take Shima (32˚19'N., 130˚18'E.), with two summits about 83m high and separated by a low isthmus, has the appearance of two separate islands from a distance. Rocks project 0.2 mile N from the NE tip of the island. An archipelago of reefs and islets, the highest being 54m, extends about 0.6 mile S from the S tip of the island.

Caution.—Due to the many detached patches and other dangers in this vicinity, vessels utilizing Gannoshiri Seto should pass SW of Tsuzura Shima.

Goshonoura Shima (32˚20'N., 130˚20'E.) is traversed throughout its length by mountains, the summit of which is Karasuga Toga, 442m high. This peak appears conical and from S is conspicuous. Ganno Shiri, the SW tip of the island, is a steep rocky promontory, on which is a hill 84m high, surmounted by a conspicuous grove of trees. A submarine water pipeline extends SE and S from a position 1 mile S of the NE point of Goshoura Shima, to the W coast of Kyushu at O Saki.

Anchorage.—Small vessels with local knowledge can take anchorage off the NW side of Goshonoura Shima sheltered by the off-lying islands.

Tides—Currents.—Within Gannoshiri Seto, the flood current sets SE and the ebb NW. A maximum velocity of about 2 knots is reached; the time of the turn varies with the locality.

8.45 Secondary channels southwest of Gannoshiri Seto.—Chino Seto, which leads from Nagashima Kaikyo to Ikara Seto, lies between the N part of Naga Shima and the S part of Shoura Shima. At its narrowest part the channel is 50m wide, and in its center are two rocks which dry 2.1m. The tidal currents which set against these rocks cause heavy tide rips making the passage difficult even for boats to pass, except at slack water.

Mefuki Seto, a channel leading from Hachiman Seto to Yatsushiro Kai, lies between the E sides of Shoura Shima and Ikara Shima on the W, and the W side of Shishi Shima on the E. Due to the many dangers in this channel, large vessels should avoid Mefuki Seto, using instead Gannoshiri Seto.

The E section of the N part of Mefuki Seto is obstructed by reefs extending about 0.5 mile from the W coast of Shishi Shima. Katasoba Ura, on the W side of Shishi Shima is located about 1.5 miles ENE of Dosaki Bana, the NE tip of Shoura Shima. Ajiro Se, a reef, which dries 1.5m, with a depth of 7.6m 0.15 mile N of it, lies about 0.9 mile ESE of Dosaki Bana. Ao Shima (Hyotan Shima), 14m high, lies about 0.5 mile S of the S end of Shishi Shima and is surmounted by conspicuous pine trees. Rocks on which there are depths of 0.9 to 8m lie within 0.25 mile WSW and SSW of Ao Shima, obstructing the E side of the channel.

Mefuki Bana, the N tip of Ikara Shima, lies about 0.9 mile W of Ao Shima. A spit, on which there is a 32m islet, projects 0.25 mile N of Mefuki Bana.

Ikara Shima, the E side of which forms the W side of Mefuki Seto, is a rather flat island rising to an elevation of 105m at its highest part. Koikara Shima, an islet 35m high, lies on the S side of SE entrance to Mefuki Seto. Koikara Shima is connected to Ikara Shima by foul ground. The S extremity of the island, Biwa Kubi, is a headland connected to the peninsula N of it by an isthmus. On the W side of the peninsula is a small bay which affords shelter to small vessels with local knowledge.

Ikara Seto is the channel between the W side of Ikara Shima to the E; and the SE side of Shoura Shima and the NE coast of Naga Shima to the W. This channel, entered from N by Mefuki Seto or Chino Seto, is used only by small vessels with local knowledge. There is a shoal in the entrance with a depth of 8.2m. On the W side of the N part of the channel are three islets and several shoals and rocks. Naka Se, a detached shoal on which there is a rock that dries 0.3m, lies in midchannel about 0.6 mile NW of Biwa Kubi.

Kuen Saki, a cape on the S side of the SE entrance to Ikara Seto, lies about 0.4 mile SSW of Biwa Kubi. From this cape shoals project about 0.18 mile NE to O Sone, which has a depth of 1.8m. Miyano Ura is a small cove on the SW side of Ikara Seto, about 0.4 mile WSW of Biwa Kubi. An overhead cable, with a vertical clearance of 29m, spans Ikara Seto, 0.15 mile S of the W tip of Ikara Shima.

A bridge, with a vertical clearance of 18m, spans Ikara Seto close NW of the overhead cable.

Tides—Currents.—Within Mefuki Seto and Ikara Seto, tidal currents flow E on the flood and W on the ebb. The turn occurs within 1 hour after HW or LW. The current attains a maximum rate of 4 knots in Mefuki Seto and 1.5 knots in Ikara Seto.

Amakusa Kami Shima, a hilly island, lying between Yatsushiro Kai and Shimabara Kaiwan. The island is located E of Amakusa Shimo Shima and is separated from it by Hondo No Seto.

8.46 South side of Amakusa Kami Shima.—Hondo No Seto is generally used by small vessels and is less than 91m wide at its narrowest part. This strait's 30m wide fairway was dredged (1961) to a depth of 3m. Since 1968, this channel has been dredged to a depth of 4.5m covering a width of 50m in order to allow the navigation of ships of 700 grt. The maximum range of tide is about 3m. Two overhead cables span the strait at its N end, with vertical clearances of 21 and 23m.

Hondo Ko (32˚27'N., 130˚12'E.) is a small harbor which indents the NE coast of Amakusa Shimo Shima and is situated close W of the N entrance to Hondo No Seto.

The entrance channel to the port is located S of the sand dike which projects NE from the coast. This dredged channel is reportedly 40m wide, with a depth of 3.5m.

There is an unloading embankment on the W shore of the inner port, with depths alongside of 3m. On the N and E sides of the inner port are two reclaimed areas. The embankments have reported depths alongside of 3 and 4.5m.

The S approach to Hondo No Seto is via Nankian Seto or Yokoshima Seto. Yokoshima Seto, the channel between Yoko Shima and Amakusa Kami Shima, is over 10m deep and has a navigable width of 0.41 mile.

Both Nankian Seto and Yokoshima Seto lead into a nearly landlocked bay and then into the S entrance of Hondo No Seto. Shimochizuka Shima, 35m high, and Kamichizuka Shima 24m high, lie in the NE part of this bay and are almost connected to the NE shore by foul ground. Gosiki Shima is a small islet lying close to the S end of Hondo No Seto.

Yufunebara Wan (32˚24'N., 130˚16'E.) is entered between Funase Bana and Okinose Bana, about 1.5 miles ENE. This bay, which is exposed from S, offers temporary anchorage to vessels with local knowledge, in moderate depths, good holding ground, in its S part.

From Okinose Bana, the low, rocky E entrance point of Yufunebara Wan, a reef, which dries, projects 0.2 mile S. Several rocks, with depths of 8.2m and less, lie within 0.65 mile W and WSW, and a 10.1m patch lies about 0.35 mile SE of Okinose Bana. A fish haven is situated about 1.5 miles W of Okinose Bana.

Se Saki, a prominent point backed by a small hill, lies about 1.12 mile E of Okinose Bana. About 0.38 mile E of Se Saki is a spit, on the tip of which is a depth of 2.1m.

Ochiyodo Bana, about 1 mile E of Se Saki, is a bold pointed headland fronted by a cliff. Two drying rocks lie about 0.15 mile ENE of this point.

Kuraga Take, which attains a height of 682m, is the summit of a range of mountains in the S part of Amakusa Kami Shima. Kuraga Take, 1.75 miles N of Ochiyodo Bana, is dark and cone-shaped with a summit which is thickly covered with bushes.

8.47 Tanasoko Wan, sheltered by off-lying islands, is entered between Ochiyodo Bana and a point about 0.75 mile SE. The head of this bay dries for about 0.3 mile offshore, and on a shoal off the E side is Ko Shima, an islet, 3.2m high. On the W shore of this bay is the town of Tanasoko. Vessels with local knowledge can obtain safe anchorage, in about 19.6m, good holding ground.

The southernmost point of Amakusa Kami Shima, Karajiro Bana, lies about 1.75 miles SE of Ochiyodo Bana. This point rises to a height of 116m about 0.25 mile within its extremity. A conspicuous point, 34m high, lies about 0.25 mile W of Karajiro Bana. A grove of trees stands on this point. Ikeno Ura, which indents the coast close N of the 34m high point, is a small inlet, which affords anchorage to small vessels with local knowledge sheltered from all but W winds. Odoka Se, a 4.5m patch, lies about 0.3 mile W of the 34.4m point.

Matsuga Saki, a prominent rocky point, lies 1.33 miles ENE of Karajiri Bana. A rock, which dries 0.6m, lies at the tip of a reef which projects about 0.1 mile S of Matsuga Saki. A short distance inland the land rises to an elevation of 118m and is thickly wooded. About 1.25 miles N of Matsuga Saki is Riuga Dake (Ryuga Dake), a hill 472m high, which has a large conspicuous rock on its SW side.

Wada Saki, a headland 40.2m high, lies about 1.25 miles NE of Matsuga Saki and represents the SE tip of Amakusa Kami Shima. Close off the S side of Wada Saki is Kube Shima, an islet, 98m high, which has a lone pine tree on its summit. A shallow channel, about 91m wide, separates Kube Shima from Wada Saki.

8.48 Off-lying islands and dangers.—O Sone (Oso Ne), an off-lying rock, on which there is a depth of 7.3m, lies about 1 mile S of Okinose Bana.

Maki Shima, a craggy island, 181m high, lies about 2.5 miles S of Se Saki. Naga Ura indents the SW side of this island. Hadaka Se, a pointed rock in the W approaches, is 5.2m high.

Dateku Shima (Hagi Shima), 62m high, lies 1.25 miles S of Se Saki, in the approach to a bay on the NW side of Maki Shima. Small vessels with local knowledge can take anchorage in Naga Ura. Kusumori Shima, about 0.4 mile E of Dateku Shima, is a conspicuous, conical island 160m high, on which there are clumps of pine trees. This island is separated from the N coast of Maki Shima by a channel about 0.15 mile wide. Hiotan Shima, 42m high, lies about midway between the N end of Dateku Shima and the W side of Kusumori Shima. Between Hiotan Shima and Kusumori Shima are reefs, on which there is an islet.

Hirase Shima, 82m high, lies about 1 mile ESE of Se Saki. A detached rock, with a depth of 5m, lies 0.2 mile W of Hirase Shima.

O Seto, the channel between the N end of Kusumori Shima and the S tip of Hirase Shima, is over 0.2 mile wide. The channel N of Hirase Shima is about 0.13 mile wide and is available to vessels with local knowledge.

Yoko Shima, 52m high, lies on the E side of the approach to Tanasoko Wan, about 0.5 mile SE of Hirase Shima. Within 0.1 mile SW of the SW end of Yoko Shima is a detached rock with a depth of 5m.

Yoichigama Shima (Yokoura Shima) rises to a conspicuous cone-shaped hill, 198m high, about 0.35 mile SW of Karajiro Bana.

Yokoura Seto, which is the channel on the W side of Yokoura Shima, has a navigable width of 0.3 mile and depths ranging from 20 to 40m in the center. A submarine water pipeline crosses the fairway between Yokoura Shima and Goshoura Shima.

Karajiro Seto, which is the channel between Yokoura Shima and Amakusa Kami Shima, has a navigable width of 40m and use of it by large vessels is not advised. Odoka Se, a rock with a depth of 4.5m, lies about 0.5 mile WNW of Karajiro Bana. A rock shelf, with a depth of 0.4m, lies on the S side of Karajiro Seto, and extends about 0.1 mile N from the N tip of Yokoura Shima.

Aka Shima (Mae Shima), located about 0.45 mile SE of the SE side of Yokoura Shima, is 92m high.

8.49 Naka Seto is the channel between the NW coast of Goshoura Shima (32˚20'N., 130˚20'E.) and the SE part of Maki Shima. Overhead cables, with a clearance of 18m, cross this channel. At its narrowest part, the NW side of the channel is obstructed by shoals, on which is an islet 0.3m high. Rocks, which dry 2.7m, and are marked by a light, lie in the middle of the N end of the channel. The fairway leads E of these rocks. At its S entrance is Mayu Shima, an islet, 61m high. A basin, protected by a breakwater, lies within Gosho Ura, a small cove on the NW side of Goshoura Shima, SE of Mayu Shima.

Hino Shima lies with the N part of its W side close E of **Wada Saki** (32˚24'N., 130˚24'E.) and Kube Shima, from which it is separated by a narrow channel. An overhead power cable spans the shallow channel between Wada Saki and Kube Shima. This channel is primarily used by small vessels with local knowledge. A bridge, with a vertical clearance of 12m, connects Hino Shima and Kube Shima. The island has two conspicuous peaks separated by a low isthmus. The highest point, 238m high, is the dark, densely-wooded and cone-shaped N peak. Tomari Yama, the treeless S peak, has a cone-

shaped appear-ance when seen from S, and is very prominent. Shakushi Take, at the N end of the island, is 141m high, and is conspicuous from E.

Take Shima, an islet 74m high, lies about 0.4 mile NW of Taku Bana, the S tip of Hino Shima. Biwa Kubi, 44.5m high, lies close off the NE tip of the SE side of Hino Shima.

Ki Shima (Shiro Shima), 41m high, located on a spit, lies 1 mile NW of Biwa Kubi. Kuro Shima, another islet, lies about 0.25 mile NE of Ki Shima and between them is Naka Se, which dries 0.6m.

Inu Se, which dries, 2.1m, lies about 0.25 mile NNE of Yamashita Bana, the N tip of Hino Shima. Tawara Se, 1.2m high, lies about 0.3 mile SW of Yamashita Bana.

Aka Shima, a rocky, cone-shaped islet, lies about 1 mile NE of Yamashita Bana. A shoal bank, with depths of about 5m, projects about 0.13 mile off the NW side of the islet.

Tides—Currents.—The tidal current in O Seto sets E on the flood, and then divides, one branch setting through Karajiro Seto and the other through Yokoura Seto. The ebb current flows in the opposite direction. The turn occurs about 1 hour after HW and LW and the velocity sometimes exceeds 2 knots.

Yatsushiro Kai

8.50 South part.—The S part of Yatsushiro Kai may be considered as being that area bounded on the W by the E sides of Naga Shima and Ikara Shima and the SE side of Shishi Shima and on the SE by the mainland coast NE of the E entrance to Kurono Seto.

8.51 West and northwest sides.—Sabanokuchi Bana (32˚10'N., 130˚12'E.) is a prominent point on the E side of Naga Shima, about 0.5 mile NNW of Ichigo Saki. A similar point, Sakinoyama Bana, lies about 0.5 mile further WNW. Ko Shima, 18.3m high, is located about 0.25 mile NE of Sakinoyama Bana, and a rock 0.9m high lies 0.2 mile E of the point. The coast between Sakinoyama Bana and Kuen Saki, 1.5 miles N, is indented by a small bight. Nanao Shima (Nano Shima) is a rocky islet, 13m high, about 2.25 miles E of Sakinoyama Bana.

Tokoro Shima lies off the bight formed in the S part of Shishi Shima (32˚17'N., 130˚14'E.). The SE part of Tokoro Shima is steep-to, but Toro Se, which is above water, lies about 0.25 mile NNE of its SE point.

8.52 Southeast side.—Warabi Shima (32˚07'N., 130˚16'E.), 87m high, is located close off the W side on an extensive shoal bight; about 1.25 miles S of Katsura Shima. Warabi Shima is a conspicuous mark when approaching from NW through Kurono Seto, but not so from NE. The SE shore of the above bight is fringed with pine trees. Hirose Kawa empties out into the sound about 3 miles E of Warabi Shima. The village of Nago (Nagoura) is situated on the W side of the river. A breakwater projects about 0.2 mile NW on the W side of the river mouth.

Komenotsu Ko (32˚08'N., 130˚20'E.), a small local harbor, is situated at the NE tip of reclaimed land, and protected by two breakwaters. This harbor, used by small vessels, is not safe during NW winds. Vessels with local knowledge can obtain open anchorage NW of Komenotsu Ko, in a depth of about 9.1m.

Yahazu Dake, which attains an elevation of 687m, about 3 miles E of Komenotsu Ko, is a conspicuous cone-shaped peak surmounted by a single pine tree. Oniga Take, also prominent, lies about 3.25 miles ENE of Yahazu Take.

Koji Shima (Kogi Shima), which is distinguished by a single pine tree, lies about 4.5 miles NNE of Komenotsu Ko.

Miojin Saki (32˚12'N., 130˚22'E.) is a low, rocky tip of a narrow promontory. Between the point and Koji Shima is a channel obstructed by foul ground, on which is Nanatsu Se, which dries 1.2m.

Nakano Se (Naka Se), a detached steep-to reef, with a least depth of 4.2m, lies about 0.25 mile S of Koji Shima.

In calm weather, when the sea is smooth, Nakano Se can be made out by its gray-white color.

Hadaka Se, the NW edge of which lies about 0.1 mile S of Nakano Se, is an extensive shoal, which has in its center a rock which dries.

Fukuro Ura (32˚11'N., 130˚22'E.), which has a narrow entrance, is an almost landlocked bay affording shelter to small vessels with local knowledge.

8.53 Minamata Ko (32˚12'N., 130˚23'E.) (World Port Index No. 62250) is divided into a N part and a S part. The N part, Umedo Ko, is entered between Miojin Saki and Futago Shima, about 0.6 mile NNE. The S part, Hyakkan-Ko, is entered S of Koji Shima. The port provides anchorage and mooring facilities for large vessels and berthing for small vessels. The maximum size vessel which can be accommodated at the anchorage is 40,000 dwt, with a maximum length 190m. The depth at the anchorage is 10.5m.

Winds—Weather.—The N part of the harbor, Umedo Ko, is exposed NW. The S part of the harbor is partially protected by an off-lying island, Koji Shima, and there is relatively calm water there, except during SW winds.

Tides—Currents.—The MHW interval at Minamata Ko is 8 hours 42 minutes; the tidal difference between HW and LW is 4.1m

Depths—Limitations.—Umedo Ko, a private harbor, whose inner part is protected by a breakwater, which projects about 100m NE, has charted depths from 5 to 9m. A quay, which is situated on the S shore of this N section, is about 250m long and has depths from 3 to 5.2m; it can accommodate vessels to about 3,000 dwt. There is a dolphin berth on the E side of the breakwater with a depth of about 3m.

The S part of the harbor has charted depths from 10 to 19m. A breakwater extends about 150m SW from Miojin Saki. A quay, situated on the landfill W of Sannenga Ura, reportedly has a depth of about 3 to 4.5m.

There is a mooring buoy, whose use is prohibited, about 0.2 mile WSW of Midorino Bana, the NE tip of Koji Shima.

It has been reported (1996) that New Whaf contains two additional berths. One berth is185m long, with a depth alongside of 10m; the other berth is130m long, with a depth alongside of 7.5m.

Hyakken Midora Pier, which lies on the NE side of the S part of Minamata Ko, has a length of 220m and a depth alongside of 6.5m.

Aspect.—The chimneys and factory lights of a power plant on the W bank of the mouth of Minamata Kawa are conspicuous at night.

Nakao Yama, 334m high, is located about 2.25 miles E of the harbor; near its summit is a conspicuous silver iron framework radio tower from which red and white obstruction lights are shown.

Three silos are situated about 120m SW of the base of the breakwater at Umedo Ko.

Pilotage.—Pilotage is not compulsory; however, pilots may be requested from the Shimabara Kaiwan association between 0600 and 2000. Pilots board vessels about 1 mile S of **To Shima Light** (32˚12'N., 130˚04'E.); 24 hours notice required. It is also noted that availability of pilot is dependent upon the tidal conditions.

Regulations.—The entrances to Minamata Ko are blocked by fishing nets, except on the lighted range leading S of Koji Shima.

Vessels entering or leaving the S section of Minamata Ko shall use the channel mentioned above, between Lighted Buoy No. 1 and Lighted Buoy No. 2 at the entrance.

It has been reported that the depths at the mooring embankment are less due to sunken ore spilled during loading operations.

Anchorage.—Vessels with local knowledge can anchor in the S part of Minamata Ko, sheltered from all but SW winds, in about 12.8m, mud and sand.

Temporary open anchorage can be taken off Umedo Ko. The best berth is situated about 0.3 mile W of the SE islet of **Futako Shima** (32˚12'N., 130˚23'E.), in 16.5m, mud and sand.

The quarantine anchorage, a circular area with a radius of 0.3 mile, lies with its center in position 32˚12'N, 130˚20.5'E.

Vessels should not anchor within the port boundary within a 0.33 mile radius centering on a point bearing 159˚, distant 0.35 mile from Koji Shima Light. Exclusions from this restriction are the areas to the S of the 072˚ range from a point bearing 165˚ distant 0.4 mile from Koji Shima Light and to the N of a 051˚ line from a point bearing 189˚, distant 0.3 mile from the light.

Anchored vessels should not block the lights of the beacons on Midorina Bana.

Directions.—Local knowledge is essential for vessels entering the N section, Umedo Ko. Vessels should exercise caution with regard to a submerged rock, with a depth of 0.4m, located about 80m W of the N end of the breakwater.

Futako Shima, located about 0.45 mile NE of Miojim Saki, is comprised of two rocky islets lying on the reef close off **Umedo Bana** (32˚12'N., 130˚23'E.). The SE and larger of these two islets is about 14.6m high. The area between the SE islet and Umedo Bana has been reclaimed.

8.54 Central section.—This section of Yatsushiro Kai may be considered as that area bounded on the NW by the SE sides of **Goshonoura Shima**(32˚20'N., 130˚20'E.) and Hino Shima, and on the SE by the coast between O Saki and Tatsu Saki.

O Saki, 1.75 miles NE of Umedo Bana, is a prominent point backed by a mountain range which projects NE from Yahazu Dake.

Minamata Kawa empties out into the head of a bay, which nearly dries, between Umedo Bana and O Saki. The town of Minamata lies at the head of this bay.

8.55 Southeast side.—I Shima (Yunoko Shima), a dark, thickly wooded islet, 42m high, lies about 1.25 miles ENE of O Saki. Close NW of the island are two above-water rocks, which lie on a reef, having a steep-to outer side. Numerous fish havens lie close offshore between Tsunagi Wan and Sashiki Ko 4 miles NNE.

Tsunagi Wan is entered between I Shima and Inse (Kurase) Saki about 0.9 mile NNE. A rock, 0.6m high, lies about 91m W of Inse Saki. This bay affords anchorage, sheltered from all but W winds, to vessels, with local knowledge, in its middle, in about 12.8m, mud, good holding ground. Close NE of Inse Saki lies Egushi Ko, a fishing boat harbor protected by breakwaters 2.5 miles NE of Tsunagi Wan. A lighted tower stands at the head of Breakwater No. 1. A lighted buoy marks a 2.2m patch 0.5 miles SW of Egushi Ko.

Omon Saki (Oto Saki) , located about 0.9 mile NNE of Inse Saki, is a low prominent point. Close off this point is a small rocky islet, 13m high, surmounted by a solitary pine tree. Uzo Ne (U Sone), a detached reef, with a least depth of 2.3m, lies about 75 miles NE of Omon Saki. A rock with a depth of 6.4m lies NNW of Uzo Ne.

Hobashira Saki, about 1.75 miles NE of Omon Saki, is the NW tip of a wide peninsula and forms the W side of Fukura. Close off this tip is a uniquely-shaped above-water rock; within 0.8 mile N is a rocky shoal on which there are three islets. Kino Shima, (Oki Shima,), the W islet, 22.3m high, is surmounted by a conspicuous pine tree. Ki Shima, the middle islet, is thickly wooded and 27m high. Taka Shima, the northeasternmost, is cone-shaped and 24m high. Mekari Se, which dries 0.9m, lies close N of the peninsula.

Karafune Hana, about 1 mile NE of Hobashira Saki, is the end of a narrow peninsula which forms the E side of Fukura. A chain of rocks which dry extends from this point N to a rock 9.1m high.

Fukura can provide anchorage, sheltered from all but N winds, for small vessels with local knowledge, in depths of 6.4 to 10.1m. However, caution must be taken to avoid a sunken ledge, with a drying rock, which projects about 91m E from the middle of the W side of Fukura.

Sashiki Wan, entered between Karafune Bana and a point about 0.5 mile N, is shoal; most of it dries. Sashiki Kawa empties out into the head of this bay. A conspicuous cone-shaped hill, 233m high, upon which is a dense growth of pine trees, lies about mile S of the river mouth.

Ide Saki (Ideno Hana) (32˚19'N., 130˚28'E.) is a jutting, rocky headland located about 1.75 miles N of Karafune Hana. This point is conspicuous from S; a conical hill, 218m high, E of the point, is a good mark.

Shirakami Se, which is prominent, pointed, and white, is located about 0.45 mile WNW of Ide Saki.

Donkame Se, which is awash, is located about 0.17 mile further S. Ya Se, with a depth of 6.4m, lies about 1 mile S of Ide Saki.

Hiu Se, with a depth of 1.2m, lies about 0.7 mile NNE of Shirakami Se.

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Umino Ura (32˚20'N., 130˚28'E.) affords anchorage, sheltered from all but NW winds, to small vessels with local knowledge, in depths of 4.6 to 7.3m.

Tanoura Wan, with generally shallow depths within, is entered between a point, about 1.5 miles NE of Ide Saki and Tatsu Saki, about 0.9 mile NE.

Tatsu Saki (32˚22'N., 130˚29'E.) is a prominent, densely-wooded headland, which rises to a height of 29m. Tono Shima, heavily wooded, with a round summit, 24m high, and conspicuous pine trees on its S side. The island is located about 0.25 miles SW of Tatsu Saki. A rock shelf, which dries, projects about 0.1 mile SW from the island. Hiki Se, a rocky reef, with a depth of 3.6m, lies about 0.35 mile S of Tono Shima.

Nanatsu Ze, a detached group or rocks, of which the westernmost dries, lies about 0.4 mile W of Tatsu Saki. Several fish havens lie close W, S, and E of Nanatsu Ze.

8.56 North section.—The N section is bounded on the W by the E side of Amakusa Kami Shima and the SE sides of Senzoku Shima and Tobase Shima, and on the E and N by the mainland N of Tatsu Saki.

The E side of the N part of Yatsushiro Kai leads about 18.5 miles NNE from Tatsu Saki to the head of the inlet and is fringed with shoal and drying flats up to 3 miles offshore in places.

Shiba Shima, about 1.8 miles N of Tatsu Saki, is a high conspicuous islet, 25m high, surmounted by a dense growth of pine trees. Reefs project about 0.1 mile S from the islet, but its N side is steep-to. Genjiro Se, which dries 0.9m, lies about 0.75 mile NE by N of Shiba Shima. Kature Se, with a depth of 7.3m, and a patch with a depth of 9.1m, lie respectively, about 1 mile SE and 1.25 miles E of Shiba Shima.

Hinagu Ko, a small harbor protected by breakwaters, lies about 6 miles NE Tatsu Saki, and flats extend a considerable distance off the harbor. Kushi Yama, 324m, lies about 0.5 mile SSE of the root of the breakwater. This peak, which is surmounted by a conspicuous growth of trees, is particularly prominent from SW.

Fune Se, a rocky islet 5.2m high, lies about 3 miles NNW of the S breakwater of Hinagu Ko, on the edge of a drying bank. Detached patches with depths of 4.9m and 5.2m lie, respectively, 1.25 miles SSW and 1.75 miles WSW of Fune Se.

Kuma Kawa empties out into the strait about 3.5 miles N of Hinagu Ko. This river has a delta with three branches, the middle being the main stream, Mae Kawa is the N and Kuma Kawa (Minau Kawa) is the S. This river, which is noted for its rapids, is accessible only to small boats.

Kaga Shima, which lies on the coastal bank, is 29m high and is located about 2.25 miles N of Fune Se.

Yatsushiro Ko (32˚30'N., 130˚32'E.)

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8.57 Yatsushiro Ko is situated in the Mae Kawa. There is a mooring embankment for large vessels on the SW side of the tip of the reclaimed land to the SW of O Shima; another is under construction in an area to the NE of these embankments. On the reclaimed area to the E of O Shima, a petroleum handling port is being built.

A deep water channel, with depths greater than 20m, is situated between Kotsuka Shima and Ne-Shima as well as between O-Tuku Shima and Ne-Shima. Vessels must note that the N part of this channel becomes shallow immediately. The shiping lane leading into the port has soundings of 5 to 6m, which shoal to 3m in the vicinity of Shiro Shima.

Winds—Weather.—Local weather signals are displayed near two conspicuous chimneys of a cement factory, on the N side of the river, about 1 mile SE of Shiro Shima.

Tides—Currents.—The MHW interval at Yatsushiro Ko is 8 hours 42 minutes; the tidal difference between HW and LW is 4.3m.

It is reported that seiches enter the harbor during strong W and SW winds.

The tidal currents off the entrance of Yatsushiro Ko set NE on the rising tide and SW on the falling tide; the rates are 1.25 and 1.5 knots, respectively.

Depths—Limitations.—In the outer harbor there are five quays. Quay A and Quay B has a length of 130m, with a depth of 7.5m alongside. Quay C has a length of 165m, with a depth of 9m alongside. Quay D has a length of 185m, with a depth of 10m alongside. Quay E is the largest, with a length of 240m and an alongside depth of 12m.

Galko Wharf on reclaimed land N of the entrance have six berths. Berth No. 1 to Berth No. 4 has a length of 740m, with a depth of 13m. Berth No. 5 has a length of 240m, with a depth of 13m alongside. Berth No. 6 has a length of 240m, with a depth of 13m alongside. The approach is dredged to 10m.

The inner harbor has a quay, 720m long, with a depth of 5.5m alongside its quays and floating pier.

A tanker port is situated about 1.75 miles NE of the S breakwater. This facility, enclosed by breakwaters, is entered through a channel about 40m wide, which has been dredged to about 5m. There are dolphin berths on the S shore with depths of about 6m.

A new wharf, 560m in length, 14m in depth, able to accomodate vessels up to 50,000 dwt is being developed at Ohshima Kita.

Aspect.—O Shima, 83m high, and joined to the mainland by reclamation, is NE of the entrance to the inner harbor and very prominent. Cement silos situated atop the quay at the N entrance to the inner harbor are conspicuous. Two white chimneys, on the cement works, and the chimney on the incinerator plant, mark the inner part of the inner harbor.

Pilotage.—Pilotage is not compulsory for entering or leaving port, but can be obtained, if needed upon request from Miiko Ko. Harbor pilots board at the quarantine anchorage just S of O-Tuku Shima, and are not available after dark. Bay pilots are available from 0600 to 2200 and board about 1 mile S of To Shima Light.

Anchorage.—The quarantine anchorage is situated in approximate position 32˚28'N, 130˚29'E.

Anchorage can be taken off the entrance to Yatsushiro Ko, in a depth of 11m, E of Mitsu Shima.

Directions.—The approach to the entrance of the inner harbor may be made utilizing the channel between O-Tuku Shima and Kotsuka Shima and then heading midway between Mitsu Shima and the light on the end of the S breakwater, which leads to the entrance. Mariners are advised to make the above transit

at slack water just after the HW, because there is a conspicuous tidal current which flows from S to N.

Shiro Shima is 17m high and is located about 1 mile E of Kaga Shima on reclaimed land. Taka Shima, which is prominent, and 43m high to the tops of the trees, is located about 0.75 mile NE of Shiro Shima.

O Shima is located about 1.75 miles NW of Taka Shima and its limestone strata are notable.

8.58 Oasase is a comparatively narrow spit, which projects about 9.5 miles S from Uto Hanto in the N part of Yatsushiro Kai. There are depths less than 5.5m upon this spit. The channels leading to Shimabara Wan are approached on the W side of Oasase. The channel on the E side of Oasase N of Yatsushiro Kai ends about 4 miles from the NE head of Yatsushiro Kai.

Tsuki Shima Shoto is a group of five islets lying at the S tip of Oasase, and within about 3.5 miles SW of Kaga Shima. Tsuki Shima (O-Tuku Shima), the largest islet, is 95m high, and comprised of limestone and white in color. On its NW side are two shallow coves; its SE side is cliffy. Kannon Shima (Kuro Shima), the southernmost islet of the group, lies about 0.35 mile S of Tsuki Shima, to which it is joined by a shoal flat. A shoal bank, on which there are depths less than 9.1m, projects about 0.5 mile S from Kannon Shima. Kuro Shima (Unoko Shima) , 39m high to the tree tops lies about 0.1 mile NE of Kannon Shima. Close SE of Kuro Shima is Hako Shima, a rocky wooded islet, 18m high. Ne Shima (Me Shima), 12m high and black, lies about 0.5 mile E of Tsuki Shima. Within about 1.25 miles S of Ne Shima, are shoals with depths less than 5.5m. Kotsuki Shima, 60m high, the northeasternmost islet lies about 0.3 mile E of Tsuki Shima. Between Kotsuki Shima and Ne Shima are shoals, with depths less than 5.5m.

Ushi Se (Oushi Se), which dries 3.4m, and Bebe Se (Koushi Se), a stone post, 3.6m high, on the reef, lie on Oasase in positions 10.75 and 2 miles N of Kotsuki Shima. Both rocks are usually marked by breakers, even at HW when winds are light.

Mitsu Shima, a group of three islets, lies on a shallow spit that projects NE from the E side of Oasase. The southernmost islet, Minami Shima, is 45m high to the tree tops, and lies about 1.25 miles WSW of O Shima. Naka Shima, also 45m high to the tree tops, lies about 183m NE of Minami Shima. Kita Shima, 44m high to the tree tops, lies about 0.2 mile NE of Naka Shima and about 0.1 mile NE of it is Benten Shima, 15m high.

Minor Passages Between Yatsushiro Kai and Shimabara Kaiwan

8.59 Otono Seto (Utono Seto) and Zozo No Seto, on the S and NE sides of Senzoku Shima (Senzokuzozo Shima) are the entrances to several connecting channels between Yatsushiro Kai and Shimabara Kaiwan. Zozo No Seto and its continuations NW represent the main channels. Otono Seto and continuations W represent the minor channels.

8.60 Otono Seto-Yanagino Seto-Michigoeno Seto.— These secondary channels, which connect Yatsushiro Kai with Shimabara Wan, are available for vessels with local knowledge. Otono Seto is entered from Yatsushiro Kai between **Shimo-Utono Bana** (32˚32'N., 130˚27'E.), the NE tip of Amakusa Kami Shima and Kami-Utono Bana, the S tip of Senzoku Shima, about 0.6 mile NNE. Reefs project about 0.1 mile into the channel from these two points. These reefs limit the navigable width to about 700m. Sobe Se, which dries 1.5m, lies about 0.43 mile N of Shimo-Utono Light.

Se Shima, on the S side of the W end of Otono Seto, is located about 1.25 miles WNW of Shimo Utono Bana. Several shoals, some of which dry, lie within 0.25 mile NE and 0.15 mile N of the island.

Kadano Bana, about 1.25 miles NW of Kami-Utono Bana, lies on the N side of the W end of Otono Seto. A spit with depths less than 9.1m projects about 0.75 mile SE from the point.

Yanagino Seto, the W continuation of Otono Seto, between Funabito Shima and Ebisu Bana. Funabito Shima lies close NW of the N tip of Se Shima. Detached patches are located within 0.1 mile NE of its N tip. Ebisu Bana lies about 0.45 mile W of Kadano Bana. A shoal bank, with depths less than 5.5m extends about 0.19 mile S. Also a patch, with a depth of 6.9m, lies about 0.20 mile S of the point.

Mebari Se, 0.3m high, lies on the S side of Yanagino Seto, 0.15 mile WNW of the N tip of Funabito Shima.

Two overhead cables span this strait.

Michigoeno Seto, whose N side is formed by the S shore of Oyano Shima, and whose S side is formed by the N shores of Nagaura Shima, Hiai Shima and Takamoku Shima. Michigoeno Seto, is the continuation W of Yanagino Seto and leads into Shimabara Wan. The narrowest part of the fairway is in the vicinity of Maruyama Bana, the S tip of Oyano Shima, where the fairway is about 91m wide. A bridge, showing green and red lights, with a height of 14.8m, spans this section of the channel extending from Maruyama Bana to the N coast of Nagasura Shima. Overhead cables span this strait close W of the bridge between Nagasura Shima and Amakusa Kami Shima. Kodomari, a village which lies on the SW point of Oyano Shima, about 0.9 mile WNW of Maruyama Bana. Suki Bana lies about 0.18 mile NNW of Kodomari. The SW part of Oyano Shima is fringed by reefs up to about 250m offshore. Suki Bana Se, with a depth of 4.1m, lies on the N side of the W end of the channel about 0.3 mile WSW of Suki Bana.

Takamoku Shima is cone-shaped, prominent, and 139m high. This island's SE coast is formed by white cliffs. For shoals and other dangers in the W approach to Michigoeno Seto, see Shimabara Wan, beginning in paragraph 8.68.

Tides—Currents.—The currents in Utono Seto flow N along the E coast of Amakusa Kami Shima, turning NW and then N between Kami-Utono Bana and Kadano Bana. It begins from 1 to 10 hours 30 minutes before LW and continues until from 4 hours 30 minutes to 5 hours after LW. Its maximum rate, which occurs between 2 and 3 hours after LW, is about 0.75 knot. The tidal current flowing S between Kami-Utono Bana and Kadano Bana continues in that direction across the channel to Shimo-Utono Bana, and then flows S along the E coast of Amakusa Kami Shima. It begins from 1 to 1 hour 30 minutes after HW and continues until from 4 hours 30 minutes to 5 hours after HW. Its maximum rate, which occurs between 2 and 3 hours after HW, is about 1.5 knots near **Shimo-Utono**

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Bana (32˚32'N., 130˚28'E.), but elsewhere it is less than 1 knot.

In Yanagino Seto, the E tidal current meets the current flowing from Utono Seto and combining with it flows N between Kadano Bana and Kami-Utono Bana. The W current is a branch of that flowing S between those two points.

In Michigoento Seto, the tidal current usually flows E during the rising tide and W during the falling tide, but the duration of flow varies greatly during the year. Between September and March, the E current stream flows for about 10 hours, and the W current for only a little over 1 hour. The W current begins about 2 hours before LW, and slack water lasts about 20 minutes. The rate of the E current is about 1 knot and that of the W current is about 0.75 knot. Between April and August, it is reported that conditions opposite to the foregoing prevail, and that the E current is at times inappreciable; it is possible that the report is based on daylight observations, and that at night the opposite is the case.

At the W end of Michigoeno Seto, N of Takamoku Shima, the current, flowing E along the NW coast of Amakusa Kami Shima during the rising tide, branches off Suki Bana, one part flowing N in Shimabara Wan and the other entering the channel; their rates are from 0.5 to 0.75 knot. The W current, flowing out of the channel, combines with the current flowing S along the W coast of Oyano Shima, off Suki Bana (32˚33'N., 130˚24'E.), and the combined current then flows W.

8.61 Akamatsuno Seto-Marukono Seto-Ikeshimano Seto.—Akamatsuno Seto is a narrow channel, usable only by small vessels with local knowledge, which is situated between the N coast of Amakusa Kami Shima on one side and the islands of Se Shima, Naka Shima and Mae Shima on the other.

Marukono Seto, located between the NW sides of Se Shima, Naka Shima, Mae Shima on one side; and a chain of islets, reefs and shoals called Ikeshima Gunto on the other side. This channel is only available to small craft.

Ikeshimano Seto is located between the N side of Ikeshima Gunto on one side and the S coasts of Takamoku Shima, Hiai Shima, and Nagaura Shima on the other side. Ikeshimano Seto, which is entered on the S side of Yanagino Seto, leads W into Shimabara Wan.

Nagasare Se, which dries 1.5m, lies on the SE side of the channel between the NE end of Ikeshima Gunto and Mebari Se. Ike Shima, 14.9m high, lies in about the middle of the NW side of Ikeshima Gunto. A bridge, with a vertical clearance of 12m, spans the channel between Ike Shima and Nagaura Shima.

Hira Se, 0.3m high, lies near the SW end of Ikeshima Gunto about 0.65 mile SW of the summit of Ike Shima. On the N side of the channel, reefs, which dry in places, project about 0.2 mile SW from the S tip of Hiai Shima. In the center of the channel, lies a detached shoal, with a depth of 7.6m, about 0.25 mile SW of W extremity of Hiai Shima.

Biro Shima, 22m high to the tree tops, serves as a good mark for identifying Ikeshimano Seto, and lies about 0.8 mile SW of Takamoku Shima. Umigame Se, which dries 0.6m on the SW side of the fairway, lies on a shoal about 0.3 mile NE of Biro Shima.

Tides—Currents.—Within Ikeshimano Seto, the currents resemble those in Michigoeno Seto, except off the W entrance. West of Takamoku Shima, the currents occasionally sets E and W directly into and out of the channel.

Zozo No Seto

8.62 Main approach.—Zozo No Seto, which leads between the NE side of Senzoku Shima and the SW side of Tobase Shima, is the main channel leading from Yatsushiro Kai to Misumi Ko to Shimabara Wan. This passage has depths ranging from 15 to 30m, and at its narrowest part, off Tobase Shima Light on Kata Shima Bana, it has a navigable width of 0.1 mile. An overhead cable, with a vertical clearance of 51m, spans Zozo No Seto SW from Katashima Bana.

A patch, with a depth of 4.5m, lies on the shoal which projects from the coast NE of Kami Utono Bana, the S tip of Senzoku Shima. This patch, which lies in the S approach to Zozo No Seto, is located about 0.75 mile NE of Kami Utono Bana a depth of 8.5m is located about 1.25 miles ESE of the same point.

Senzoku Shima is separated from Oyano Shima by an obstructed channel that can only be used by small vessels with local knowledge, and then not without difficulty. Senzoku Shima rises to a height of 167m near its E coast about 1.75 miles NNE of Kami Utono Bana.

Tobase Shima is low in its central part and densely wooded in its N section. The island is separated from the S side of Uto Hanto by a narrow, shallow channel available only to small vessels with local knowledge. The summit of the island, which is 83m high, lies near Katashima Bana, the S tip.

Dangers on the NE side of the S approach include a shoal bank, with depths less than 5.5m, which projects SE to join Oasase. Between the NW edge of this shoal bank and the SE side of Tobase Shima, about 0.4 mile NW, there are depths of over 7.3m.

Amitori Se, which dries 1.8m, is located about 0.2 mile NNW of Katashima Bana. A fish haven is situated about 0.75 mile ENE of Katashima Bana.

Nagakado Bana is a headland on the E side of Zozo No Seto, lying about 0.35 mile N of Katashima Bana. Between Nagakado Bana and Usagi Bana, about 0.55 mile NW, is a bay almost completely obstructed by shoals.

The N tip of Senzoku Shima, Rokushiro Bana, lies on the SW side of the channel opposite Usagi Bana. Genno Shima, 11m high, lies about 0.1 mile ESE of Rokushiro Bana and upon which are some pine trees. Ge Se (Ige Se), 5.6m high, and on which is a lone building, lies about 0.2 mile SE of Genno Shima.

Currents.—In Zozo No Seto, the flood current sets N and the ebb current sets S. A velocity of about 2.5 knots is attained in the narrows; however, it was reported that a current of 4 to 5 knots has been experienced.

Tera Shima, 39m high, lies on a shoal, about 0.3 mile N of Rokushiro Bana. Kotera Shima, 4.5m high, lies about 0.13 mile S of the S side of Tera Shima.

Kabuto Shima, 13m high, lies on the E side of the fairway, about 0.27 mile ENE of Tera Shima.

Shira Sw (Sira Se), above sections of which are always above-water, lies in the center of a group of shoals with depths less than 11m. These shoals project about 0.85 mile NW from Tera Shima on the SW side of the fairway. The channel SW of

Tera Shima and Shira Se is shoal and not recommended. Yemachino Se (Emachino Se), which dries 0.4m, lies about 0.1 mile SSE of the E tip of Shira Se. Another rock, which dries 0.3m, lies about 0.1 mile NW of the W extremity of Tera Shima.

8.63 Misumi Ko (32˚36'N., 130˚28'E.) (World Port Index No. 62280), a principal port, and the channel through it, form the NW continuation of Zozo No Seto.

This port, which is a good natural harbor, is bound on the W by the E side of Oyano Shima, on the S by the N end of Senzoku Shima, and on the NE by the SW sides of Tobase Shima and the Uto Hanto. Zozo No Seto leads into the SE part of the harbor and Yoko Seto into the S part. Motareno Seto leads E from the NE part of the harbor. Misumi No Seto leads NW into Shimabara Wan from the NW part of the harbor.

Winds—Weather.—In general, the harbor is sheltered from all winds but those from the S and occasionally those from the N. The prevailing winds for the most part are from the N. At times, during spring and summer, a strong S wind blows.

Local weather signals are shown from the harbor office near the radio tower on the N side of Misumi Ko, about 0.5 mile E of Sagari Matsu, the SW tip of Uto Hanto.

Tides—Currents.—The MHW interval at Misumi Ko is 8 hours 48 minutes. Spring tides rise 3.9m and neap tides rise 3m.

The tidal currents in Misumi No Seto, as in Zozo No Seto, flow N on the rising tide and S on the falling tide, the turn occurring about the times of HW and LW. The maximum rates of the currents are usually about 3.5 knots. However, it has been reported that in the narrows NW of the Sagari Matsu, a rate of 5 knots has been observed. Also, in O Seto, at springs, a rate of 6 knots has been observed. In addition, a vessel reported (1951) that the best time to enter or depart Misumi Ko through Misumi No Seto is about 1 hour before HW or LW at Misumi Ko. At this time it was ascertained that at about 40 minutes before HW or LW there, the current had already turned.

Depths—Limitations.— The Ganpeki Wharves A, B, and C are situated E of Sagari Matsu. The depths alongside range from 6 to 8m. Vessels up to 10,000 dwt can be accommodated. There are mooring buoys situated SE and S of Sagari Matsu which can accommodate vessels to 10,000 dwt with drafts to about 10.5m. The berths NE of these have depths alongside of 2 to 4.5m and are for scheduled liners. Reclamation has been carried out in the vicinity of West Pier, 0.25 mile ENE of Quay A.

Aspect.—Misumi Take, 406m high, is located about 0.85 mile E of the E entrance of Misumi No Seto. This peak's sharp summit is prominent.

Shibao Yama, 225m high, lies on the W side of the entrance of Misumi No Seto.

Hi Take (Tobi Take), 230m high, is located about 0.35 mile SW of Ushikorobi Bana and is prominent. Near the S end of Misumi No Seto it is crossed by an overhead cable and the Tenmon-Hasi Bridge (Amakusa Dai-itigo Hasi Bridge). The cable has a vertical clearance of 41m and the bridge has a height of 38 to 41m. A cable, having a vertical clearance of 51m, crosses the S entrance of the Zozo No Seto; another, with a vertical clearance of 23m, crosses the center part of Motare No Seto.

Nakagami Shima, an islet in the middle of the N entrance to Misumi No Seto, is about 89m high. This islet divides the N entrance of Misumi No Seto into two channels, the E being Ko Seto, and the W, O Seto, which is the preferred channel.

Pilotage.—Vessels approaching Misumi Ko are boarded by pilots off **Kuchinotsu Ko** (32˚36'N., 130˚12'E.) in Hayasaki Seto, the channel in the seaward entrance of Misumi No Seto. Pilots will board in either quarantine anchorage. Pilots are not available after sunset and their availability depends on tidal conditions. When clearing the port the pilots are usually dropped close off the N entrance of Misumi No Seto. During bad weather the pilots may remain on board as far as Kuchinotsu Ko.

Anchorage.—The quarantine anchorage is situated about 0.8 mile NNE of Shibao Yama (32˚37'N., 130˚27'E.). Another quarantine anchorage is situated about 0.8 mile S of the S entrance of Zozo No Seto.

There is an anchorage, in 15m, mud, good holding ground, between the shore E of Sagari Matsu and the N edge of the shoal NW of Shiro Se. Vessels should refer to the latest chart, because the space is limited in this area. There are mooring buoys here and vessels can moor. Vessels should anchor with caution because of hard materials on the sea bottom, and being a menace to anchoring lie close off the shore just E of Sagari Matsu. Midway between the N edge of Shira Se and the S coast of Uto are sunken lumbers. Misumi Light and Seto-no-Bana, 39m high, on the E side of Ko Seto, are reported suitable for bearings when anchoring.

Fish havens are set about 0.7 mile NE of Misumi lLight, and about 0.5 mile ENE and 0.6 mile S, respectively, of Katashima Bana.

Directions.—Entry to Misumi Ko by way of Yatsushiro Kai or from Shimabara Wan requires local knowledge.

Vessels approaching Misumi Ko from Yatsushiro Kai should pass through the narrowest part of Zozo No Seto with the pine trees on Genno Shima and the building on Ige Se in range about 320˚. This range should lead close W of the lighted buoy marking Amitori Se. However, care should be taken to avoid opening Genno Shima to the NE of Ige Se. When abeam of the N end of the village of Zozo, Amitori Se will be cleared and course should be changed to pass midway between Tera Shima Light and Kabuto Shima. A course of 339˚ can be steered. Then course may be shaped for the flagstaff, 84m high, on the summit of a hill about 0.35 mile ENE of Sagari Matsu, bearing about 328˚. When abeam of **No Saki** (32˚36'N., 130˚29'E.), vessels should alter course for the anchorage.

Vessels proceeding from Misumi Ko into Shimabara Wan must pass through Misumi No Seto. Misumi No Seto is narrow and affected by strong tidal currents. Also, this channel has a very sharp bend, making the possibility of meeting a vessel passing through from the opposite direction a primary consideration. Due to all of the above factors, transit of Misumi No Seto should be made at slack water at a reduced speed. In O Seto, vessels should pass as close as practicable to the SW side of Nakagami Shima. The tidal currents in this vicinity come into contact upon Nakagami Shima and set across the fairway to the shore off Shibao Yama, where they again deflect back across the fairway in an opposite direction.

Caution.—Caution is especially needed to avoid the vicinity of Usikorobe Bana on the W shore, near the bridge. Vessels

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southbound for Yatsushiro Kai should follow roughly the reciprocal of the courses described above from the vicinity of Shira Se.

Nagasaki Hanto—East Side

8.64 **Tameishi Ura** (32˚38'N., 129˚50'E.) is a cove at the head of a bight, about 5 miles NNE of Kaba Shima. It is sheltered from all winds except from the S. Depths in the cove are from 1 to 5m. The village of Tameishi lies at the head of the cove.

Between Tameishi Ura and Mogi Ko, a distance of about 5.5 miles, the coast trends in a NE direction, and is fringed with reefs extending about 0.2 mile offshore in places.

A breakwater extends SW from the reef fringing the N shore of the entrance to the inlet. Another breakwater extends NE from the reef fringing the S shore of the entrance; a light stands at its head. An inner breakwater protects the harbor on the W side of the inlet; a light stands at its head.

Mogi Ko (32˚42'N., 129˚55'E.) (World Port Index No. 62340) is entered between Shiomi Saki and Aka Saki, about 0.5 miles to the NE. The W side of the harbor is fronted by a bank that dries. The town of Mogi lies on the W side of the harbor, where a pier is situated near the N end. A light is shown from the head of a breakwater SE of the pier.

Mogi Ko affords anchorage, sheltered from all winds except those between E and S, to small vessels with local knowledge, in depths of 6.9 to 8.2m. Large vessels can anchor near the entrance of the harbor, in depths of 14.6 to 20m.

Biwaga Saki (32˚43'N., 129˚56'E.) is the E point of Ikano Ura and lies almost 1 mile NNE of Aka Saki. The point is a conspicuous overhanging headland. Kajikake Iwa, a drying rock, lies 0.25 mile offshore and 0.75 mile NE of Biwaga Saki.

Aba Wan is located about 1.5 miles NE of Kajikake Iwa and is entered between Tate Ishi, a conspicuous black pointed rock, and Tsu Shima, about 1 mile to the E. The village of Aba Wan lies on the W side of the bay, where a basin for small boats is situated.

Anchorage.—Aba Wan affords anchorage, sheltered from all winds except from the S and SE, in a depth of 16.5m, in the center of the bay.

Maki Shima (32˚45'N., 129˚59'E.) forms the E side of Aba Wan; small vessels with local knowledge can obtain anchorage, sheltered from all winds, between the NE side of the island and the mainland coast, in depths of 2.7 to 4.6m.

Caution.—Caution is necessary because of shoals in both entrances.

Eno Ura, a small boat harbor, lies about 3.25 miles ENE of Aba Wan. A shoal, on which lies Biwa Shima and Shamisen Shima (Samison Shima), extends more than 1 mile E of the entrance. A narrow channel with a depth of 3m leads into the boat harbor. A light is shown from Shamisen Shima and the S entrance point of the harbor.

Tachibana Wan

8.65 **Tachibana Wan** (32˚44'N., 130˚08'E.) is entered between Shamisen Shima and Kuni Saki, 6 miles to the SE on the opposite shore. The bay is open to the SW and depths range from 31 to 37m in most parts of the bay.

Yuki (Uki), a village on the N side of the bay, lies about 3 miles NE of Shamisen Shima. Three conspicuous radio towers lie about 3.5 miles E of Yuki; the village of Chijiwa lies about 2.5 miles SE of the radio towers.

Obama Ko (32˚43'N., 130˚13'E.) lies about 3.25 miles S of Chijiwa and is conspicuous by a number of white buildings on its shore. The roadstead off Obama affords good anchorage, sheltered from all winds except those between S and W. The bottom is mud and the holding ground is good, but the depths are somewhat great.

Kyodomari, a boat harbor, protected by a breakwater, lies about 4.25 miles SW of Obama Ko. The village of Kyodomari lies on the SE side of the boat basin. A light is shown from the head of the breakwater.

Kuni Saki (32˚41'N., 130˚08'E.) is a densely-wooded peninsula, faced with a white overhanging cliff, located about 1 mile NW of Kyodomari. A reef, with depths of less than 2.7m, extends about 0.15 mile NE from Ko Shima, an islet, 0.5 mile ESE of Kuni Saki. Kamino Se, a detached rock that dries, 1.8m, lies 0.3 mile offshore, about 0.75 mile S of Kuni Saki.

From Kuni Saki, the coast trends S for about 3 miles and then SE for 3 miles to Setsume Saki, the NW entrance point to Hayasaki Kaikyo. A light is shown from the point.

Hayasaki Kaikyo

8.66 **Hayasaki Kaikyo** (32˚34'N., 130˚10'E.), the main entrance of Shimabara Wan, leads from seaward between the N side of Amakusa Simo Shima and the S extremity of Shimabara Hanto.

Tides—Currents.—In Hayasaki Kaikyo, the tidal current flows E from 1 hour after LW until 1 hour after HW, and W from about 1 hour after HW until 1 hour after LW. The maximum rate is about 8 knots, and eddies and tide rips are formed between Gotsu Iwa and Setsume Saki, especially in the vicinity of the latter.

Gotsu Sho (32˚34'N., 130˚07'E.), on the S side of the main fairway, lies about 1.5 miles off the coast of Amakusa Shimo Shima, about 3 miles WSW of Setsume Saki; from it a shoal extends about 0.3 mile southward. There is a detached 12.5m patch about 1 mile E of Gotsu Sho. A light is shown from a tower on Gotsu Sho.

Tsujino Shima lies about 1.25 miles S of Gotsu Sho and is separated from a point on the coast of Amakusa Shimo Shima by a narrow and shallow channel. A light marks the NW side of the channel and a lighted buoy marks the SW side. The N side of the islet is fringed with foul ground of a spit, on which lies Kogame Sho, a rock, showing a light. A light is also shown from the E end of Tsujino Shima.

From the point abreast Tsujino Shima, the S shore of Hayasaki Kaikyo trends about 3.5 miles E to Oniike Ko and is fringed with a shoal bank extending about 0.3 mile offshore in places.

Oniike Ko (32˚33'N., 130˚11'E.) is located on the SE side of the strait, about 3.25 miles E of the E extremity of Tsujino Shima. The harbor, used mainly by small craft, is protected by a breakwater. A light is shown from the head of the breakwater.

Kuchinotsu Ko (32˚36'N., 130˚12'E.)

World Port Index No. 62330

8.67 Kuchinotsu Ko (Kutinotu Ko), on the N side of Hayasaki Kaikyo, is entered between Tsuchibira Saki, about 1.5 miles NE of Setsume Saki, and Miyasaki Bana, about 0.5 mile to the ENE. The port consists of a small natural harbor and town, with anchorage afforded to most vessels awaiting a favorable tide in Hayasaki Kaikyo.

Depths—Limitations.—Charted depths in the middle part of the harbor are from 5 to 19m. A rocky patch, with a depth of 14m, lies about 0.3 mile SSE of Tsuchibira Saki.

It was reported (1963) that the water depth at a point bearing 110˚, 0.3 mile from Kuchinotsu Light is less than charted.

Pilotage.—Pilots are available and will board vessels in Hayasaki Kaikyo.

Anchorage.—Large vessels can anchor SE of Tsuchibira Saki, in about 18.3m, mud bottom. Small vessels can anchor inside the harbor, in a depth of 5.5m, mud.

Shimabara Wan—South Part

8.68 Shimabara Wan is entered from seaward through Hayasaki Kaikyo. Vessels approaching the strait from the W or S should proceed to a position N of Gotsu Sho, and then steer for the middle of the narrows of Hayasaki Kaikyo. If an opposing tidal current is encountered, it is best to enter the passage from a position NW of Setsume Saki, passing reasonably close to that headland.

Pilotage.—Pilots are available for Shimabara Wan and the ports within. By arrangement, pilots meet vessels in the entrance to Hayasaki Kaikyo, in the vicinity of Gotsu Sho or Setsume Saki.

The locations of fish haven obstructions should be noted on the chart.

8.69 South and southeast shore of Shimabara Wan.— From Oniike Ko, the E coast of Amakusa Shimo Shima, forming part of the S shore of Shimabara Wan, trends about 5.5 miles S to Hondo Ko, on the W side of the N end of Hondono Seto, and is fringed with a coastal bank, with depths of less than 5.5m extending about 0.75 mile offshore in places.

Fish haven obstructions are situated about 1.25 miles offshore.

Hondo Ko (32˚27'N., 130˚12'E.) is only available to small vessels with local knowledge, as the coastal bank in the vicinity dries for a distance of 0.75 mile. The town of Hondo overlooks the harbor. Two lights are shown offshore, E of the town.

From the E side of the N end of Hondono Seto, the NW coast of Amakusa Kami Shima, forming part of the S shore of Shimabara Wan, trends about 7 miles NE to Akasaki. This stretch of the coast is fringed with a coastal bank, with depths of less than 5.5m, extending about 0.5 mile offshore in places, and from it a bank, with depths of less than 18.3m and on which lie some 8.3m patches, extends up to 4 miles offshore. Lights are shown close offshore from the villages of Oshimako, Kotsu, and Akasaki. Numerous fish havens lie up to 1 mile offshore between Hondo Ko and Michigoeno Seto.

8.70 Kuro Shima (32˚32'N., 130˚20'E.) lies about 0.5 mile offshore, 1.25 miles NE of Akasaki. Take Shima lies about 0.25 mile offshore and 1.75 miles E of Kuro Shima. The village of Oura, on the N coast of Amakusa Shimo Shima, lies 0.75 mile SW of Take Shima. A lighted buoy is moored 0.5 mile WNW of the N extremity of Take Shima.

Yu Shima, a flat-topped island, is conspicuous when entering Shimabara Wan through Hayasaki Kaikyo. The island lies about 4.5 miles N of Kuro Shima. Two conspicuous radio towers stand on the S side of the island and lights are shown from the W and S sides of Yu Shima. Shoals with depths less than 5m extend E, SE and S of Yu Shima.

Yushima Seto, the channel taken by nearly all vessels which enter Shimabara Wan, leads between Yu Shima and Yoko Sone, nearly 3.25 miles to the W.

Nogama Shima (Nokama Shima) (32˚35'N., 130˚23'E.) lies on the SE side of the S end of Shimabara Wan, close off the W extremity of Oyano Shima, about 2.25 miles SE of Yu Shima. The coast between Nogama Shima and a small peninsula about 2 miles NE is fringed by a shoal bank. Habo Shima, an above-water rock, lies close off the NW side of the bank.

Ebito Ko, a fishing harbor on the W coast of Oyano Shima, 1.5 miles E of Nokama Shima. A light stands on the head of the protecting breakwater.

Misumi No Seto lies about 2.75 miles NE of Habo Shima and is entered between the NE end of O Yano Shima, which shows a light, and the SW end of Uto Hanto.

Shimabara Wan—Central Part—East and West Sides

8.71 Uto Hanto (32˚39'N., 130˚35'E.) is the mountainous peninsula on the SE side of the central part of Shimabara Wan, and its N coast extends about 9 miles ENE from Setono Bana, to the mouth of the Midori Kawa. O Take, the summit of the peninsula, attains an elevation of 478m, and lies about 5.75 miles E of Misumi Take, and is a good landmark. The point on the S side of the mouth of Midori Kawa is low and wooded, and from a distance appears dark and is fairly prominent.

A light is shown from the village of Sumiyoshi, which lies near the S entrance point of Midori Kawa. A lighted buoy is moored off the mouth of the river. A fish haven lies close NE of the lighted buoy.

Between the middle of the N side of Uto Hanto and Nagasu Ko, about 15 miles NNW of the mouth of Midori Kawa, the E shore of Shimabara Wan forms a bight, from the shores of which a shoal bank with depths of less than 5.5m, most of the inner part which dry, extends about 2.75 miles offshore in places.

Hyakkanishi Ko (32˚48'N., 130˚37'E.) lies at the mouth of the Tsuboi Kawa, which is located about 4.75 miles N of the mouth of the Midori Kawa. The port is used by small vessels with local knowledge. A light is shown from the N entrance point to the river, and a lighted buoy is moored about 1.9 miles W of the light.

Two small harbors, protected by breakwaters, and showing lights, lie within 2.25 miles, NW of Hyakkanishi Ko Light.

8.72 West side of the south part of Shimabara Wan.— **Kareki Saki** (32˚44'N., 130˚23'E.) is a headland marked by

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several houses, and lies about 8.5 miles NNE of Yu Shima. A line of trees extends inland at right angles to the coast and makes the point somewhat conspicuous.

Unzen Take lies almost in the middle of Shimabara Hanto, about 4.5 miles WNW of Kareki Saki. Its summit is somewhat flat and its sides are steep, making it a prominent mark.

Shimabara Ko (32˚46'N., 130˚23'E.)

World Port Index No. 62320

8.73 Shimabara Ko is situated 2 miles N of Kareki Shima and consists of the two towns of Minato and Shimabara. The port is made up of the outer and inner harbors, with anchorages and docking facilities for small vessels.

Winds—Weather.—Local weather signals are displayed at the town of Minato in a position SW of the railroad station.

Tides—Currents.—The MHW interval at Shimabara Ko is 8 hours 54 minutes, spring tides rise 4.3m and neap tides rise 3.1m.

The tidal currents flow N and S during the rising and falling tides, respectively; the change occurring at approximately HW and LW. The velocity exceeds a rate of 2.5 knots.

Depths—Limitations.—Coastal vessels and car ferries use the outer harbor and fishing vessels frequent the inner harbor. The outer harbor pier has depths of 2.5 to 3m alongside.

Aspect.—A radio tower, marked by a red obstruction light, standing about 0.7 mile NNW of Shimabara Light, and Shimabara Castle, marked by intermittent illuminating lights until 2100, are excellent landmarks both day and night.

Pilotage.—Local knowledge is essential for entering either the outer or inner harbor.

Anchorage.—Small vessels anchor in the inner harbor, in depths of 0.3 to 5m, sheltered from all winds.

8.74 West side of the north part of Shimabara Wan.—Taira Ko (32˚52'N., 130˚19'E.), a small harbor protected by breakwaters, lies about 7.5 miles NNW of Shimabara Ko. A light is shown from the head of the W breakwater.

Small vessels with local knowledge can obtain anchorage in the unnamed bay entered between Taira Ko and Takesaki Shima, about 6.5 miles to the NW. Two conspicuous radio masts stand near the village of Isahaya (32˚50'N., 130˚04'E.), about 2.5 miles inland from the head of the bay.

Takesaki Shima (32˚57'N., 130˚14'E.) shows a light from its E extremity; close N of this light, a second light is shown from the head of the N breakwater in Michikoshi Ko. Takesaki Ko lies on the S side of Takesaki Shima and is protected by breakwaters.

8.75 East side of the north part of Shimabara Wan.—Nagasu Ko (32˚55'N., 130˚27'E.) is entered between two breakwaters. A light stands on the head of the N breakwater. A submerged jetty extends 0.15 mile SW from a position 0.1 mile SW of the N breakwater light. Several fish havens lie within 2 miles of the entrance to the harbor. Two building docks, with a capacity of 800,000 dwt, and a quay, 310m long, with depths from 5.5 to 7m alongside, are situated on reclaimed land close SE of Nagasaka Ko.

From Nagasu Ko, the coast trends about 4.75 miles N to Miike Ko and is fringed with a bank that dries out about 1.75 miles offshore; the edge of the bank is comparatively steep-to.

Miike Ko (33˚00'N., 130˚25'E.)

World Port Index No. 62290

8.76 The port of Miike Ko, a principal port and a port of entry, is situated about 5 miles NNW of Nagasu Ko, and consists of a city, an outer harbor, a small artificial inner harbor, and a wet dock, and anchoring and berthing facilities for large vessels. Miike Ko is principally a coal exporting port.

Winds—Weather.—Winds between SE and SW prevail during the summer in the vicinity of Miike Ko, and in the winter winds between W and N predominate. Heavy seas are sometimes experienced with SW winds but seldom at other times. The heaviest rainfall occurs in June and July. Visibility is frequently poor, but the fogs here cannot be described as being thick.

Local weather signals are displayed near the SE corner of the inner harbor.

Tides—Currents.—In a position about 1.5 miles SW of the light on the head of the N breakwater, the tidal current flows N during the rising tide and S during the falling tide, at the rate of about 2 knots. Off the heads of the breakwaters, these currents sometimes attain a rate of 5 knots, necessitating great care in entering or leaving the entrance channel. In the fairways between the breakwaters, the current may obtain a rate of about 1 knot; in the approach to the wet dock, they do not exceed 0.5 knot.

Depths—Limitations.—There is a passage from about 1.4 miles S of the entrance to this port up to the dock area after passing through an area between the N and S groins. This passage has depths from 6.5 to 13m. The inner portion of the channel is being dredged to maintain a constant water depth of about 7m at LWST. New Berth No. 5 is at a pier with dolphins 138m N of Berth No. 5. There are depths of 9.5m alongside New Berth No. 5 and depths of 10.4m alongside Berth No. 5. North Wharf has eight wharves with a maximum depth of 10m. The maximum draft for vessels up to 20,000 dwt is 9m; for vessels up to 25,000 dwt the maximum draft is 8.5m; and for vessels up to 30,000 dwt the maximum draft is 7.5m. The depth on the sill of the wet dock is 10.4m at ordinary spring tides, and a depth of 8.5m is maintained within the wet dock.

The channel leading from the inner harbor to the wet dock has a width of 36.6m, with a navigable width of 20m at the wet dock gate. The gate is closed from 3 hours after to 3 hours before HW thereby enabling a depth of 8.5m to be maintained in the wet dock. A dam, 11m high, on both sides of the gate, decreases the velocity of the current when the range of the tide is high. The wet dock has a water area of about 32 acres, and the height of the quay wall is 1.5m above HW ordinary spring tides.

There are two berths in the inner harbor capable of berthing vessels up to 10,000 grt. It has been reported (1977) the largest vessel to dock in this port was 25,532 dwt. Vessels with a draft of more than 7m must wait for high tide.

Aspect.—Yotsu Yama, close to the coast, SE of the inner harbor, is a conspicuous landmark. It consists of four peaks in a row, from 39 to 55m high, extending in a NW/SE direction for

about 0.4 mile, with yellowish brown cliffs on its seaward side. Kokuzo Yama, the southernmost peak is the highest of the four. A gray mine shaft at the foot of Yotsu Yama can be recognized at a distance of several miles offshore.

Two large chimneys of a power station on the S side of the harbor are conspicuous.

Lights are shown, but only when vessels are entering or leaving the inner harbor, at intervals along each breakwater; they serve to mark the breakwater but are not visible from seaward.

Lights are shown at the N and S entrance points of the inner harbor.

Several piles remain at the site of a former beacon, situated about 2.25 miles WSW of Miike Ko Breakwater Light. The site is marked by a light.

Pilotage.—Pilots are available, though not mandatory, for bay transit and will board 1 mile S of Kuchinotsu Light. Harbor pilotage is compulsory. The pilot boards in position 32˚24.5'N, 130˚12.0'E during daylight hours only. Vessels are to forward their ETA to Kuchinotsu 48 hours prior to arrival.

Regulations.—Vessels are to reduce speed in the harbor to a point just sufficient to maintain steerage way.

Vessels must not proceed abreast of or overtake another vessel in the fairway.

Vessels must not anchor or stop in the fairway.

Vessels over 100 grt are to moor, or secure bow and stern to buoys.

Vessels are prohibited to approach within 50m of tankers loading or discharging in the inner harbor.

Signals.—There is a signal station at the harbor office, close NW of the wet dock gate, from which traffic, depth, and tidal signals are displayed.

The following traffic signals are in force:

1. A green light indicates docking and undocking permitted.
2. A red light indicates docking and undocking prohibited.

Anchorage.—Small vessels anchor in the inner harbor; however, when winds from between NW and SW exceed 40 knots, they shift berth to the wet dock.

There are mooring buoys in the inner harbor for large vessels.

A quarantine anchorage has been established off the entrance to Miike Ko.

8.77 Omuta Ko (33˚02'N., 130˚25'E.) (World Port Index No. 62300), at the mouth of the Omuta Kawa, lies about 1.5 miles NNE of Miike Ko and is approached across a bank that dries. On either side of the mouth of the river extensive reclamation work has been carried out, and on the N side, a wet dock is available to vessels of 300 grt. The approach channel is shallow, but kept dredged to a depth of 0.6m.

The city of Omuta extends from the N side of the mouth of Omuta Kawa to the E side of Miike Ko. Suwa Kawa flows through the S part of the city and can be ascended by vessels drawing less than 1.8m as far as the first bridge across the river.

8.78 North part of Shimabara Wan.—The N part or head of Shimabara Wan is much obstructed by shoals and is fringed with banks that dry out about 4.5 miles in places. Into it flows several rivers of which Chikugo Kawa and Suminoe are the largest.

Chikugo Kawa flows into the head of Shimabara Wan, about 8 miles NNW of Miike Ko. The river flows through mud flats that extend nearly 5 miles offshore. The land in the vicinity of the mouth of the river is very low, but is backed by mountains some 15 miles inland. In the channels across the mud flats, the depths in places are about 0.6m, but in the river they are greater.

The channel across the mud flats is marked by beacons, but the channel frequently changes so that local knowledge is essential for passage.

Suminoe Ko (33˚12'N., 130˚13'E.)

World Port Index No. 62310

8.79 Suminoe Ko, a specified harbor, is situated in the mouth of the Suminoe Kawa, about 7 miles WNW of Chikugo Kawa. The harbor is used chiefly for the export of coal. The port consists of two villages, Higashi Suminoe and Nishi Suminoe, and a small, natural, shallow harbor where small vessels can anchor and moor to buoys.

Winds—Weather.—Local weather signals are displayed at the village of Higashi Suminoe.

Tides—Currents.—The MHW interval at Suminoe Ko is 9 hours 12 minutes; spring tides rise 5.5m and neap tides rise 4m.

The tidal current in the river attains a rate of over 3 knots and on occasion may reach 5 knots.

Depths—Limitations.—There is a maximum depth of 5.2m in the anchorage area at LW.

The approach channel is shallow, but vessels up to 2,000 grt enter the harbor, Entry into the harbor is impossible except by making use of the tidal range, which is about 6m at its greatest.

Aspect.—The equipment for gathering seaweed at the seaward end of the drying bank is a good guide for vessels approaching the port.

Pilotage.—A pilot is available; vessels should anchor temporarily E of Suminoe Ko Lighted Buoy to await the pilot's arrival. It is recommended that vessels calling at this port for the first time employ a pilot. entering the harbor at night should be avoided, particularly in the case of the vessel’s first call to the harbor.

Anchorage.—Mooring buoys are anchored in the harbor nearly 0.5 mile downstream from a bridge that spans the river between the two villages. Vessels secure their sterns to the mooring buoys and ride with two anchors down. Two vessels, headed upstream and downstream, respectively, can secure to the same buoy. A vessel mooring heading upstream should do so when the ebb tidal current is flowing, and should moor heading downstream during the flood, otherwise difficulty may be experienced in maneuvering. Mooring is not possible at LW.