

Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.
SECTOR 8 — CHART INFORMATION

SECTOR 8

EASTERN PART OF THE NAIKAI (INLAND SEA)

Plan.—This sector first describes the passage through Bingo Nada and Hiuchi Nada, including Kurushima Kaikyo. The S part of Hiuchi Nada is then described. Fukuyama Ko and its approaches, in the N part of Bingo Nada, are then described. Finally, the passages and islands NW of Bingo Nada, including Mihara Seto, are described. The general sequence of each part is from E to W.

General Remarks

8.1 The recommended route through the Naikai, from between **Mu Shima** (34°18'N., 133°32'E.) and Mi Shima to Kurushima Traffic Route, about 28 miles WSW, is marked by Bingo Nada Lighted Buoys. Bingo Nada and Hiuchi Nada lie in the N and S parts, respectively, of this portion, and are separated from each other by a chain of islets. Kurushima Traffic Route then connects Hiuchi Nada with Aki Nada. Special regulations as prescribed by the Maritime Traffic Safety Law are in force in Kurushima Kaikyo Traffic Route. See Pub. 120 Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia, and [the graphic with the description of Kurushima Kaikyo Traffic Route in paragraph 8.11](#).

Mihara Seto and other channels lie between the NW part of Bingo Nada and the NE part of Aki Nada.

Tides—Currents.—Within Bingo Nada and Hiuchi Nada, there is a confluence of the E and W tidal currents which follows the indrafts of the tide from Kii Suido and Bungo Suido. Furthermore, within this area, the currents divide and set to the E and W. The positions of this confluence, and also those at which the currents divide, vary with the accompanying changes in times of HW and LW. With the exception of the passages between the islands and islets, the currents are weak from day to day. There is a marked difference in their directions and velocities.

In the narrow channels of Mihara Seto, the tidal currents are strong, with some tide rips and eddies. The flood current flows E, and the ebb current W. In the lee of the islands there are countercurrents, generally weak with unsettled directions. In Mekari Seto, Aogi Seto, and Oge Seto, the maximum velocities are 4.4, 5.6, and 3.6 knots, respectively.

The tidal current in Haguri Seto has a mean velocity of about 5 knots, and a maximum velocity of 7 knots. Slack water occurs 1 hour after HW and LW and lasts for about 1 hour.

The tidal currents in Miyanakubo Seto are strong, attaining velocities of 9 knots at springs.

Routes Through Bingo Nada and Hiuchi Nada

8.2 The recommended route through Bingo Nada and Hiuchi Nada is indicated by Bingo Nada Lighted Buoy No. 1 to Bingo Nada Lighted Buoy No. 7. Bingo Nada Lighted Buoy No. 7 is moored between Mu Shima and Mi Saki, while Bingo Nada Lighted Buoy No. 1 is moored about 2 miles WNW of **Kaji Shima** (34°07'N., 133°10'E.). The least depth in the vic-

nity of the fairway is 14.9m, about 5 miles WSW of the NW end of **Takaikami-jima** (34°18'N., 133°16'E.).

The route branching off the main route between Mu Shima and Mi Saki, and extending W to Mihara Seto, in the NW part of Bingo Nada, has a depth of about 10.1m in the E entrance to Mihara Seto.



Takaikami-jima Light

8.3 North side of route.—Mu Shima, the islands NW, and Nezura Iwa, W of the island, have been [previously described in paragraph 7.41](#).

Hassyomaki and an isolated group of rocks, with a depth of 14.7m, lie about 1.7 miles SW of Mu Shima.

Uji Shima (34°19'N., 133°28'E.), nearly 3 miles W of Mu Shima, has a 188m high summit at its E end.

Hyakkan-jima (34°18'N., 133°17'E.), off the E entrance to Mihara Seto, is a conical island, 71m high, marked by a light on its summit; the coast has generally steep cliffs.

Toyo Shima, about 4 miles S of Hyakkan-jima, and on the N side of the recommended route, has 2 summits; the W and higher is 109m.

Yuge Shima, about 2 miles NW of Toyo Shima, consists of two parts joined by a low isthmus. The N part is mountainous, with three peaks, and Mi Yama, 326m high, the N peak is the summit of the island. Kushi Yama, in the S part, is 199m high and conical.

Sa Shima, close SW of Yuge Shima, has hills alternately covered with small trees, and others with exposed granite. Its summit, 123m high, is near the middle of the island.

Hakata-jima, about 2 miles SW of Sa Shima, has a conspicuous summit, Hoko San, 304m high, near its center.

O Shima lies on the N side of the E entrance to Kurushima Kaikyo. Nembutsu Yama (Nenbutu Yama), its summit 382m high, lies in the N part of the island. Todai Yama, 234m high, with Takatori Yama, 253m high, with a wooded peak, lie in the NE part of the island. Tate Yama, 231m high, lies near the SW end of the island. Kiro Yama, 308m high, lies about 0.8 mile ENE of Tate Yama. All are conspicuous bare mountains.

Kamagi Shima, 22m high and bordered by rocks, lies about 1 mile SE of Todai Hana, the NE extremity of O Shima; a rock, with a depth of 0.9m, lies about 320m NE of Kamagi Shima.

Yoko Shima, 41m high, lies about 0.8 mile SW of Kamagi Shima. A rock, with a depth of 10.1m, lies about 0.3 mile SSW of Yoko Shima; Kamo Sho, a group of rocks, drying 2.4m, lies about 0.8 mile WSW of Yoko Shima.

8.4 South side of route.—Ibuki-jima (34°08'N., 133°32'E.), about 8 miles SSW of Mi Saki, is 122m high; it is low and flat in its E part, while its W half is high. The village in its central part is conspicuous from a distance. A light is shown from a round concrete tower standing on Aka Saki, the S extremity of the island. A lighted buoy is situated 0.2 mile W of Aka Saki.

A power cable, several telephone cables and a water pipeline, all on the seabed, are laid from the E side of Ibuki Shima E to the mainland shore.

A fishing village is situated in the middle of Ibuki Shima, and a basin protected by Kitaura Breakwater lies on the N side of the island. A detached outer breakwater, marked by a light, located N of the harbor entrance.

Marugami-jima, nearly 4 miles WNW of Ibuki-jima, is 83m high, and heavily wooded on its N side. It is uninhabited except during the fishing season. Ongo Iwa, drying 4m, lies about 0.3 mile ESE of Marugami-jima.

Mata-jima, about 4 miles WSW of Ibuki-jima, has two summits; the S and higher summit is 56m high, and is a flat area of cultivated land. The N and S ends of Mata-jima are densely wooded. Komata Shima, 37m high to the tops of the trees, lies about 0.3 mile SE of Mata-jima, to which it is joined by a reef.

Eno Shima, about 4.5 miles WNW of Marugami-jima, is 131m high; its N end is low, but the W side is steep and treeless. An islet, 17.1m high, lies close off its S end, and Yoshido Iso, a rock, with a depth of 1.3m, and steep-to, lies about 0.3 mile SE of the small islet.

Uo-jima, about 1.5 miles W of Eno Shima, has three summits. The central peak, 170m high, is the summit of the island, rather flat and cultivated. The E peak is rounded while the W peak has a sharp summit. Hyotan Shima, an islet, 59m high, with conspicuous pine trees on its summit, lies about 410m S of Uo-jima; there is a least depth of 2.1m between the island and islet.

There is a small harbor protected by breakwaters within the small bay on the N side of Uo-jima. Lights are shown from each breakwater head.

Takaikami-jima (34°11'N., 133°16'E.), about 1.5 miles WNW of Uo-jima, lies on the S side of the recommended route and near the central turning point. It slopes gradually N and S, but drops steeply on its E and W sides. The summit of the island, 258m high, is conspicuous from a distance. A light is shown from the N slope of the island, and pine trees mark the NE end of the island. A racon transmits from the lighted tower. Depths of less than 10.1m extend up to 0.5 mile E and W of the island.

Submarine power cables link the islands Takaikami-jima, Toyo, Yuge, and Uo-jima.

Hiuchi Deitai, a mud bank with depths of less than 20m, extends from S of Takaikami-jima to the NE end of O Shima. There is a least depth of 15m near the recommended track.

Kaji Shima (Kazi Shima), about 6.5 miles SW of Takaikami-jima, is a round-topped island, 79m high, and covered with bamboo grass. A reef extends about 0.1 mile S of the island.

Shisaka-jima is the collective name for four islets, about 1 mile E of Kaji Shima. Ieno Shima (Iye Shima), the middle island, is joined by reclaimed land to Mino Shima, close S. The chimney of a former refinery, 110m high on Ieno Shima, is conspicuous from a distance. Nezumi-jima, 49m high, lies close W of Ieno Shima. Myojin-jima, 88m high and covered with bamboo grass, lies about 0.3 mile N of Ieno Shima. Shoals, with depths of 8.7 and 10.8m, lie about 185m and 348m NW, respectively, of Nezumi Shima; a group of rocks, some drying, extends about 0.1 mile SE of the same island.

Bandai Iso, a steep-to rock, with a depth of 0.3m, lies about 0.8 mile ESE of Mino Shima. About 0.2 mile farther ENE, there is a rock, with a depth of 1.3m, with another rock close E, with a depth of 4.7m. A lighted buoy is moored S of the above rocks.

Okino Se, a steep-to rock, with a depth of 5.8m, lies 2.75 miles N of Higi Shima. A light is shown from a round concrete structure on Okino Se. A long, narrow shoal, with depths of less than 20m and a least depth of 14.4m, extends about 1.3 miles SSW from a position about 3.5 miles WSW of Kaji Shima.

Caution.—Fishing nets are positioned between April and June (it is reported times can vary), as follows:

1. About 2.3 miles SW from Uji Shima.
2. About 2.5 miles SW from Hashiri Jimi.
3. In the area 2 miles E of Hyakkan-jima (length about 2 miles).
4. In the area 2.5 miles NE of Hyakkan-jima (length about 2.3 miles).
5. In the area 2 miles NE of Toyo Shima (length about 2.3 miles).

The nets NE of Hyakkan-jima and SW of Uji Shima cross the fairway. The nets are indicated by buoys with flashing lights and small flags, but are reported to be difficult to see when a strong tidal current is running.

Fishing vessels infrequently congregate in the vicinity of Takaikami Shima, spreading E and W over a large area, and when there is a wind they operate in pairs to tow their nets, and some may run across the fairway at considerable speed.

The area W of Mi Saki and the area in the vicinity of Ibuki Shima and Marugami-jima may have large numbers of fishing boats operating in them.

Kurushima Kaikyo

8.5 Kurushima Kaikyo (34°07'N., 133°00'E.) is an important strait joining Hiuchi Nada to Aki Nada. There are four channels through the strait, but they are all narrow and winding, with a poor forward view; the tidal currents are strong and complex. There is considerable traffic in Kurushima Kaikyo and its approaches. Passage through the strait should not be made at the time of the strongest tidal current or in poor visibility.

Winds—Weather.—The average wind velocity throughout the year is about 11.5 knots, but due to the topography of the strait there are frequent W and N winds in the vicinity of the W entrance, but rarely S winds in the vicinity of the E entrance. During the winter monsoon winds and when a depression is transiting the Sea of Japan, the W wind strengthens and has on occasion exceeded a maximum velocity of 58 knots.

Fog on a monthly basis is concentrated from April to June, but is more frequent in Bingo Nada than in the vicinity of the W entrance. The generation of fog occurs in the later half of the night and is most frequent 4 to 6 hours before sunrise. The tendency is for the fog to disperse by about 1100. Its duration is relatively short in summer, but frequently 6 to 12 hours in spring.

Tides—Currents.—The tidal currents in the narrow channels of Kurushima Kaikyo are very strong and extraordinarily complex, causing tide rips and whirlpools in places. In addition, there are areas of countercurrents in the lee of islands, etc., but generally the rate of the current is weak and the direction variable. The general condition of the various channels is, as follows:

1. On the center line of Naka Suido, the S current (N current) flows from about 1 hour 20 minutes after LW (HW) at Hashihama, until about 1 hour 20 minutes after HW (LW). The maximum velocity is attained close downstream of the narrowest part of the channel for both N and S currents, and the maximum velocity may exceed 10 knots.

2. In the central part of Nishi Suido the turn of the tidal current is about 20 minutes later than in the Naka Suido. The area of the strongest velocity of the S current is almost on the center line of the channel, and for the N current in the area of the line from the SW end of Uma Shima to the NE end of Ko Shima. The velocity is about the same as that of Naka Suido. In addition, when there is a N current, it sets down hard on Ko Shima except during its final period.

3. The turn of the tide in the central part of Higashi Suido is almost simultaneous with that in the central part of Naka Suido, but the maximum velocity is about 0.5 times the maximum velocity in Naka Suido.

4. In the channel between Ko Shima and Kuru Shima the turn of the tide is about 15 minutes earlier than in Naka Suido. When there is a NW current, it sets down strongly on Kuru Shima. The NW current is stronger than the SE current, and the maximum velocities are 0.75 and 0.5 times, respectively, of the maximum velocity in Naka Suido.

Depths—Limitations.—The least depth in the central part of Kurushima Kaikyo is 18.4m at the N entrance to Naka Suido, with deep water elsewhere. There are many shoals and submerged rocks around Uma Shima and along the coast of

Shikoku; there are frequent marine accidents due to groundings, etc.

Signals.—The tidal signals refer to the tidal current in Naka Suido, W of Nakato-jima. For further information, see the [Kurushima Kaikyo Traffic Route graphic in paragraph 8.11](#). The tidal stations are, as follows:

1. At the Nagaseno Hana Tidal Signal Station and the Osumi Hana Tidal Signal Station, the signals are shown continuously, day and night, by a white isophase light every 4 seconds. The signals consist of letters, numerals, and arrow symbols, as follows:

- a. The letter N or S—The direction of the current.
- b. A numeral from 0 to 9—The velocity of the current.
- c. An arrow pointing vertically up—An increasing current.
- d. An arrow pointing down—A decreasing current.
- e. The letter X is shown during the last period of the current (for about 10 minutes before the turn), instead of the numeral and arrow symbol.

2. At the Nakato-jima Tidal Signal Station, the signals are made, by day, with a white beam having a red disc at one end and a black rectangle at the other, pivoted at the head of a white post at an elevation of 37m; the night signals are made by a light shown from the station. The positions of the day signal, the characteristics of the light for the night signal, and their meaning are, as follows:

- a. Black rectangular shape upward, beam inclined at an angle of about 30° from the vertical—flashing green light every 3 seconds—the period of the S current.
- b. Black rectangular shape upward, beam inclined at an angle of about 70° from the vertical—group flashing green light, 3 flashes every 8 seconds—last period of S current.
- c. Red disc upward, beam inclined at an angle of about 30° from the vertical—flashing red light every 3 seconds—the period of the N current.
- d. Red disc upward, beam inclined at an angle of about 70° from the vertical—group flashing red light, 3 flashes every 8 seconds—last period of the N current.

Note.—"Red ball and up is W, down is E" is a convenient way to remember the day signals, with W meaning the N, ebb current.

3. At the Ohama Tidal Signal Station and the Tsu Shima Tidal Signal Station, the following tidal current signals are shown day and night:

- a. Green flashing light every 10 seconds—South current.
- b. Green group flashing light, three flashes every 20 seconds—The last period of the S current.
- c. Red flashing light every 10 seconds—North current.
- d. Red group flashing light, three flashes every 10 seconds—Last period of the N current.

There is an indicator light, showing a fixed yellow and red light, at the Ohama Tidal Signal Station, the Nakato-jima Tidal Signal Station, and the Tsu Shima Tidal Signal Station.

The **Ohama Tidal Signal Station** (34°05'N., 133°00'E.) lies near the N harbor limit of Imabari Ko. Chikami Yama (Tikami Yama) rises to an elevation of 244m, about 1 mile WSW of the signal station. Karako Yama, 105m high, an isolated hill re-

sembling Mount Fuji, is conspicuous about 4.3 miles SSE of the signal station.

The Ohama Tidal Signal Station also broadcasts continuously on 1,665 kHz, identification signal NT. Signals broadcast the period and direction of the tidal current in Naka Suido are, as follows:

1. S—The period of the S current.
2. LS—Last period of the S current.
3. N—The period of the N current.
4. LN—Last period of the N current.
5. R—Information not available.



Nagaseno Hana Light

8.6 Namikata Oil Terminal (34°07.1'N., 132°54.6'E.) lies 2 miles SW of Osumi Bana, on the N coast of the projection forming the N side of Obe Wan. There are seven oil berths, the main jetty having a depth of 20m and can accommodate vessels of up to 125,000 dwt. Tugs of up to 3500 hp are available for berthing/unberthing, which is undertaken in day-light hours only.

Aspect.—O Shima, at the E entrance, was [previously described in paragraph 8.3](#). **Nagaseno Hana** (34°06'N., 133°02'E.), a cliffy headland, lies at the SE end of O Shima. There is a tidal signal station on the headland.

Kozo Iso, drying rocks, with a small rock, 2m high, near its center, extend to about 410m SSW of Nagaseno Hana. Tide rips occur S of Kozo Iso.

Ryujin To (Ryuzin Shima), a small rock, marked by a light, lies W of Kozo Iso, and about 0.4 mile SW of Nagaseno Hana. A rock, drying 0.2m, and a depth of 3.2m, lie close S and 137m S, respectively, of Ryujin To.

A rock, with a depth of 17.1m, lies about 2.8 miles ENE of Ryujin To, with depths of less than 20.1m extending about 0.3



Ryujin To Light

mile NW and SE, respectively, from it. Okino Se and the bank SSW were [previously described in paragraph 8.4](#).

Hiki Shima (Higi Shima) (34°03'N., 133°06'E.), a flat-topped island, 58m high, and marked by a light on its summit, lies about 4.3 miles SE of Ryujin To. There is a line of three islets on the W side of the island; Ko-hiki Shima (Ko-Higi Shima) lies close ENE of the island. Hiki Shima and Ko-hiki Shima are surrounded by shoals, and a depth of 3.4m lies nearly 0.2 mile SSE of Ko-higi Shima.

Ajika Iwa (Asiko Iso), a rock drying 2.3m, lies about 1 mile ENE of Ko-higi Shima; it is marked by a beacon and a lighted buoy on its NE side. Aino Ishi, drying 0.5m, lies about 0.2 mile SW of Ajika Iwa. Shitano Ishi, a rock with a depth of 0.9m, lies about 0.3 mile farther WSW; a depth of 4.3m lies about 0.1 mile SE of Shitano Ishi. Rocks, with depths of 13.6 and 17.1m, lie about 0.5 mile SSE and 0.4 mile SW, respectively, of Ajika Iwo.

Heichi Shima (Heiti Shima), about 2 miles S of Hiki Shima, has a flat summit, 96m high, with rows of pine trees on its slopes; there is a forest of pine trees on its summit. Ko-heichi Shima (Koheiti Shima), covered with bamboo grass, lies close E of Heichi Shima, from which it is separated by a narrow, shallow channel. Shiakabe Iwa, a pointed rock, 17.1m high, lies about 0.5 mile S of Heichi Shima.

Teraga Iso, a sandbank, with depths of less than 10.1m and a least depth 4.7m, extends from a position about 1.3 miles NW of the NW extremity of Heichi Shima, in a WNW direction to about 0.5 mile off the coast of Shikoku. There are sandwaves on the sandbank. A rock, with a depth of 6.4m, lies about 0.2 mile off the mouth of Tomita Kawa, W of Terago Iso.



Kurushima Kaikyo Bridge

Narrows of Kurushima Kaikyo

8.7 There are four conspicuous steel pylons for the overhead cables running from the SW part of O Shima to the Shikoku coast via Nakato-jima and Uma Shima. There is a vertical clearance of 66m over Nishi Suido and Nake Suido, and a vertical clearance of 41m over the channel between Nakato-jima and O Shima.

There is an overhead cable, with a vertical clearance of 75m, across Nishi Suido, between Uma Shima and Ko Shima to the NW. The steel pylons are 80m high.

A bridge crosses Nishi Suido, between the coast of Shikoku and Uma Shima and between Uma Shima and Mushi-jima; there is a vertical clearance of about 65m in both channels. The bridge continues ENE from Mushi-jima to O Shima, with a vertical clearance of about 36m.

Naka Suido Nakato-jima (Nakato Shima) (34°07'N., 133°00'E.), a round-topped island, 62m high, lies on the E side of Naka Suido. The tidal signal station is situated at its NW end.

Mushi-jima (Musi Shima), 55m high near its SE end, lies about 0.3 mile NE of Nakato-jima. Ko-mushi Shima, 37m high, lies close off the NW end of Mushi-jima. Warabe Iso, an isolated rock, with a depth of 3.1m, lies about 82m W of Mushi-jima.

An area to the W and N of Mushi-jima is delineated by nine lighted buoys. Entry into this area is restricted due to bridge construction.

Taka Se, about 0.5 mile NNW of Nakano-jima, is a rock, with a least depth of 18.4m, and the least depth in the fairway.

Uma Shima lies about 0.3 mile W of Nakato-jima, leaving a navigable width of about 0.2 mile. The island has two summits, the S is higher and surmounted by the previously-mentioned pylon. Uzuno Hana, Okora Saki, and Nagase Hana, the SW, W, and E extremities, respectively, of the island, are marked by lights. The N and E shores are bordered by dangerous rocks extending from 90 to 180m offshore.



Uzuno Hana Light

Mukuri, a rock, with a depth of 1.7m, lies about 250m N of Nagase Hana. Nagase Hana, bearing 188°, in range with Ohama Tidal Signal Station, clears Mukuri.

8.8 Nishi Suido.—The SW and N ends of Uma Shima are bordered by dangerous submerged rocks. Rocks, with depths



Okora Saki Light

of 5.2 and 1.8m, lie about 230m W of the N end of the island. Depths of over 20m lie from 150 to 250m off the W coast of Uma Shima. Nishi Suido should be navigated against the current, which attains a rate of as much as 8 knots.

An overhead power cable, with a vertical clearance of about 66m, spans Nishi Suido between the S end of Uma Shima and Shikoku to the WSW. The towers supporting the cable at each end are conspicuous and stand at elevations of 200m and 162m. They are marked by red obstruction lights.

The Shikoku coast N of Imabari Ko should not be approached closely, due to the many rocks and shoals bordering the coast.

Ama Se, a rock, drying 0.6m, lies about 0.1 mile offshore, about 0.5 mile W of the SW extremity of Uma Shima. A lighted beacon stands on Ama Se.

Oiseno Se, a rock, with a depth of 4.4m, lies about 0.1 mile offshore, about 295m NNW of Ama Se.

Shiro Ishi, a white rock marked by a light, lies about 0.3 mile SSE of Ama Se. Mukuri, a rock, with a depth of 4.7m, lies about 228m ESE of Shiro Ishi, and is the outermost of the shoals; it lies close to the traffic route.

Hiro Se, a group of rocks, some of which dry, lies about 0.3 mile SSE of Shiro Ishi. Wakameji, consisting of reefs with a least depth of 2.1m, extends about 137m NNE of Hiro Se.

Ko Shima (O Shima), about 0.5 mile NW of Uma Shima, is 100m high, with much cultivated ground and some wooded areas. Biwano Kubi, a small wooded bluff, 43m high, and surmounted by a pylon, is connected to the SW end of Ko Shima by an isthmus. Futatsu Iwa, a rock drying 3.7m, and marked by a light, lies about 90m SW of Biwano Kubi.

Oasari, a steep-to rock, with a depth of 8.6m, lies about 0.2 mile off the coast of Ko Shima, about 0.3 mile ESE of Biwano

Kubi. Nezumi Iso, a rock, with a depth of 8.4m, lies about 0.1 mile NW of Oasari.

8.9 Kono Se (34°07'36"N., 132°59'24"E.), with a depth of 19.2m, is steep-to on its E and W sides, and lies on the W side of the N end of Nishi Suido.

In Higashi Suido (Higasi Suido), the pylons supporting the overhead cable are conspicuous. Gono Ishi, rocks with depths of less than 1.8m, lie about 137m E of Nakato-jima.

Bujiro, an isolated rock, with a depth of 3.8m, lies in the middle of Higashi Suido, about 0.2 mile E of **Mushi-jima** (34°07'N., 133°01'E.).

Lights, in line bearing 122°, are situated on the N side of Hinai Hana, nearly 0.5 mile NE of Mushi-jima. Wakame Iso, a rock with a depth of 1.1m, lies about 230m SE of this headland.

Kenashi Shima lies close N of the E part of Mushi Shima; a rock, with a depth of 2.7m, and steep-to on its N side, lies about 90m N of Kenashi Shima.

Ozukuma Shima, 35m high, lies about 1.3 miles N of Mushi-jima; its W coast is bordered by dangerous rocks extending to about 250m offshore. A reef, with a rock drying 0.7m at its outer end, extends about 0.1 mile S of the island.

An overhead cable, with a vertical clearance of 29m, extends from the SE side of Ozukuma Shima, to Boze, a headland, about 0.3 mile SE. Bozo Iso, a rock with a depth of 9.5m, lies at the end of a reef extending about 0.1 mile WSW of Boze.

8.10 Kuru Shima (34°07'N., 132°58'E.), about 0.3 mile SW of Ko Shima, is 40m high, covered with trees, and lies in the entrance to Hashihama. Depths of 2.5 to 6.5m extend to about 137m N of the island. Umano Se, rocks with a least depth of 2.9m, lie about 320m E of Kuru Shima.

Hiro Se, a rock drying 1.3m and marked by a light, lies in the approach to Namikate Ko, about 0.8 mile WNW of Kuru Shima. Shoal water extends up to 0.2 mile offshore, about 0.5 mile SE of Osumi Bana.

Shiro Ishi, a white, pointed rock, 8.5m high, lies about 1 mile N of Kuru Shima. Dangerous submerged rocks extend about 1.5 miles WNW of Ko Shima. Tanishi Su, with a least depth of 6.6m, lies about 0.8 mile ESE of **Osumi Bana** (34°08'N., 132°57'E.).

There are sandwaves about 1 mile offshore between Ko Shima and Osumi Bana.

Aspect.—Tsu Shima (34°09'N., 133°00'E.), about 1.5 miles N of Uma Shima, lies on the E side of the W entrance to Kurushima Kaikyo. It has E and W peaks, which appear as one mountain when viewed from the W. Ichinose Yama, the W peak, 177m high and rather pointed, is a good mark for passing through the narrows of Kurushima Kaikyo. There is a tidal signal station near Ichinose Hana, the SW end of the island. Tsu Shima Tidal Signal Station consists of a round concrete structure. Signal lights are shown at an elevation of 48m, and a light indicating the position of the station is shown at an elevation of 54m.

8.11 Osumi Bana (Osumi Hana) (34°08'N., 132°57'E.), about 2.5 miles WSW of Tsu Shima, lies on the S side of the W entrance to Kurushima Kaikyo. There is a tidal signal station



Hinai Hana Lights

Oge Shima, about 2.5 miles N of Osumi Bana, attains an elevation of 208m in its N part; it is marked by light on its W side. Ko-oge Shima, about 0.5 mile W of Oge Shima, has a 133m summit in its SW end; white cliffs, caused by quarrying, are conspicuous on the S side of its summit. **Yakushi Yama** (Yakusi Yami) (34°12'N., 132°58'E.) is conspicuous in the SW end of Omi Shima.

Pilotage.—Pilotage is compulsory in Kurushima Kaikyo and its approaches for the following vessels:

1. Vessels of 10,000 grt or over.
2. Foreign vessels carrying dangerous cargo.
3. Foreign vessels whose master is making a first voyage through the Naikai.

For further information, see paragraph 6.1.

Regulations.—The Kurushima Traffic Route (Kurusima Traffic Route) has been established under the Maritime Traffic Safety Law. Vessels must navigate in accordance with the traffic procedures established under this law:

1. Traffic in Naka Suido and Nishi Suido is one-way, depending on the direction of the tidal current.
2. When there is a S tidal current, vessels meeting in the E and W entrances should pass each other starboard to starboard.
3. When there is a N tidal current, eastbound vessels in Nishi Suido and vessels heading to pass between Ko Shima and Hashihama should pass starboard to starboard.
4. When in the passage at the time of the turn of the tide, there is danger of meeting conflicting traffic within a given channel around the time of the turn of the tide, because navigation in a particular channel continues without interruption.

Higashi Suido and Kurushima Seto are the channels normally used by scheduled shipping services and small vessels.

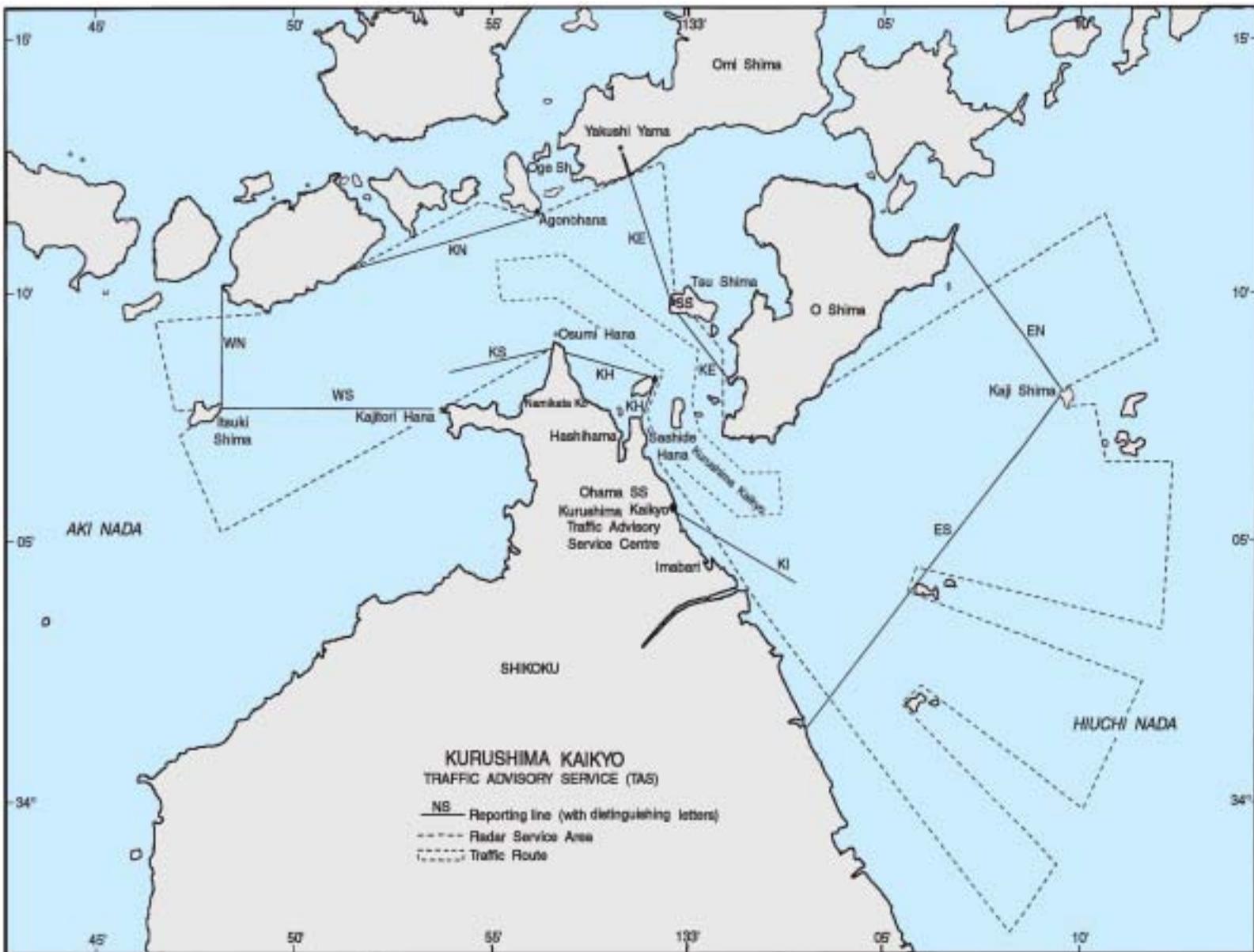


Ikado Iso Light

about 0.1 mile S of the headland. Drying rocks, on which there is rock, 3.8m high, extend about 137m N of the headland.

Ikado Iso, about 0.2 mile long N-S, lies about 0.4 mile WNW of Osumi Hana. It is marked by a light at its N end, and a rock, 7m high, lies at its S end. Ko-ikado, two white rocks, 4.6m high, and a drying rock, lie about 90m SSE and W, respectively, of the S rock. A shoal, with a least depth of 14.9m, lies about 0.3 mile ENE of Ikado Iso Light.

Kajitori Hana (Kazitori Hana), marked by a light, lies about 3 miles WSW of Osumi Hana. Ogon Sho, an isolated rock, with a depth of 9.5m, and with tide rips in its vicinity, lies about 0.4 mile WNW of Kajitori Hana.



5. The following vessels are required to have an escort vessel, with a fire-fighting capability before navigating the straits:

- a. Vessels of 250m or more in length.
- b. Vessels of 200m or more in length which are carrying a dangerous cargo.
- c. Vessels of 25,000 grt or more which are carrying liquefied gas.

6. The following additional limitations and regulations apply to tankers using the strait:

- a. Laden tankers and tankers in ballast, but not gas-free:
 - Length overall of 200 to 230m—Maximum draft of 11.9m
 - Length overall of 230 to 285m—Maximum draft of 11.0m
- b. Gas-free tankers:
 - Length overall of 200 to 250m—Maximum draft of 12.8m
 - Length overall of 250 to 300m—Maximum draft of 11.0m

Tankers should only navigate Naka Suido during daylight hours and when the favorable tidal current is less than 3 knots.

The draft of tankers in passage between Kurushima Kaikyo Traffic Route and Mizushima Traffic Route should not be more than 11m.

7. In low visibility, entry into Kurushima Kaikyo Traffic Route is restricted as given in the accompanying table:

The **Kurushima Kaikyo Traffic Advisory Service (TAS)** provides vessels with information, controls traffic routes, and ensures safe navigation. Huge vessels, vessels of 10,000 gross tons or more (except huge vessels), and vessels towing (or pushing) an object between 100m and 200m in total length, should report to Kurushima Martis, by VHF or telephone, on passing the Reporting Points listed in the accompanying table.

The following information should be included in the report:

1. Vessel's name.
2. Time passing Reporting Point.
3. Abbreviation of Reporting Points.
4. If towing or pushing, length of vessel.
5. Destination of vessel (that do not need seaway information).

Caution.—Vessels should avoid crossing in the vicinity of the entrance and departure points of the traffic route.

Vessels intending to enter the traffic route or to alter course after leaving it shall not alter course in the sea area near the entrance and departure points of the traffic route.

At Reporting Point WS, a large number of fishing vessels congregate in every channel.

Kurushima Kaikyo Low Visibility Restrictions	
Type of Vessel	Restriction
Vessels of 200m or more in length.	Entry prohibited when the visibility in the traffic route is less than 1 mile.
Vessels of 50,000 grt or more carrying dangerous cargo.	
Vessels of 25,000 grt or more carrying liquefied gas.	Entry prohibited when the visibility in the traffic route is less than 1 mile.
Vessels towing or pushing very long tows.	
Vessels carrying dangerous cargo (excluding those listed above).	Entry prohibited when the visibility in the traffic route is less than 0.5 mile.

At Reporting Point WS, line fishing vessels congregate in the fairways and may greatly impede the passage of large vessels. They do not enter the fairway when the current is strong, but some may remain while the current is still weak. The greatest obstruction to navigation is the concentration of fishing lights in use on the coasts of Uma Shima, Nakato-jima, and Ko Shima; the islands and headlands may not be visible due to these lights.

A triple-linked suspension bridge spans Nishi Suida, Naka Suida, and Higashi Suida, with a vertical clearance of 65m for Nishi Suida, 65m for Naka Suida, and 46m for Higashi Suida.

Imabari Ko (34°04'N., 133°01'E.)

World Port Index No. 62070

8.12 Imabari Ko is a specified harbor on the S side of Kurushima Kaikyo. It consists of Section I to Section III; Section III at **Hashihama** (34°06'N., 132°58'E.) is used as an anchorage for small local vessels and for the construction and repair of medium and small vessels.

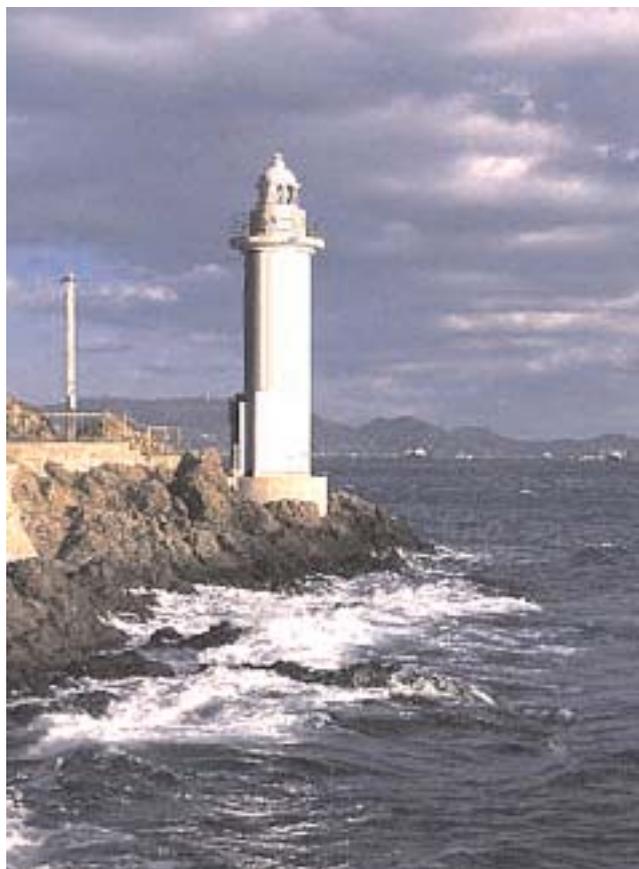
Kurushima Kaikyo TAS Reporting Points		
Name of Reporting Point	Abbreviation	Description
Kurushima Kaikyo East Entrance N	EN	A line bearing 325° from Kaji Shima to the coast (O Shima).
Kurushima Kaikyo East Entrance S	ES	A line bearing 218° from Kaji Shima to the coast (Shikoku).
Off Imabari	KI	A line bearing 120° from Ohama Signal Station.
Off Hashihama	KH	A line connecting Ko Shima East Light and Osumi Hana and a line connecting Ko Shima East Light and Sashide Hana.
Off Namikata	KS	A line bearing 250° from Osumi Hana.

Kurushima Kaikyo TAS Reporting Points		
Name of Reporting Point	Abbreviation	Description
Kurushima Kaikyo North Entrance E	KE	A line connecting Tsu Shima Signal Station and Yakushi Yama on Omi Shima and a line connecting the Signal Station and Naibana Front Range Light.
Kurushima Kaikyo North Entrance W	KN	A line bearing 075° from Agono Hana Light on Oge Shima and a line bearing 255° from Agono Hana Light.
Kurushima Kaikyo West Entrance N	WN	A line bearing 000° from the E end of Itsuki Shima to the coast (Osaki Shimo Shima).
Kurushima Kaikyo West Entrance S	WS	A line connecting the E end of Itsuki Shima and Kajitori Hana Light.

Winds—Weather.—The inner harbor is safe even in NE to E winds, which are the most severe, and raise a sea at the entrance.

Tides—Currents.—The tidal rise at Imabari is 3.4m at springs, and 2.6m at neaps.

The flood current flows SE, and the ebb current flows NW, but are not strong enough to have any particular effect on navigation.



Agono Hana Light

Depths—Limitations.—In Section I, the inner harbor, the wharf S of the base of the E breakwater has depths of 4.5m alongside and a length of 235m.

A bent groin, from which a light is shown, extends from the shore; its head is situated close E of the S end of the detached breakwater.

Kurashiki Wharf, on the W side of the commercial harbor, about 0.5 mile farther SE, N of the mouth of Soja Kawa (Sosya Kawa), has a depth of 9m alongside its N berth, which can accommodate vessels up to 8.5m draft and 15,000 grt. Temposan Wharf, with a depth of 7.5m alongside, lies on the SE side of the inner harbor and can accommodate two vessels of 5,000 grt. Three piers and a ferry quay, with a depth of 6.1m alongside, lie on the SW side of the harbor.

Aspect.—A conspicuous building lies about 0.5 mile SE of the head of the E breakwater.

The harbor office, a five-storied building with radio masts, lies on the inner side of the inner harbor. A radio tower is situated about 0.5 mile SW of the harbor office. A power station chimney, 68m high, is conspicuous about 0.8 mile NW of the E breakwater.

Pilotage.—Pilotage is not compulsory. The harbormaster can be contacted by radiotelephone.

For further information, see paragraph 6.1.

Anchorage.—Vessels carrying dangerous cargo will be assigned anchorages in Section II. Temporary anchorage is available in Section III; however, Umano Se, previously described in paragraph 8.10, lies in the E entrance, and a shoal, with a depth of 4.7m, and marked by a mooring buoy, lies about 0.2 mile S of Kuru Shima.

Caution.—Many ferries and sight-seeing vessels use the inner harbor. In addition, caution is necessary entering or leaving the harbor as there may be fishing vessels which operate in the E entrance to Kurushima Kaikyo, particularly at Reporting Point WS.

Hiuchi Nada—South Shore

8.13 The coast of Shikoku, from **Mi Saki** (34°15'N., 133°34'E.) to **O-jima** (34°00'N., 133°22'E.), about 18 miles SW, forms a large bay with generally level sandy shores and a few steep places. Anchorage can be taken in suitable depths, about 1 mile off the coast, except in the vicinity of Mi Saki, in a bottom of mud, or mud and sand. The tidal currents are weak



Imabari Ko Breakwater Lights

and there are few uneven parts in the seabed, but there are many fishing nets and seaweed cultivation grounds along the coast, some of which extend up to about 1 mile offshore.

Maruyama Shima (34°13'N., 133°37'E.), about 3.5 miles SE of Mi Saki, is 101m high, densely wooded, conspicuous, and has a black appearance.

Otsuta Shima, 91m high, lies about 1 mile farther SE, with Ko-tsuta Shima, close SSE. Tenjinno Iso, steep-to, with a depth of 7.4m, lies about 1.5 miles W of Otsuta Shima.

Tsukumo Saki, about 2.5 miles S of Ko-tsuta Shima, is surmounted by Tsukumo Yama, a conical hill, 153m high, and appears as an island from the N; the large landslide on the SW side of the hill is conspicuous.

Kannonji Ko (34°07'N., 133°38'E.), about 1.5 miles farther S, lies at the mouths of Saita Kawa and Ichinotani Kawa. Numerous fish havens extending up to 1 mile offshore exist in this vicinity. A chimney, 37m high, is conspicuous on the N side of the mouth of Saita Kawa, from which a breakwater extends. Close S of this breakwater, N and S breakwaters enclose the harbor at the entrance of Ichinotani Kawa; a detached breakwater fronts the harbor entrance. A wharf, at the base of the N breakwater, has depths of 4m alongside its S side, with a length of 111m. The roadstead W of the pier has depths of 6m.

Toyohama Ko, a small harbor, lies about 3 miles S of Kannonji Ko. A light is shown at the head of the W breakwater. Yoki Saki, a headland, 28m high, is conspicuous about 2.8 miles farther SW; it lies about 1 mile NNW of Yahachi Yama, 264m high. Okino Iso, a rock with two heads, each drying 0.8m, lies about 0.3 mile offshore, about 0.5 mile ENE of Yoki Saki.

Mishima-Kawanoe Ko (34°00'N., 133°33'E.)

World Port Index No. 62085

8.14 Mishima-Kawanoe Ko is a specified harbor on the SE side of Hiuchi Nada. It is developing into an industrial port with paper-making and cotton-spinning industries. The harbor consists

of Kawanoe Chiku and the city of Kawanoe, in its NE part, and Mishima Chiku and the city of Iyo-Mishima, in its SW part.

Kawanoe Shiku consists of a small harbor, (formerly Kawanoe Ko), sheltered by breakwaters; the fishing harbor close SW; and Nishi Ko Wharf 2 and Nishi Ko Wharf 1, respectively, farther SW. The W breakwater of the local harbor is being extended NNW. Kinsei Kawa discharges into the middle of Kawanoe Chiku.

Mishima Chiku consists of the small local harbor (formerly Mishima Ko), sheltered by breakwaters; Taio Dolphin Berth, close NE; and Muromatsu Wharf, farther NE. East Wharf lies in the S part of the harbor. There is a dolphin berth, with a depth of 9m alongside, projecting N from East Wharf.

A breakwater is situated at the NW end of East Wharf; a light is shown from the end of the breakwater at Sankawa, 1.5 miles WSW of East Wharf. A detached breakwater, from which a light is shown, is situated 0.5 mile seaward of Muromatsu Wharfs.

The quarantine anchorage is about 1 mile W of the Mishima-Kawanoe Ko W breakwater light, on the SW side of the harbor.

Winds—Weather.—The most frequent wind is W, followed by NE. North and S winds are the least frequent. As the harbor opens into Hiuchi Nada, the berthing of vessels alongside the wharf is difficult when there is a strong N wind.

Tides—Currents.—The mean tidal rise at Mishima is 3.7m at springs and 2.9m at neaps. The flood current flows SE, and the ebb current flows NE to SW, but does not constitute an obstacle to navigation.

Depths—Limitations.—Nishi Ko Wharf 1 (Kawanoe Chiku) has depths of 11.6 to 12m alongside the major part of its NE side. There is a least depth of 10.1m in the approach to the NE side of the wharf; however, close NE, a bank, with a least depth of 9.5m, fronts Nishi Ko Wharf 2.

Goten Iso, a fishing reef with a least depth of 7.9m, lies about 0.3 mile NW of the NW extremity of Nishi Ko Wharf 2.

Muromatsu Wharf has a berth on the outer part of its S side, with depths of 14 to 14.9m alongside, and a length of 400m.

Taio Dolphin Berth has depths of 9.5m alongside. Okidai Wharf is 200m long, with a depth alongside of 3.5m.

Aspect.—Shiro Yama, 62m high, with a park, is conspicuous S of the fishing harbor.

The smoke from the factories at Kawano and Iyo-Mishima is very visible from a distance.

A paper mill chimney, 183m high and painted red and white, is conspicuous on the S side of Murumatsu Wharf.

Pilotage.—Pilots are available from Sakaide with sufficient advance notice, when required. [For further information, see paragraph 6.1.](#)

Anchorage.—The quarantine anchorage is centered about 0.5 mile NW of Murumatsu Wharf; there are depths of 14 to 17.1m in the anchorage.

Niihama Ko (33°59'N., 133°17'E.)

[World Port Index No. 62080](#)

8.15 Niihama Ko is a specified harbor located near the middle of the S shore of Hiuchi Nada. The harbor is divided into Niihama Ku and Takihama Ku. Takahama Ku (Takahama Ko), the E part, is a timber harbor; Niihama Ku, the W part, is divided into Sections I to IV. The city of Niihama is a major industrial city, from metal and chemical industries, and mining.

Kokuryo Kawa flows into the sea about 1 mile E of the entrance to the inner harbor and considerable reclamation work has been carried out in the intervening area. A breakwater extends ENE from the E entrance point to Kokuryo Kawa.

Matsunoki, a small harbor constructed on reclaimed land, lies at the E entrance to Kokuryo Kawa. A detached breakwater lies 91m N of the harbor entrance from the NW end of which a light is shown.

Extensive piling work is being carried out along the shoreline between Matsunoki and Habu Saki, 1.5 miles ENE.

Winds—Weather.—Throughout the year, the most frequent winds are WSW and W, followed by ENE. North and S winds are least in frequency and velocity. Typhoons are blocked by a mountain range, with elevations of over 1,000m, which lies S of the harbor; it is reported that typhoons rarely affect the harbor. In strong N winds, swells enter the harbor, but it has no effect on the inner harbor.

Tides—Currents.—The mean tidal rise at Niihama is 3.5m at springs and 2.7m at neaps. The flood current flows E outside the breakwater and generally S inside the breakwater; the ebb current is the reverse. The current has velocity of 0.75 knot outside the breakwater and is weak inside the breakwater.

Depths—Limitations.—North Wharf, about 0.3 mile NE of the E breakwater at Niihama Ku (Section I), has a depth of 14m alongside and can accommodate vessels up to 50,000 grt and a 12.8m draft.

Berth K-6, about 0.5 mile ESE of the head of the E breakwater, can accommodate vessels up to 10,000 grt and a 9.2m draft. A berth on the W side of Section I, about 0.8 mile S of W breakwater, has a depth of 9.5m alongside. A least depth of 7.4m lead to the above berths.

Aspect.—Lighted buoys in Hiuchi Nada mark the approach to Niihama Ko from the NE. **O-jima** (34°00'N., 133°22'E.), 147m high and comparatively steep-to on its N side, forms the NE harbor limit of Takihama Ku.

Habu Saki, about 1.5 miles farther W, is marked by a light, and is surmounted by Habu Yama, 101m high, about 0.3 mile

SE. The land S of Habu Yama is low and it appears as an island from a distance.

Kuro Shima, 49m high, lies about 1 mile ESE of Habu Saki. It was formerly an island, but has been extended W and S by reclamation and is now separated from the mainland SE only by a narrow channel. Its N and E sides are fringed with rocky ledges.

Two lighted buoys are moored 0.3 mile NW of Kareneko Hana, the N extremity of Kuro Shima, and mark the entrance channel to the inner harbor at Takihama Ku.

The large chimneys of the factories at Niihama Ku are good landmarks; at night the lights of the factories are visible from a distance. A chimney, 124m high, is conspicuous about 0.8 mile ESE of the head of the E breakwater; another chimney, 134m high, and painted red and white, is conspicuous about 0.8 mile S of the W breakwater.

With offshore winds, the breakwater lights may be difficult to distinguish due to smoke, but in these circumstances, the summit of Miyo Shima, 74m high and heavily wooded, is a good mark close W of the W breakwater.

Drying rocks extend about 0.2 mile W of **Nishiha Shima** (Saki) (33°58'N., 133°15'E.), in the NW part of Niihama Ku. Funagami Iwa (Hunagami Iwa), a rock drying 2.7m and marked by a light, lies about 0.5 mile W of Nishiha Shima.

In Takihama Ku, Kajikake, a submerged rock, marked NW by a lighted buoy, lies about 0.2 mile off the W side of O-jima. Farther SE, Nagaeno Iso, with a least depth of 2.2m, lies between O-jima and Kuro-jima. The NE side of Kuro-jima is bordered by rocky ledges.

Pilotage.—Pilotage is not compulsory, but recommended. Call "NIHAMA-HO-AN" on VHF channels 16 and 12. There is a liaison office of the Naikai Pilotage Area Pilots Association at Niihama. Local harbor pilots are available with 48 hours advance notice.

The harbormaster can be contacted by radiotelephone regarding harbor operations.

[For further information, see paragraph 6.1.](#)

Anchorage.—The quarantine anchorage is centered about 0.8 mile NNE of the head of the E breakwater. Vessels loaded with dangerous cargo are assigned anchorages in Section III.

There is good anchorage, sheltered from S to W winds, in depths of 4.9 to 20m, mud, between O-jima and the coast of Takihama Ku.

Caution.—Caution is necessary to keep clear of submarine cables, a submerged water line, and oyster beds. There are seaweed cultivation grounds (September to April) around O-jima and NE of Kuro-jima.

8.16 Toyo Ko (33°56'N., 133°09'E.).—Saijo Ko, about 4 miles W of Niihama Ko, and Nyugawa Ko, about 3 miles farther W, are subject to harbor regulations, but the extended harbor area, which includes both harbors, is the principal port of Toyo Ko.

Saijo Ko (Saizyo Ko), at the mouth of Honjin Kawa, can be recognized by a large number of chimneys and oil tanks of the factories and power stations on each side of the harbor. The harbor is sheltered by breakwaters. The channel into the harbor is about 68m wide, with depths of 3.1 to 4m. Lighted buoys mark the entrance to the channel, and lights, in line bearing 156°, at the head of the harbor, lead into the inner harbor. Two

overhead power cables, the lower with a vertical clearance of 37m, span the harbor about 2 miles N of the range lights.

Several fish havens exist to the E of the range line. A lighted buoy is situated close to the range line 1.75 miles offshore, while a similar buoy is 1 mile farther E.

A wharf, on the E side of the mouth of Honjin Kawa, has depths of 3.1 to 4.9m alongside.

Nyugawa Ko is divided into two parts; the E part is called Chuo Chiku while the W part is called Nyugawa Chiku. There are factories, refineries, and a power station in Chuo Chiku, and a cotton factory in Nyugawa Ku.

Nyugawa Chiku is sheltered NW by a breakwater. A channel, with depths of 4 to 4.9m and marked by lighted buoys, lies close SE of the breakwater and leads to the inner harbor. A wharf, at the base of the breakwater, has a depth of 4.5m alongside. A new breakwater constructed close SE of the head of the W breakwater.

Lighted buoys, about 1 mile ESE of the head of the breakwater at Nyugawa Chiku, mark the entrance to a channel, 4.9m deep, leading to the harbor at Chuo Chiku. The inner harbor has a dredged depth of 4.9m bordered by shoal ground. The power station, on the NW side of the inner harbor, has a conspicuous four-stack, composite chimney, 183m high and painted red and white. The power station jetty has depths of 4.9m alongside, and the oil jetty, close NE, has depths of 5.5m alongside.

Osaki Hana (33°59'N., 133°04'E.), about 3 miles NW of Toyo Ko, is a sloping point, high in its N part and low in its S part. The coast N of Osaki Hana consists of sandy beaches backed by mountains. Kasamatsu Yama, about 1.5 miles W of Osaki Hana, is 328m high, appears flat-topped from the E, but from the N, has the appearance of a dark, pointed summit.

Torii Ishi, a rock 4.4m high, lies about 410m E of the mouth of Sakurai Kawa, about 2 miles NNW of Osaki Hana.

Karako Yama, Heichi Shima, and other features farther N were described in [paragraph 8.5](#) and [paragraph 8.6](#), respectively, with Kurushima Kaikyo.

Islands and Dangers in the Approach to Fukuyama Ko

8.17 Hashiri-jima (Hashiri Shima) (34°20'N., 133°26'E.), in the approach to Fukuyama Ko, lies about 1.3 miles NW of Uji Shima. Taka Yama, 180m high, its summit, lies in the SE part of the island. Kanayama Hana is the SE extremity of a small peninsula joined to the SE end of the island by a low isthmus. Kajiya Shima, 43m high to the tops of the trees, lies about 0.5 mile W of the N end of Hashiri-jima; a reef, with a rock drying 2.6m at its SE end, extends about 0.2 mile SE of Kajiya Shima. A fish haven is situated close to the SE point of the islet. Tako Zowai, a rock with a depth of 3.1m, lies about 0.1 mile N of Hashiri-jima.

Okino Hachikazano Se, an isolated group of rocks, with a depth of 13.7m and marked E by a lighted buoy, lies about 2 miles WSW of Hashiri-jima.

Hakama Shima, a flat-topped islet, 36m high, lies about 1 mile NE of the E end of Hashiri-jima. Towu, a rock, drying 2.1m, lies about 228m off the E coast of the islet.

Kong Ishi, a rock 2.7m high and marked by a light, lies about 1 mile NNW of the N end of Hashiri-jima; a depth of 2.1m lies close NE of the rock.

Shirodashi Iso, a rock nearly awash at lowest LW, lies about 1.5 miles ENE of Kono Ishi, near the entrance of the main fairway to Fukuyama Ko. A rock, with a depth of 9.2m and marked W by a lighted buoy, lies about 0.2 mile NW of Shirodashi Iso.

Sensui Shima (34°23'N., 133°24'E.), about 2.5 miles NW of Hashiri-jima, rises to a 159m high summit, on which there is a radio tower with a parabolic antenna. Tutsuji Shima, an islet, 25m high, lies about 0.2 mile E of the SE extremity of Sensui Shima.

Benten Shima, a rocky islet, 12.8m high, lies in the channel between Sensui Shima and **Tomo Ko** (34°23'N., 133°23'E.) ([World Port Index No. 61610](#)), close WSW. A three-storied pagoda on its summit is illuminated at night and forms a good landmark.

A floating breakwater extending NNW-SSE lies about 0.1 mile NNW of Benten Shima. A lighted beacon is situated about 0.1 mile SSE of Benten Shima.

Submarine cables and a submarine water pipe extend WNW from Hashiri-jima to the vicinity of Sensui Shima and Tomo Ko.

A lighted buoy lies about 1.5 miles S of Sensui Shima.

Fish havens are situated and seaweed cultivation is carried out in the bay within 2 miles N of Sensui Shima.

Fukuyama Ko (34°26'N., 133°27'E.)

[World Port Index No. 61605](#)

8.18 Fukuyama Ko, a specified harbor, lies in the N part of Bingo Nada. The harbor is accessible to large vessels as a result of dredging, extensive reclamation, and the development of a steel tubes factory complex. The latter complex of factories and chimneys lies N and NW of the signal station. A dredged channel, entered about 2 miles E of Sensui Shima, leads to the harbor. An overhead power cable, with a vertical clearance of 55m, spans the harbor. Further W, it is spanned by a bridge with a vertical clearance of about 12m. The city of **Fukuyama** (Huku-yama) (34°29'N., 133°22'E.) is a commercial city but is becoming more of an industrial city.

Tides—Currents.—The mean tidal rise at Fukuyama is 3.6m at springs and 2.7m at neaps. The tidal currents in the harbor are weak and do not affect harbor operations.

Depths—Limitations.—The main fairway, with a depth of about 16m and a width of about 300m, extends from about 2 miles E of Sensui Shima to the Raw Materials Wharf. The branch fairway branches off the main fairway near the signal station and leads to the Export Berths; it is about 300m wide, with depths of 10.1 to 11.9m.

Raw Materials Wharf Berth M and Raw Materials Wharf Berth L have depths of 17.1 to 18m and can accommodate vessels up to 200,000 dwt. Raw Materials Wharf Berth M has a length of 250m and Raw Materials Wharf Berth L is 315m long. Berth A has a depth of 17.1m alongside and can accommodate vessels up to 150,000 dwt; Berth B has depths of 16m alongside and can accommodate vessels up to 100,000 dwt. Berth A is 300m long; Berth B is 280m long.

Kasaoka Wharf has depths of 10.1 to 11.3m alongside and can accommodate vessels up to 35,000 dwt.

Export Berth X and Export Berth Y have depths of 12.5 to 12.8m alongside. Export Berth 2 and Export Berth 3 have a depth of 13m alongside; these berths can accommodate ves-

sels up to 35,000 dwt. Export Berth 1 has a depth of 11m and can accommodate vessels up to 20,000 dwt.

The dangers in the approach to the harbor were [previously described in paragraph 8.17](#).

Aspect.—The islands in the harbor approach were [previously described in paragraph 8.17](#).

Tsuganomaru Yama (34°27'N., 133°31'E.), in the middle of Kono Shima, is conspicuous from all directions; it is 302m high and has a TV tower on its summit.

Mi Saki, the W extremity of Kono Shima, is conspicuous due to its barren appearance.

Lighted buoys mark the fairways. Lights, in line bearing 000.5°, lead to the Raw Materials Wharf, and lights, in line bearing 300°, lead through the branch fairway to the vicinity of the Export Berths.

The signal station, painted white, lies at the SE end of the steel tubes works.

A group of chimneys is conspicuous in the steel tubes works. The highest chimney, 206m high and showing a flare, lies nearly 1 mile NNW of the signal station.

Miyazaki Yama, 155m high to the tops of the trees, is conspicuous on the right bank of the mouth of Ashida Kawa (Asida Kawa). Takamaru Yama, 129m high, with few trees, lies on the left bank of the mouth of Ashida Kawa.

Pilotage.—A liaison office of the Naikai Pilotage Area Pilots Association is situated at Fukuyama. A signal station is situated at the SE end of the steel tube works. The harbor-master can be contacted by radiotelephone regarding harbor operations. Anchorage and berthing signals are shown from the signal station. Vessels should retain onboard the most recent edition of Japan Maritime Safety Laws and Regulations, obtainable through the Japanese Coast Guard. This publication should be kept as a reference for signal station communiques other local or specific regulations.

Pilotage is compulsory on Tomogashima Suido, Bisan Suido, and Kurushima Strait for vessels over 10,000 grt. A vessel with an loa greater than 200, is required to navigate in Bisan Seto and Kurushima Strait only in daylight. The Osaka pilot for Tomogashima Suido Berthing boards in position 34°10'N, 135°00'E. Inland sea pilot boards at either Wada Misaki or Sekisaki. Harbor pilots are available at the port anchorage; VHF channels 16, 14, and 12 are used.

[For further information, see paragraph 6.1.](#)

Anchorage.—The quarantine anchorage is centered about 1.8 miles E of Sensui Shima, about 1 mile SW of the main fairway entrance buoys.

Caution.—Vessels must use caution when anchoring due to the large amount of small vessel traffic between the lighted buoy S of Sensui Shima and **Shiraishi Seto** (34°25'N., 133°31'E.). [The latter passage is described in paragraph 7.54.](#)

A large number of islands lie between the NW part of Bingo Nada and NE part of Aki Nada. There is a large number of channels formed between the islands. Mihara Seto, the main passage, is used by many low speed large vessels, small vessels, and lighters under tow. The tidal currents are weaker than those in Kurushima Kaikyo, but the distance traveled is longer and more winding. In the channels between the islands, inter-island vessels run between Honshu and Shikoku, and

large vessels enter and leave Onomichi-Itosaki Ko, Habu Ko, and Inokuchi Ko.

Fukuyama Ko to Mihara Seto

8.19 Tsugara Shima (34°22'N., 133°23'E.), a wooded islet, 15.8m high, lies about 0.5 mile offshore, about 1.3 miles WSW of the S end of Sensui Shima.

Aburo Sho, about 0.8 mile farther WSW, is a rock drying 0.6m and marked by a light.

Abutono Seto (34°22'N., 133°21'E.) is entered about 1 mile farther W, between Abu Saki, marked by a light, and Ta Shima, close W. Abutono Seto has strong tidal currents and should only be used by small vessels with local knowledge.



Abutono Seto Light

Ta Shima is divided into an E part and a W part by an isthmus. The summit of the island, 329m high, lies near the SW end of the island.

Yoko Shima lies close WSW of Ta Shima, from which it is separated by a narrow canal passable by small craft and crossed by a drawbridge. Ategi Shima, an islet, 25m high, barren, and with steep cliffs, lies close off the SW end of Yoko Shima and is conspicuous from a distance.

A tanker berth with a T-head pier extends S from the SW end of Yoko Shima; mooring buoys are on each side of the berth. There is a depth of about 10.1m in the berth, which can accommodate tankers up to 40,000 dwt. The berth is unsuitable during strong winds and heavy seas from the S. Vessels berth port side-to at SW with tug assistance. Night movements are not normally carried out. There are a large number of oil tanks N of the pier, on the W side of Yoko Shima.

Pilotage.—[See paragraph 6.1.](#)

Mekari Seto and Approaches

8.20 The E entrance of Mihara Seto is called **Mekari Seto** (34°21'N., 133°11'E.), between Mukai Shima and Inno Shima. The channel then extends W along the coast of Honshu, through Mihara Wan and Aogi Seto, and then between Omi Shima and Osaki-Kami Shima. It then joins the main traffic route at the W entrance to Kurushima Kaikyo, through Oge Seto, between Oge Shima and Ko-oge Shima.

Hyakkan-jima (34°18'N., 133°17'E.), [previously described in paragraph 8.3](#), is the best mark for entering Mihara Seto.

The recommended route, N of Hyakkan-jima, has depths of about 10.1m. Bozino Su, close SW of the fairway, has depths of less than 10.1m and a least depth of 8.4m; it is about 1 mile wide and 1.5 miles long. Shoals, with depths of 8.9 to 9.5m, lie close N of the fairway.

Kannon Zaki (34°21'N., 133°13'E.), the SE extremity of Mukai Shima, is a steep, cliffy point, surmounted by a 57m high, red-colored bare hill. Takami Yama, about 1 mile NNW of Kannon Zaki, is 289m high, with a TV antenna near its summit; another TV antenna is on a 246m hill, close NE. Kotakami Yama, about 1 mile W of Takami Yama, is 194m high, with a sharp peak, conspicuous from a distance.

Morinoseno Su, with depths of 1.8 to 4.9m, and marked NE by a lighted buoy, lies about 1 mile SE of Kannon Zaki. Shoal ground, with depths of 4.5 to 10.1m, extends from Morinoseno Su, WSW to Ategi Shima, and W to Tachibanano Su. Tachibanano Su, a shoal with a least depth of 5.6m, lies about 0.4 mile S of Kannon Zaki; shoal ground, with depths of less than 10.1m, and a least depth of 6.1m, extends between Tachibanano Su and Nagasowa Hana to its WNW. A lighted buoy is moored 0.2 mile SE of the shoal. A shoal depth of 5.6m lies approximately 0.5 mile SW of Kannon Zaki.

Ryuo San, covered with pine trees, with Ishiba Yama, a granite hill close W, lies about 0.3 mile N of Nagasowa Hana; each peak is 147m high and pointed.

Sasa Shima, a grassy round islet, 14.9m high, lies about 0.2 mile W of Nagasowa Hana.

Iwashi-jima, W of Mukai Shima, has several granite peaks; Nishiwa Take, 131m high and pointed, lies in the NW part of the island and is conspicuous from the W. Tono Yama, 117m high, lies in the SW part of the island.

8.21 Kajino Hana (34°20'N., 133°12'E.), a steep cliffy headland, lies on the NE side of Inno Shima, at the S side of the E entrance to Mekari Seto. Aka Ne, a steep-to rock with a least depth of 9.8m, lies about 0.5 mile NW of Kajino Hana; it has been swept to a depth of 9.5m. Matsui Dashi, an isolated rock with a depth of 9.5m, lies about 0.5 mile farther NW; it has been swept to a depth of 8.5m.

Ohama Saki, marked by a light, lies at the NE end of Inno Shima. Shiju Shima, an islet, 18m high, lies about 0.6 mile WNW of Ohama Saki; rocks, drying 1.5 and 1.1m, lie within 0.1 mile N of Shiju Shima. Shoals, with depths of less than 4.9m, lie between Shiju Shima and Hosho Shima to its WNW.

A bridge, with a vertical clearance of about 50m, crosses the narrowest part of Mekari Seto, close S of Ohama Saki. The center and each side of the fairway under the bridge are marked by lights.



Ohama Saki Light

Mekari Iwa is a group of rocks that fronts Mekari Hana, the SW extremity of Mukai Shima. The highest rock dries 1.3m and is marked SE by a lighted buoy.

Farther NW, Iedashi Ishi, a group of rocks, with a least depth of 4m, extends up to 0.2 mile off the S coast of Iwashi-jima.

Hoso Shima lies about 0.5 mile SW of Iwashi-jima. A jetty extends 120m SE from near the SW point of the island. Hosogashira, 50m high, lies at the NE end of the island, and is surmounted by a red and white pylon, 82m high. An overhead cable, with a vertical clearance of 53m, extends between Hosho Shima and Iwashi-jima.

Chodayu Sho, rocks with depths of less than 1.8m and marked by a light, lie about 0.3 mile WNW of the N end of Hosho Shima. A rock, with a depth of 3.7m, lies about 90m NNE of Chodayu Sho.

Kakari Se (Ko Kari Se), a group of rocks, with a width of about 91m and a least depth of 8.9m, lies near the middle of the channel, about 600m N of the N end of Hosho Shima. It has been swept to a depth of 8.2m, and there are eddies in its vicinity. Kakari Se is indicated by the red sector of Chodayu Sho Light between the bearings of 219° and 239°, and by a red light shown on Ohama Saki between the bearings of 125° and 130°.

A 10.8m patch lies about 0.3 mile WNW of the SW extremity of Iwashi Shima.

Mekari Seto to Aogi Seto

8.22 Hachiga Mine (34°23'N., 133°08'E.), 430m high and thickly covered with pine trees, lies on the E side of Mihara Wan, and is the highest peak in the vicinity.

Inubo Hana, the W entrance point of Mihara Wan, rises about 0.3 mile inland to Inubo Yama, 309m high, conical, and

surmounted by an observation platform. Hata Yama, 448m high, about 0.5 mile SW of Inubo Yama, has a dome near its summit, and is also conspicuous. A radio tower lies close NE of the summit.

Hosono Su, a sandspit which dries 0.6m in places, is centered about 0.5 mile SW of Chodayu Sho; it is surrounded by foul ground. The red sector of Chodayu Sho Light indicates the foul area.

An extensive fish trap lies close off the N side of Honoso Su; a dangerous wreck lies about 0.3 mile NW of the same bank. A lighted buoy is moored 183m SSW of the dangerous wreck.

Sukune Shima, about 1 mile WSW of Chodayu Sho, is a conspicuous, rounded, dark islet, 30m high, and covered with pine trees. A shoal, with a depth of 4.6m, lies about 0.2 mile E of Sukuna Shima.



Ko-Sagi Shima Light

Ko-Sagi Shima, about 0.5 mile W of Sukune Shima, has two summits; the NE summit is 72m high and the SW summit is 76m high. A light is shown from the NW end of the island. A reef, with rock drying 2.1m at its outer end, extends about 90m N from the NW end of the island. Ko-Sagi Shima is separated from the NW end of Sagi Shima by a narrow channel, which should not be attempted without local knowledge.

An overhead power cable, with a vertical clearance of 34m, spans the narrow channel.

A light is shown from the S end of a detached breakwater, situated on the W side of Aogi Seto, 0.5 mile W of Ko-Sagi Shima. A second breakwater is situated 183m farther N.

Kankano Ishi, a rock with a depth of 12.8m, and Okino Ishi, a rock with a depth of 17.1m, lie about 0.8 mile NNW, and 0.25 mile NW, respectively, of the NW end of Ko-Sagi Shima.

Sunamino Su, with a least depth of 15m, is centered about 0.8 mile SSW of Ko-Sagi Shima.

8.23 Sagi Shima (34°20'N., 133°07'E.) lies close S of Ko-Sagi Shima. Hoteiwa Hana, near the middle of the W side of



Sagi Shima Light

the island, is surmounted by a conspicuous monument. A harbor, protected by a detached breakwater, is situated in the NE part of the island.

Toramaru Sho, which dries 1.2m and is marked by a light, lies about 0.1 mile NW of Hoteiwa Hana. Yake Yama, the summit of the island, rises to an elevation of 278m, about 0.8 mile ESE of Hoteiwa Hana. Inu Yama, about 0.4 mile farther N, is a sharp granite peak, 251m high. Tera Yama, a sharp conical peak, 155m high, is conspicuous in the NW part of the island.

The N extremity of **Kone Shima** (34°19'N., 133°05'E.), marked by a light, lies about 1 mile WSW of Hoteiwa Hana. Two parallel ranges of hills running N-S are on Kone Shima. Kannon Yama, 310m high, the summit of the island, lies in its SW part.

Aogi Hana, rising to an elevation of 129m, lies about 0.6 mile N of Kone Shima. Uryu Shima, a red islet, 21m high, lies about 0.8 mile W of Aogi Hana. A gantry crane is conspicuous about 1 mile WSW of Uryu Shima. A two-story building is conspicuous on the E side of the shipyard. Kami-taka Se, a rock with a depth of 3.8m, and Shimo-taka Se, a rock with a depth of 12.2m, lie about 0.3 mile SE and SSE, respectively, of Uryu Shima. Depths of less than 4.9m extend about 0.5 mile SW of Uryu Shima.



Kone Shima Light

Aogi Seto to Oge Seto

8.24 Otani Iso (34°18'N., 133°05'E.), with depths of 3.1 to 4.9m, sand and shells, is a detached shoal lying parallel with and within 0.5 mile of the W coast of Kone Shima. Depths of less than 10.1m extend up to 0.8 mile W of the central part of the W coast of Kone Shima.

Omi Shima, on the E side of Mihara Seto, is a large wooded island; it appears dark, but there are granite outcrops on the lower slopes of the hills in its S part. It is divided into three mountainous parts by valleys running SSE from the SE corner of **Mishima Uchi** (34°15'N., 132°59'E.), and ENE from Miyano Ura, at the head of Mishima Uchi. Kusono To, 395m high, lies in the N part of the island. Washigato Yama, 437m high and the summit of the island, lies about 2.8 miles farther SSE. Yakushi Yama, 436m high, lies in the SW part of the island.

8.25 Miyanoura Ko (34°15'N., 132°59'E.) ([World Port Index No. 62075](#)) lies at the inner end of Mishima Uchi. Depths of 4 to 6m may be found through most of the bay area and there is a floating jetty having depths alongside of 3.1 to 3.4m at the SE inner end.

Shiju Shima, a rocky islet, 11.9m high, lies about 0.1 mile offshore, off the N coast of Omi Shima.

O-kuno Shima (34°17'N., 133°00'E.) lies N of Omi Shima, leaving a navigable width of 0.3 mile in the channel. A light is shown from the S end of the island; a beacon is shown from a drying rock at the SE end of the island. Lights are shown from several towers standing at the jetty heads of the port complex near **Salzaki** (34°20'N., 33°02'E.). The summit of the island is 108m high, and a large red and white pylon for overhead



O-kuno Shima Light

cables, near the summit, is very conspicuous. There are also conspicuous pylons on the N coast of Omi Shima, on the S coast of O-kuno Shima, and on the Honshu coast N of O-kuno Shima.

Caution.—An overhead cable, with a vertical clearance of 50m, spans the channel to the S of O-kuno Shima; another cable, with a vertical clearance of 41m, spans the channel to the N. The pylons supporting these cables are prominent.

Noji Tai, a sandbank with depths of 1.4 to 4.9m and a width of about 0.1 mile, lies parallel to the coast and extends from a position about 1.8 miles ENE of O-kuno Shima to about 0.8 miles SW of Uryu Shima. A lighted buoy is moored at the SW end of Noji Tai; it is indicated by the red sector of O-kuno Shima Light.

Mekarino Su, a sandbank with depths of less than 10.1m and about 0.5 mile long, lies with its least depth of 4.7m at its E end, about 0.8 mile NE of O-kuno Shima.

8.26 Ko-kuno Shima, a round-topped islet, 84m high, lies about 0.4 mile W of O-kuno Shima. Shiraishi Sho, rocks drying 3.9m, lies between the islands. Matsu Shima, nearly 1 mile WSW of the S end of O-kuno Shima, has two summits, which appear as one from the SW.

Tadanoumi Ko (34°20'N., 133°00'E.), a local port, lies about 1 mile N of O-kuno Shima. Kurami Saki, on which there is a shrine surmounted by a red light, lies close E of the E breakwater at Tadanoumi Ko. Ushikuso, a rock drying 2m and marked by a beacon, lies about 0.3 mile SE of Kurami Saki.

Anchorage.—Anchorage can be taken, in 13 to 16m, in the bay fronting Tadanoumi Ko.

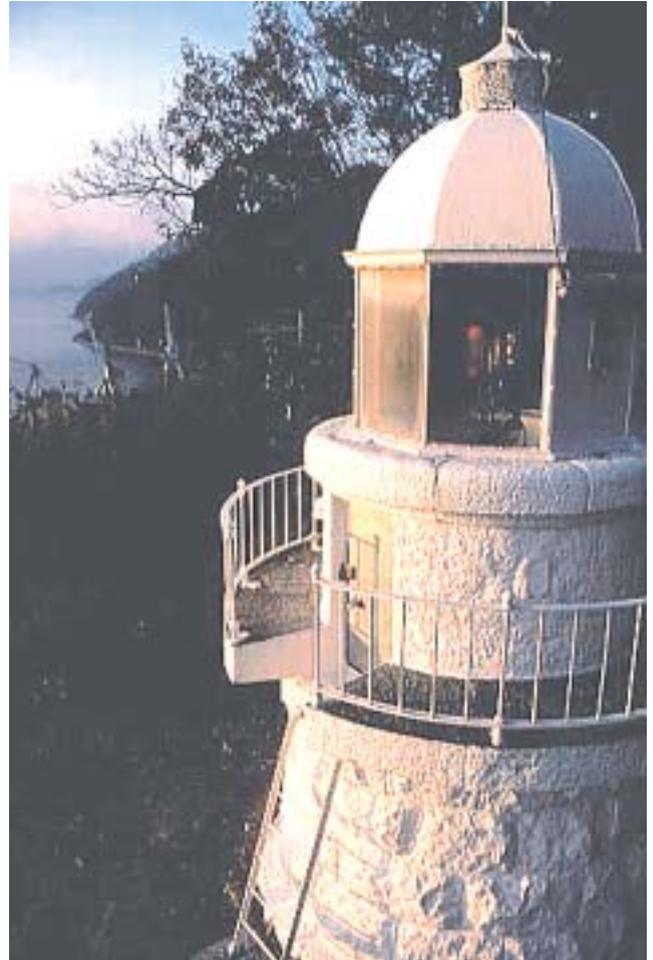


Nakano Hana Light

8.27 Osaki-kami-jima, on the W side of Mihara Seto, attains an elevation of 453m at Kanno Mine, its summit, located about 1 mile NW of Nakano Hana, the SE extremity of the island. Kanno Mine has conspicuous woods on its summit. Nakano Hana is a steep cliff, marked by a light. A steep granite hill, 182m high, lies about 0.3 mile WNW of Nakano Hana. Oko Yama, a conical peak, 275m high, lies about 2.3 miles NNE of Kannon Mine.

Mebaru Saki, marked by a light, lies at the NE end of Osaki-kami-jima; a conspicuous cliff caused by quarrying lies in the central part of the E coast of the island. It affords temporary anchorage to small vessels awaiting a favorable tidal current through the straits.

Kodono Shima, 48m high, lies about 1 mile E of Mebaru Saki. A group of rocks, with a least depth of 4.6m and marked W by a lighted buoy, lies about 0.3 mile N of Kodono Shima, and a rock, 4.3m high, lies about 0.1 mile W of the islet. A rock, drying 0.6m, lies about 0.3 mile ENE of Kodono Shima, and a shoal, with a depth of 8.9m, lies about 0.3 mile farther NE.



Mebaru Saki Light

Ko-yoko Shima, 56m high, lies about 1.5 miles SSW of Kodono Shima and is joined at LW to O-yoko Shima, close S. The latter island has two summits, the W being 86m high. The N end of O-yoko Shima is a wooded peninsula which appears as a separate islet from a distance. A shoal, with a least depth of 9.5m, lies about 0.6 mile S of O-yoko Shima.

Fuku Shima, 45m high, lies about 0.8 mile ENE of Nakano Hana. Shoal ground extends about 0.1 mile E of Fuku Shima and Kuro Iso, a rock awash at HWS, lies about 595m SE of the islet.

Chishago Sho, a rock drying 3.1m and marked by a beacon, lies about 410m N of Nakano Hana, and Kinoe Su, with a least depth of 9.5m, lies about 1 mile farther N.

8.28 Oge Shima (34°11'N., 132°56'E.) lies on the E side of Oge Seto. Oishino Mine, 211m high, the summit of the island, lies in its N part; the interior of the island is under intensive cultivation. A peninsula, forming the SW side of Oge Shima, has steep black cliffs on its W side and is marked by a light.

Ko-oge Shima lies on the W side of Oge Seto, about 0.5 mile W of Oge Shima. Okinohera Mine, its summit, lies in the SW part of the island and is 133m high and conical. The island is composed of quartz and has been much quarried, especially on

the S side of the summit, where a large white cliff, visible from a distance, has been formed.

Deep-draft vessels entering Mihara Seto from the E should choose a suitable tide due to the depths of 8.9 to 10.1m about 1.8 miles NW of Hyakkan-jima. Vessels entering the W entrance via Kurushima Kaikyo have general depths of 18m to Onomichi-Itosaki Ko.

Vessels in the vicinity of Ohama Saki should maintain nearly a mid-channel course, moving right when there is oncoming traffic.

There are channels on either side of Karkare Se but vessels other than deep-draft vessels pass safely over the shoal.

Between Kone Shima and O-kuni Shima, Gobori Hana, the NW end of Omi Shima, in line bearing 238° with Oko Yama, in the N part of Osaki-Kami-jima, leads midway between Noji Tai and Otani Iso.

The two lights in the vicinity of Mebaru Saki, in line bearing 144°, are good marks for passing between O-kuno Shima and Omi Shima. Mekari Saki Light is on the slopes, and the front light is low and difficult to see when there are conflicting lights.

Onomichi (34°24'N., 133°12'E.)

World Port Index No. 61620

Itosaki Ko (34°23'N., 133°07'E.)

World Port Index No. 61630

8.29 Onomichi-Itosaki Ko is a specified harbor in the N part of Mihara Seto. The harbor includes Mihara Wan and Onomichi Seto. The harbor is backed by mountains and is a good natural harbor enclosed by a large number of islands, including Mukai Shima. It is an industrial belt, with many factories and some shipyards; there is much marine traffic.

Large vessels enter and leave Onomichi Seto through the W entrance. The E entrance, N of Mukai Shima, is narrow and only used by small vessels with local knowledge. The area NW of Mukai Shima, and N of **Takoma Hana** (34°23'N., 133°15'E.), including Tosaki Seto, is part of Onomichi-Itosaki Ko.

Winds—Weather

The climate is extremely mild, with little precipitation. Good weather prevails and a typhoon passing has little effect. Except for Mihara Wan, the winds are mostly NE and S in spring and summer, and NNE and W in winter. In Mihara Wan, the winds are predominantly S to W.

Tides—Currents

The tidal rise at Onomichi is 3.4m at springs and 2.7m at neaps. In Onomichi Seto, the maximum velocity is about 2.8 knots; the flood current flows E, and the ebb W. In Mihara Wan, the mean velocity of the current is about 0.5 to 1 knot.

Depths—Limitations

Itosaki Wharf No. 2, fronting the railway station at Itosaki, in the NE part of Mihara Wan, has a depth of 10m alongside



Onomichi Light

and a length of 185m; it can accommodate vessels up to 15,000 dwt. Itosaki Wharf No. 1 has a depth of 6.8m alongside and a length of 135m; it can accommodate vessels up to 15,000 dwt. There is a private wharf, with a length of 205m, a depth alongside of 4.5 to 7.5m, and a capacity of 10,000 dwt.

A wharf at Onomichi, about 2.3 miles ENE of Kujiro Shima, has a depth of 6.5m alongside and a length of 404m; it can accommodate vessels up to 2,000 grt.

A drydock at Onomichi is 350m long and 56m wide, with a depth of 7.4m; it can accommodate vessels up to 150,000 dwt.

Aspect

Kujiro Shima, in the middle of the W entrance to Onomichi Seto, is 18.9m high, and wooded. Kokujiira Shima, 11.9m high, lies close SE.

A cement plant chimney, 65m high, is conspicuous close W of the railway station at Itosaki.

A chimney, 63m high and showing a neon light, and with a large number of chimneys in the vicinity, lies on the SE side of the mouth of Nishi Kawa, the river emptying into the N part of Mihara Wan.

Pilotage

Pilotage is not compulsory at Itozaki. Inland sea pilots are available at Wada Misaki, Seisaki, and Hesaki. Call "ITOZAKI-HO-AN" on VHF channels 12 or 16. [For further information, see paragraph 6.1.](#)

Pilotage is not compulsory at Onomichi. Harbor pilots are available at the anchorage off Kashima Island or off Kihara; VHF channels 16 and 12 are used.

Anchorage

Mihara Wan provides sheltered anchorage for large and medium vessels according to draft; the bottom is mud and sand in many places. To avoid the mud bank on the W side of Mihara Wan, keep the W side of Kone Shima, bearing more than 209° and open E of Aogi Hana. Vessels with dangerous cargo are assigned anchorage in the vicinity of the harbor limit at the W entrance to Onomichi Seto.

Caution

The passage between Kujira Shima and Kokujira Shima is narrow and should not be used by large vessels; both islets are bordered by shoals. Passage should not be made between Kokujira Shima and Iwashijima, as there are rocks with depths of about 1m.

There is a shoal patch, with a least depth of 5.2m, mud, and swept to 4.4m, about 600m NE of Kujira Shima. Ushino Ura lies about 1.8 miles ENE of Kujira Shima and is marked by a light. A shoal patch, with a least depth of 4.7m, rough sand, and swept to 4.3m, lies about 0.3 mile W of Ushino Ura.

Approach to the East Entrance to Onomichi Seto (Mekari Seto to Tosaki Seto)

8.30 Nagamoji Sowa, a rock awash, lies at the extremity of a reef extending about 410m SW from the NW extremity of Yoko Shima.

Momo Shima (34°22'N., 133°16'E.), N of the W end of Yoko Shima, is 184m high, and consists of red-colored rocks; its W side is steep. Ka Shima (Ko Shima), about 0.5 mile W of Momo Shima, is 103m high, conical, and consists of broken red stones.

Shira Ishi, a rocky islet, 6.1m high, lies about 0.6 mile S of Ka Shima. A reef extends about 0.4 mile SW of Ka Shima; Okinotaka Sowa, a rock with a depth of 4m, lies at its outer end; Taka Sowa, a rock drying 0.2m, lies in the central part of the reef.

Niboneno Sho, midway between Ka Shima and Mukai Shima, is a group of rocks marked E by a lighted buoy; the W end of the group dries 2.4m while the E end dries 1.5m. Lights are shown from a breakwater on the E coast of Mukai Shima, 0.5 mile WNW of Niboneno Sho.

Takoma, rocks with a least depth of 4.5m and marked S by a lighted buoy, lies nearly in the middle of the S entrance to Tosaki Seto.

There are several channels between the islands separating Kurushima Kaikyo from Mihara Seto, but they are mostly



Ushino Ura Light

narrow and intricate, and should not be attempted without local knowledge.

Habu Ko (34°17'N., 133°11'E.)

[World Port Index No. 61617](#)

8.31 Habu Ko, a local port, lies in the S part of Inno Shima. The harbor comprises all of Nagasaki Seto and the W side of the N part of Yuge Seto. The main industry of the port is shipbuilding; the main portion of the Hitachi Shipyard is situated in the S part of Inno Shima.

Winds—Weather.—The temperature is relatively high and there is little rainfall. The harbor, except for Mitsunosho Wan in its NE part, is calm throughout the year, as it is surrounded by islands.

Tides—Currents.—The flood current flows along the coast of Inno Shima, from Nagasaki Seto to the N entrance of Yugo Seto; the ebb current flows in the opposite direction. The maximum velocity of the tidal current at springs is 3.25 knots in Nagasaki Seto.

Depths—Limitations.—The largest drydock at the Hitachi Shipbuilding Yard at Habu Ko is 282m long and 46.6m wide, with a depth of 8.8m; it can accommodate vessels up to 79,000 dwt. A berthing wall in the NW part of the harbor can berth vessels of 20,000 dwt; the berths have reported depths of 4 to 10.1m.

Nagasaki Seto, occupying the W half of the harbor, has a least navigable width of about 90m. The N half is generally shallow, while the S half is generally over 10.1m deep, but with shoals in many places.

Rocks and shoals extend up to 0.2 mile off the N coast of Yuge Shima. A rock, with a depth of 4.9m, lies about 0.2 mile N of Isega Hana, the W extremity of Yuge Shima. In the S entrance to Yuge Seto, a rock with a depth of 1.8m, lies about 0.1 mile offshore, about 0.2 mile W of the S end of Yuge Shima; in the narrows of this same strait, rocks and shoals extending from both sides restrict the navigable width to about 0.1 mile.

Rocks, with depths of 4.9 to 5.8m, extend up to 410m N of Sa Shima.

A rock, with a depth of less than 1m and marked N by a lighted buoy, lies between **Isega Hana** (34°16'N., 133°12'E.) and Itsuki Shima, about 0.5 mile W.

There is a bridge, with a vertical clearance of 21m, between Yuge Shima and Sa Shima, and an overhead cable, with a vertical clearance of 40m, between the N end of Sa Shima and Ikina Shima. There is also an overhead cable, with a vertical clearance of 30m, between the N end of Ikina Shima and Inno Shima.

A bridge, with a vertical clearance of 21m, spans Yuge Seto near the NE point of Sa Shima.

A lighted beacon stands in shoal water close to the SW point of Ikina Shima. A submarine pipeline is also laid across the strait 0.2 mile N of the submarine cables. A light is shown from the end of a breakwater extending from the shoreline of Iwagi Shima, 0.5 mile farther N.

Aspect.—**Tengu Yama** (34°17'N., 133°11'E.), a conical mountain, 208m high, with a TV tower on its summit, is conspicuous in the S part of Inno Shima. Mi Yama, 326m high, the N summit of Yuge Shima, is also conspicuous.

A light (34°17.4'N., 133°10.5'E.) is shown from a white, round concrete tower, 10m high, situated at the breakwater head on the NW side of the entrance to the principle harbor basin. A lighted buoy is moored about 0.2 mile off the N end of Yuge Shima.

When entering from the S entrance of Yuge Seto, Kushi Yama, 199m high and rather conical, the S summit of Yuge Shima, is conspicuous.

Pilotage.—See paragraph 6.1.

Anchorage.—Mitsunosho Wan, in the NE part of Habu Ko, is open E, but is relatively calm except in E winds; it provides anchorage, in 4.9 to 7m, in its outer part.

8.32 Setodo Ko (34°19'N., 133°06'E.), a local port entered from Mihara Seto, is enclosed by Kone Shima, Sagi Shima, and Ikuchi Shima. The main harbor installations lie on the E side of the channel between Ikuchi Shima and Kone Shima; a shipyard is situated at the NW end of Ikuchi Shima. A bridge, with a vertical clearance of about 22m, spans the channel between Kone Shima and Ikuchi Shima.

Tides—Currents.—The mean tidal rise at Setoda is 3.5m at springs and 2.7m at neaps. There are tidal currents of about 2.5 knots in the N entrance to the harbor, 2 knots in the E entrance, and 3.5 knots between Kone Shima and Ikuchi Shima.

Depths—Limitations.—The shipyard berthing wall has depths of 3.5 to 7m alongside. The largest drydock is 230m

long and 36m wide, with a depth of 7m; it can accommodate vessels up to 37,000 dwt. A floating jetty, with a depth of 7m on its fairway side, lies on the E side of the channel between Kone Shima and Ikuchi Shima, and S of the bridge.

The channel between Sagi Shima and Kone Shima is used by scheduled passenger vessels and was reported to be used by vessels of 1,000 grt making use of the tide.

The channel between Sagi Shima and Ikuchi Shima is wide and deep, but there are many shoals E of the harbor limit; it is only used by small craft.

The channel between Kone Shima and Ikuchi Shima has depths of 3 to 7m and a least width of about 90m.

Pilotage.—The shipyard dockmaster is to report to the pilot when the vessel is to enter the shipyard. [For further information, see paragraph 6.1](#)

Hakata Seto

8.33 Hakata Seto leads from Mihara Seto to Bingo Nada, passing between Kone Shima and Omi Shima, then between Hakata Shima and Akahone-jima.

Hyotan Shima (34°17'N., 133°03'E.), an islet, 48m high, lies near the middle of the N entrance to Hakata Seto. Shoals, with least depths of 3.6m, lie about 1 mile ENE and NE of Hyotan Shima.

Tides—Currents.—The tidal currents are strongest in the vicinity of the S entrance to Hakata Seto. Between Tsuba Shima and Kubito-Ko Saki, at the E end of Hakata Shima, the maximum velocity at springs reaches 5 knots. Farther N, the current weakens, with a minimum velocity of about 2 knots. In general, the SE (flood) current is somewhat stronger than the NW current.

Kannon Yama, the summit of Ikuchi Shima, near the island's SW end, has twin peaks 475m and 478m high.

Tatara Iso, a rock marked by a light, lies about 0.2 mile ENE of Tatara Misaki (Tatara Saki), at the E end of Omi Shima. Rocks, awash and drying, extend about 320m N of Tatara Saki, and Chitori Ishi, a rock with a depth of 11.5m, lies about 686m N of the same point. The tidal currents are strong in this vicinity, attaining a maximum velocity of 4.5 knots.

Caution.—A bridge is under construction across Hakata Seto between Omi Shima and Ikuchi Shima, in the vicinity of Tatara Iso.

Gojno Taka, steep-to rocks, with a least depth of 5.9m, lie about 0.5 mile S of Gohammatsu Saki, at the S end of Ikuchi Shima.

Mukaiyama Misaki, 39m high, lies about 0.5 mile E of Gohammatsu Saki. Sato Sho, a rock with less than 1m, and Mekari Sho, a dangerous rock, lies about 0.3 and 0.8 mile ESE, respectively, of Mukaiyama Misaki; a rock, with a depth of 4.4m, lies about 0.1 mile S of Mekari Sho. A lighted beacon stands in shoal water 1 mile ENE of Mekari Sho. A second lighted beacon is situated 300m farther NE.

8.34 Sekizen Yama (34°15'N., 133°09'E.), the summit of Iwagi-jima, is 368m high, and has a ridge extending E-W; from the E or W, it appears as a sharp peak, but from the N or S, it appears to have a flat top.

Hoko San, 304m high and pointed, is the summit of Hakata-jima and is conspicuous in the middle of the W part of the is-

land. Kanzai Dashi, a rock with a depth of 9.5m, lies about 0.3 mile NW of Tobyo Bana, the N extremity of Hakata-jima.

Kubito Saki, 38m high, lies at the E end of Hakata-jima; Kubito-Ko Shima (Kubagashira Shima), 17.1m high and conical, lies close off the point. Wanwan Se, a rock with a depth of 5.2m and marked N by a lighted buoy, lies at the outer end of a group of detached rocks, with depths of 4.9 to 6.7m, extending about 0.6 mile N of Kubito-Ko Shima.

Akahone-jima, SE of Iwagi Shima, has a 160m summit in its SE part. Depths of less than 4.9m extend up to 0.2 mile off the W side of Akahone-jima. Akahone-jima lies close SE of Iwagi Shima and is separated from it by a very narrow channel spanned by two overhead cables with a least vertical clearance of about 26m. A light is shown from a round, concrete tower standing 1 mile ENE of Mekari Sho. A beacon exhibiting a light stands about 5 miles WNW.

Iwagi Ko (34°14.5'N., 133°09.0'E.), protected by a breakwater, lies on the S side of Iwagi Shima. A light is shown on the head of the breakwater; another light is shown on the E side of the harbor. A detached breakwater has been constructed to the W of the harbor entrance.

Tsuba Shima divides the E entrance to Hakata Seto into N and S channels. The summit of the island, 88m high, lies near the S end of the island and is faced by a rocky cliff. An overhead cable, with a vertical clearance of 42m, crosses the S channel between Kubito Saki and Tsuba Shima. Overhead cables, with vertical clearances of about 32m and 40m, cross the narrow N channel between Tsuba Shima and Akahone-jima.

Inokuchi Ko

8.35 Inokuchi Ko (34°16'N., 133°03'E.), a local port, lies in the middle of the E side of Omi Shima. It is the site of an oil storage depot with a large number of oil tanks.

Tides—Currents.—The tidal current is fairly strong off the T-head pier, decreasing shoreward. The current flows parallel to the coast in the vicinity, but off the buoys, an offshore set may be experienced, especially marked with an ebb current. Seven tugs of 3,000 to 5,000 hp are available.

Depths—Limitations.—A T-head pier, with a berthing face of 71m, extends from the shore at Inokuchi Ko. It has depths of 9.5m alongside and can accommodate tankers up to 35,000 dwt. There are four mooring buoys N and S of the pier, which is floodlit. A smaller jetty lies about 0.3 mile farther NW.

Vessels normally berth heading into the current, port side-to during the flood and starboard side-to during the ebb. There is ample swinging room off the pier. One tug is sufficient for berthing and unberthing, but a powerful tug is necessary due to the current.

Aspect.—There are seaweed cultivation grounds (September to April) within about 300m offshore N and S of the T-head pier.

Hanagui Seto, branching off Hakata Seto, between Omi Shima and Hakata-jima, is S-shaped, with a minimum navigable width of about 90m. The tidal currents are strong and there are dangerous rocks in its narrowest part. A bridge, with a vertical clearance of 36m, crosses the narrowest part. An overhead power cable, with a vertical clearance of 35m, spans the channel close NE of the bridge. Hanaguri Seto is used by

local ferries and small vessels, and should not be used without local knowledge and experience.

A light is shown from a round concrete tower standing on a rocky islet situated on the N side of the narrows.

Pilotage.—See paragraph 6.1.

8.36 Miyanakubo Seto, the passage between Hakata Shima and O Shima, is divided by **U Shima** (34°11'N., 133°05'E.), near its E end, into Funaore Seto and Kojin Seto. The latter passages have a least navigable width of about 90m and the tidal currents are very strong; they should be avoided by vessels without local knowledge and experience. The tidal currents at springs attain a maximum velocity of 9 knots. About 40 per cent of the small vessels, mostly under 500 grt, going through the Naikai use this passage, as it is shorter than going through Kurushima Kaikyo. The majority of the vessels generally use Funaore Seto, N of U Shima; care is necessary as there are many fishing vessels. A bridge, with a vertical clearance of about 23m, spans the W entrance to the narrows between O Shima and Michika Shima.

Yanagino Seto (34°18'N., 132°54'E.) is the channel between the various islands on the NW side of Osaki-Kami-jima and the Honshu coast. There is deep water and a least navigable width of about 0.5 mile. The E entrance is divided into Takasaki Seto and Karashima Seto.

Tides—Currents.—The maximum velocity of the tidal current at springs is about 2 knots. The E current flows for about 1 hour and 40 minutes after LW in the area to about 1 hour and 40 minutes after HW. The W current flows for about 1 hour and 40 minutes after HW in the area to about 1 hour and 40 minutes after LW.

Aba Shima (34°19'N., 132°58'E.), in the E entrance to Yanagino Seto, has two summits; the S summit is 100m high, and the N summit is 74m high and pointed. Depths of less than 10.1m extend up to 0.8 mile off the E side of the island. Mote Sho, with a least depth of 0.6m, lies about 0.5 mile SW of the NW end of Aba Shima. Dodono Sho, two rocks with depths of 3.5m and 3.9m, lie nearly midway between Mote Sho and the NW end of Aba Shima.

Takehara Ko lies at the mouth of a river about 1 mile W of Aba Shima. Mitsu Ishi, a steep-to, isolated reef, lies about 0.5 mile SSE of the head of the breakwater at Takehara Ko.

Anchorage.—Large vessels can anchor, in 15 to 17m, about 500m SW of the head of the breakwater at Takehara Ko. Lumber vessels of 10,000 grt are reported to anchor about 1 mile SW of the breakwater head, in 22m, sand and shell, good holding ground; it is a good anchorage, but it receives the counter-current of the tidal current in Yanagino Seto, with a reported velocity up to 2 knots.

8.37 Ikari Shima (34°18'N., 132°53'E.), a rock, 8.1m high and marked by a light, lies about 2.5 miles SW of Takehara Ko. Shoal ground extends to the headland close N.

Islands lie in the entrances to Mitsu Wan and Mitsukuchi Wan. Aka Saki, the E entrance of Mitsu Wan, is a very conspicuous, steep, red headland. Karafune Shima, 25m high, lies about 0.3 mile SE of Aka Saki; a drying bank extends about 0.2 mile NE of the islet. Aino Shima, 32m high, and O-shiba Shima, 122m high, each covered with peach trees, lie about 1.5 miles W and 2 miles WSW, respectively, of Aka Saki. Ko-

shiba Shima, close SW of the S end of O-shiba Shima, is 32m high, with a red cliff in its SW part. Uma Shima, 68m high, lies about 0.5 mile farther WSW. Shimo-Ikari Iso, a rock, 2m high and marked by a light, lies about 0.3 mile SE of Uma Shima; a rock, with a depth of 8.9m, lies about 0.2 mile SW of Shimo-Ikari Iso.

Yoko Shima (34°14'N., 132°46'E.), a wooded islet, 36m high, lies about 1 mile SW of Uma Shima. A rock, 2.5m high, lies about 0.3 mile NE of the N end of Yoko Shima.

Sakumi Shima, 131m high, lies close off the NE end of Osaki-Kami-jima. Kara Shima lies about 0.8 mile farther NNE. Sakumini Mo, a mudbank with depths of 1.4 to 4.6m, lies about 0.2 mile N of Sakumi Shima. Sakumini Ishi, a steep-to rock with a depth of 4.6m, lies about 0.3 mile NW of Sagumini Mo. The S end of Matsu Shima, bearing 094°, and in line with **Jio San** (34°17'N., 133°01'E.) in the NE part of Omi Shima, leads about 137m N of Sagumini Ishi.

8.38 Ikuno Shima (Ikino Shima), a wooded island, lies close NW of the N end of Osaki-Kami Shima. It has two conspicuous wooded summits; the NW summit is 154m high, and the other is 159m high. A lighted buoy is moored close off the N end of the island.

Chirigi Shima, about 0.3 mile off the NW side of Ikuno Shima, has three hills joined by beaches of gravel; the central and highest hill is 37m high. A factory on the low ground in the N part of the island, and a large chimney on the summit of the island, are very conspicuous. A 3.1m patch lies about 0.3 mile W of the S hill.

Usu Shima, about 1 mile W of Ikuno Shima, has a 69m high summit near its N end. Ko-Usu Shima, 51m high, lies close E of the N part of Usu Shima.

Overhead power cables, with a vertical clearance of 44m, cross Yanagino Seto from the N extremity of Usu Shima. Overhead power cables, with a vertical clearance of 28m, cross the channel between Usu Shima and Naga Shima.

Naga Shima, about 0.6 mile SW of Usu Shima, has some red cliffs. Tsuzuki Shima, rocks, 6.7m high, lies about 0.4 mile W of the NW end of Naga Shima; groups of rocks lie between Tsuzuki Shima and the NW coast of Naga Shima.

A bridge, with a vertical clearance of 25m, is built across the channel between Osaki Kami Shima and Naga Shima. Bridge lights are shown to show the channel. Overhead power cables, with a least vertical clearance of 28m, span the channel close N of the bridge. An overhead power cable, with a vertical clearance of 40m, spans the channel between Osaki Kami Shima and Ikino Shima.

Tsukuga Shima (34°15'N., 133°00'E.), 47m high, is the W of the islands off the NW coast of Osaki-Kami Shima. A drying reef extends about 0.4 mile N of the island. A light is shown from the NW extremity of the reef.

Kuru Shima, 68m high, lies about 2.3 miles SW of Tsukuga Shima, and appears to have two summits when viewed from the E or W.

Caution.—There are many rocks, shoals, submarine pipelines, and obstructions between the islands off the NW side of Osaki-Kami Shima; passage between the islands, or between the islands and Osaki-Kami, should not be attempted without local knowledge.

8.39 Neko Seto (34°12'N., 132°40'E.) is the deep, narrow channel about 0.5 mile wide, with a depth of about 50m, between Shimo-kamagari-jima and the coast of Honshu. Its navigable width in its narrowest part is about 0.3 mile. An overhead cable, with a vertical clearance of 36m, crosses the channel.

Tides—Currents.—The turn of the tide at the W entrance, N of Shimo-kamagari-jima, occurs about the same time as in the central channel of Kurushima Kaikyo. The E current flows for about 1 hour 30 minutes after LW to about 1 hour 30 minutes after HW. The W current flows for about 1 hour 30 minutes after HW to about 1 hour 30 minutes after LW. The velocity of the current is about 0.5 times that in the central channel of Kurushima Kaikyo. The current velocity S of Kashiwa Shima is about 1.25 times that at the W entrance and the turn of the tide occurs about 30 minutes earlier; the maximum velocity of the current at springs here is 5.5 knots.

Aspect.—Meneko Shima (34°12'N., 132°51'E.), 21m high, with small trees and marked by a light at its SW end, lies at the narrow part of Neko Seto. A rock, with a depth of 4.9m, lies about 0.2 mile E of Meneko Shima.

Kashiwa Shima, 135m high and covered with dense dark woods, lies on the N side of the E entrance to Neko Seto, and is conspicuous against the background of grassy hills in the vicinity.

Kasane Iwa Light, about 1 mile W of Meneko Shima, is shown from the W entrance point of Nigata Wan.

Kami-Kamagari Shima and Shimo-Kamagari-jima, on the S side of the channel, have many orange groves; the mountains sweep down to their steep-to shores. A lighted buoy is moored close off the SW extremity of the island.

Nigata Ku (Nigata Wan), on the N side of Neko Seto, is part of Kure Ko. At the head of the bay there are several hotels. Nigata Ku provides anchorage, in depths of over 14m, good holding ground, but it is reported that wind and sea penetrate the bay during strong S winds.

There is a quay, with a reported depth of 5m alongside, in Nigata Ku which is used by a train ferry.

8.40 Akashi Seto (Akasi Seto) (34°12'N., 132°53'E.) is the channel between the S coast of Osaki-Kami Shima and Okamura-jima to the S. The fairway of the channel is deep; the narrowest part is about 0.4 mile wide. A beacon marks a rock, which dries 1.8m, about 0.5 mile NNW of the N extremity of Okamura-jima.

A light is shown on the head of a breakwater on the N side of Akashi Seto near its narrowest part.

Several submarine cables are laid across Akashi Seto.

Tides—Currents.—The turn of the tidal current is about 1 hour earlier than in the central channel of Kurushima Kaikyo. The E current flows for about 30 minutes after the time of local LW to about 30 minutes after the time of local HW. The W current flows for about 30 minutes after the time of local HW to about 30 minutes after the time of local LW. The maximum velocity of the current at springs is 2.25 knots.

Okamura-jima, close W of Ko-oge Shima, has two summits in line in its NW and central parts; Kono Mine, the central and highest, is 221m high.

The narrow channel between Ko-oge Shima and Okamura Shima has a depth of about 20m in its narrow part, and is

crossed by an overhead cable, with a vertical clearance of about 27.1m.



O Shima Light

8.41 Mitarai Seto (34°11'N., 132°52'E.) is the channel between Okamura Shima and Osaki-shimo Shima. O Shima, 99m high and marked by a light at its N end, lies in the N entrance. Hera Shima, 78m high, and Ko Shima, 79m high, lie close W and SE, respectively, of O Shima. Okino Su, with a depth of 3.4m, rock bottom, and steep-to on its E side, lies in the S entrance.

The Okamura-jima side of Mitarai Seto has depths of over 10.1m and is used by small ferries; it should not be attempted without local knowledge. Overhead cables, with vertical clearances of about 38m and 41m, cross Mitarai Seto.

Bridges, each with a vertical clearance of 21m, span the passages E and W of O Shima.

Mitarai Ko, a local harbor, occupies Mitarai Seto and the N coast of Osaka-shimo Shima. The main part of the harbor lies on the W side of the S part of Mitarai Seto. It is used by small vessels on passage through the Naikai as a port of shelter and for waiting for the tide.

Anchorage.—The tidal currents change direction continually in the vicinity of the S entrance to Mitarai Seto and it is not a good anchorage. A position about 500m W of Kannon Saki, the S extremity of Okamura-jima, is suitable as a temporary anchorage, in 20 to 30m, sand, good holding ground.

Okamura Ko, at the head of the bay on the SE side of Okamura Shima, is protected by breakwaters, but is only suitable for small craft. A light is shown from the head of the E breakwater.

Osaki-Shimo Shima to Kami-Kamagari Shima

8.42 Osaki-shimo Shima (Osaki-simo Shima) (34°10'N., 132°50'E.) has a bare hill, with a double summit, at the E end of the island; its E slope descends to the town of Mitarai. Ippoji Yama, the flat summit of the island, attains an elevation of 449m, about 1 mile W of the E end of the island, and from it there is a gradual slope to steep cliffs at the W end of the island; the island is almost completely bordered by orange groves. Osaki-shimo Shima, E of Toyo Shima, is separated by a channel. The narrowest part of this channel is spanned by an overhead cable with a vertical clearance of 48m. In 1992, a bridge spanning the channel was under construction.

Mikado Shima (Sankaku-jima), 110m high, lies about 0.3 mile off the NW coast of Osaki-shimo Shima. Maru Ishi, a rock with a depth of 0.5m, lies about 0.1 mile NE of the N end of Mikado Shima.

The passage between Osaki-shimo Shima and Toyo Shima has a least navigable width of about 0.1 mile, with depths of over 20m. Nagaskai Garama, rocks with a depth of 10.7m, lie in the N entrance, about 90m W of the W end of Mikado Shima. A shoal, with a depth of 14.9m, lies about 0.3 mile farther SW. In the S entrance, Suzume Iso, a rocky islet, 6.7m high, lies about 0.2 mile W of the W extremity of Osaki-shimo Shima. Okino Ishi, a rock with a depth of 1.8m, lies about 0.2 mile SW of Suzume Iso.

The tidal currents are strong, attaining a maximum velocity of 6 knots at springs.

Caution.—An overhead cable, with a vertical clearance of 22.9m, runs between Osaki-shimo Shima and Mikdao Shima.

8.43 Toyo Shima (34°10'N., 132°47'E.) has N and S summits; the S summit is 309m high, pointed, and conspicuous. The island is covered with orange trees.

The passage between Toyo Shima and Kamikamagari Shima should not be attempted without local knowledge due to the strong currents and the dangers in the S approach.

Ni Shima, 15.8m high and marked by a light, lies close off the NE extremity of Kami-kamagari Shima, in the N approach. Aka Ishi, a rock with a depth of 0.9m, lies about 0.4 mile NW of Ni Shima. Sasa-jima, 21m high, lies about 0.4 mile SE of Ni Shima; other islets, rocks, and shoals lie between Sasa-jima and the coast SW.

Okubi-jima, in the S approach, lies with its NE end about 0.2 mile S of the SW extremity of Toyo Shima. The island has three summits, the highest, 99m high, at its NE end. A 5.9m patch and a 6.9m patch lie about 0.3 mile NE and 0.2 mile N, respectively, of the NW end of Okubi-jima; a 2.7m patch lies close S of the latter patch.

Kamo Se, 15.8m high and marked by a light, lies about 0.3 mile SSW of the SW end of Okubi-jima; a rock, drying 2.1m, lies about 0.1 mile E of Kamo Se. Taishi Shima, 32m high and covered with pine trees, lies about 0.5 mile WNW of the NW end of Okubi-jima. Futamado Shima, about 14.9m high, lies on a drying reef, about 0.4 mile S of Taishi Shima; sunken rocks lie between Taishi Shima and the reef.

Kami-kamagari Shima (Kami-kamakari Shima), close W of Toyo Shima, is nearly covered with orange groves. Shichikokumi Yama, 457m high, the summit of the island, lies near the center of the island.

Kamagari Ko is a bay located in the middle of the N side of the island, with the town of Tado at its head. A light is shown from the W extremity of a breakwater extending W into the bay.

Ko-matsu Shima lies about 0.4 mile off the middle of the N side of Kami-kamagari Shima. A 7.8m patch and a rock, with a depth of less than 1.8m, lies about 0.2 mile WNW, and 0.1 mile SE, respectively, of Ko-matsu Shima. O-matsu Shima lies about 0.2 mile ESE of Ko-matsu Shima; a rock, with a depth of less than 1.8m, lies about 0.1 mile S of O-matsu Shima.

Anchorage.—Temporary anchorage can be taken, in 10 to 20m, mud, off the side of Kami-kamagari Shima during NE winds.

8.44 Sannose Seto (34°11'N., 132°41'E.), the passage between Kami-kamagari Shima and Shimo-kamagari-jima, is only about 0.1 mile wide in its narrowest part. The passage should not be attempted without local knowledge.

An overhead cable, with a vertical clearance of about 33m, and a bridge, with a vertical clearance of about 22.9m, crosses the passage between Kami-kamagari Shima and Shimokamagari Shima.

Several fish havens, consisting of sunken hulks or concrete blocks, lie both in the N and S entrances to Sannose Seto.

Tides—Currents.—The turn of the tidal current is about 1 hour 15 minutes earlier than in Kurushima Kaikyo. The maximum velocity at springs reaches 6 knots.

Aspect.—Ohira Yama (Taihei San) (Oitari Yama), 275m high, the summit of Shimo-kamagari-jima, lies nearly in its center. A shoal, with a least depth of 6.4m, extends about 0.3 mile SE from Shiro Saki, at the NE end of the island.

Ko-jima (Ko Shima), 20m high, lies in the S entrance to Sannose Seto, about 0.3 mile S of Kushi Saki, the SW extremity of Kami-kamagari Shima. Rocks and shoals extend about 0.1 mile N and 0.15 mile S of Ko-jima; a rock, 5.5m high, lies about 0.2 mile SSW of the islet.

Hikube Shima, a rock, 14.9m high, lies about 1 mile SSW of Ko-jima. Hira Iwa, a rock, 2.1m high, lies close W of Hikube Shima; a depth of 73m lies about 0.1 mile farther W. Okino Sone, with a depth of 9.2m, lies about 0.2 mile E of Hikube Shima.

Kami-kuro Shima, 83m high, is located about 0.4 mile SW of Hibuke Shima; depths of less than 10.1m extend about 0.4 mile SW of the island.

Shimo-kuro Shima, 102m high, is located about 0.4 mile W of Kami-kuro Shima. Otono Ishi, a rock with a depth of 4.5m, lies about 0.3 mile ESE of the SW extremity of Shimo-kuro Shima.