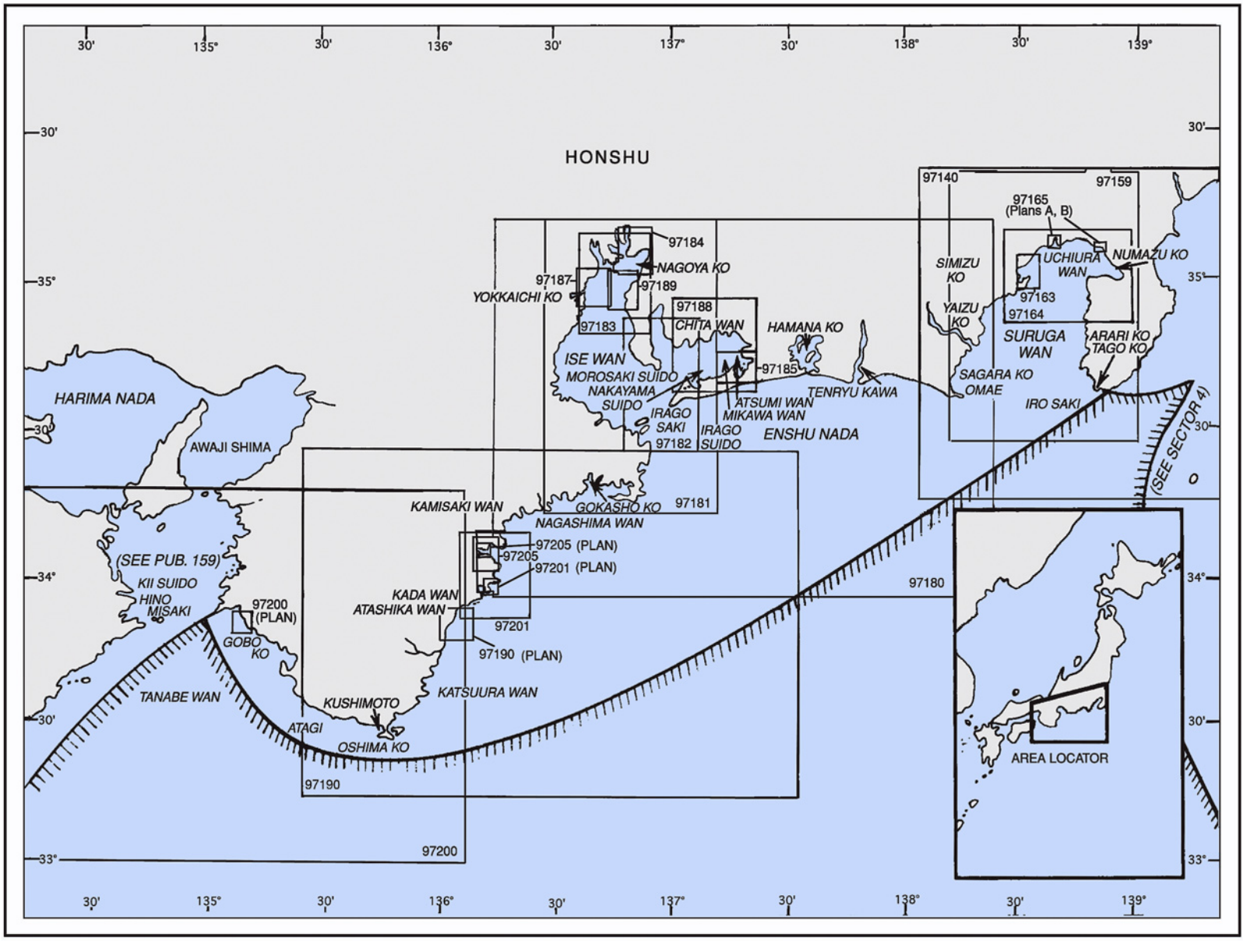
Click on "See Sector" to be hotlinked to that Sector.



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

SECTOR **5** — CHART INFORMATION

Table of Contents

Table of Contents

SECTOR 5

SOUTH COAST OF HONSHU—IRO SAKI TO HINO MISAKI

Plan.—This sector describes the S coast of Honshu from Iro Saki SW about 175 miles to Shiono Misaki, then NW to Hino Misaki.

General Remarks

5.1 The E part of this area includes the large bays known as Suruga Wan and Ise Wan; the coast between these two bays is a straight and almost unbroken stretch of sandy beach.

From Daio Saki, the coast trends SW for 75 miles to Shiono Misaki, the S extremity of the Kii Hanto, a broad mainland peninsula projecting S between the E end of Naikai on the W and Ise Wan on the E. This section of coast, known as the Kumano Nada, is generally rocky and faced with steep cliffs. The bays and coves of the irregular shoreline are relatively small and afford little protection, from, wind and sea.

Between Shiono Misaki and Hino Misaki, 45 miles NW, the coast forms the SW side of Kii Hanto and the E shore of the S approach to the Kii Suido. Sand and shingle beaches interspersed with rocky stretches make up the broken shoreline. There are no sheltered harbors, the small bays and inlets are open to the SW.

Winds—Weather.—Since the S coast of Honshu is fronted by the Pacific Ocean and backed by mountainous terrain, when face either the Kuroshio or Oyashio, its climate is controlled by these features and differs from the rest of Honshu.

During winter, there is a buildup of the continental high in the W and low pressure in the E, with the Northwest Monsoon dominating. As the continental high moves E, they bring behind them violent W winds that may blow for several days. On the Pacific seaboard, there is a high incidence of clear days with low humidity and dry air. Snowfall is generally light, although occasional heavy snows may be encountered on the S coast.

During spring, the change of pressure patterns is violent, and the weather shifts periodically. When low pressure systems originating on the continent move E and build up, fronts, especially cold fronts, are distinct and frequently generate violent storms.

The period from mid-June to mid-July is the early summer rainy season. The pattern of the rainy season front varies according to the strengths of the N (Okhotsk) and S (North Pacific) highs. Thus, if the Okhotsk high does not form or is weak, the rainy season precipitation is minimal. The rainy season is quite pronounced in S Japan where it brings abundant precipitation, but it is less pronounced and not as wet in N Japan. When the rainy season front moves N and dissipates, summertime pressure patterns move into place, and true summer begins.

During summer, hot humid, relatively weak, SE and S winds are frequent. The weather is generally fair, but with many sultry days and the highest incidence of thunderstorms for any season of the year. The frequency of onshore winds is notable. Summer is also the peak season for fogs. The end of the early summer rainy season marks the beginning of the typhoon season and coastal areas and the surrounding seas are often struck by torrential storms.

The autumn months of September and October are the peak months for typhoons and the autumnal rains, when the highest amount of precipitation for the year is recorded. Rainfall totals increase as one moves from N to S, in contrast to early summer rains, which are not so pronounced.

The climate on the S coast of Honshu, even during the winter period of the Northwest Monsoons, is generally mild due to the influence of the Kuroshio, and there are many days of good weather. However, when the Northwest Monsoons are strong, the air becomes extremely dry and chilly.

In summer, since relatively weak SE winds dominate and blow across the Kuroshio, temperatures become extremely high. Throughout the summer offshore winds in various parts of the S coast serve to alleviate the humid heat.

The Enshu Nada coast, centering around Omae Saki, has extremely strong Northwest Monsoons during winter.

Winter temperatures on the S coast of Honshu have an average minimum range of 1˚ to 4˚C. During summer most of the S coast is hot, but during the early summer rainy season from mid-June to mid-July, the high number of rainy and cloudy days keep the temperature down. Following the rainy season, the temperature rises sharply to a peak in August, when maximum temperatures average about 30˚C.

Tides—Currents.—The Kuroshio is the largest of the ocean currents in Japanese waters, and globally only the Gulf Stream in the Atlantic compares to it in magnitude. This is the principal current that affects the current along the S coast of Honshu.

The average speed of the Kuroshio is 2 to 3 knots, with maximums of 4 to 5 knots. Since the current shifts its course in unexpected and violent manner, and exerts such a powerful influence on navigation, mariners must always keep its movements in mind.

The Kuroshio, in its N flow from Luzon, generally skirts the S coast of Honshu and then flows E and NE. However, when a large cold water mass appears in the Enshu Nada, the course of the current undergoes a spectacular shift between the Kii Suido and the Izu Shoto, as it makes a wide detour around the cold water mass. Once such a cold water mass appears, the zigzag route of the Kuroshio tends to become fixed and to remain unchanged for a period of 2 to 9 years. According to a survey of the 47-year period from 1921 thru 1967, cold water masses appeared and persisted three times.

When the cold water mass appears off Omae Saki, the Kuroshio may be deflected as far S as 31˚S, S of Daio Saki, when the average flow without the presence of the cold water mass is 34˚S.

The Kuroshio is a relatively narrow current, and the width of the portion flowing faster than 2 knots ranges from 15 to 25 miles.

Tidal currents along the S coast of Honshu flow along the coast. The flood tide current sets W and the ebb current sets E.

Table of Contents

The direction changes within 1 hour after each LW and HW; the rate is nominal. The tidal currents are affected by the diurnal tide. Sometimes there is only one tidal current a day when the declination of the moon is great.

Suruga Wan

5.2 **Suroga Wan** (34˚50'N., 138˚35'E.), a large deep bay, lying between the W side of Izu Hanto and the mainland is entered between Iro Saki and Omae Saki, about 30 miles W, and from its entrance it extends almost 35 miles ENE.

Winds—Weather.—The seasonal winter winds blow N, often becoming stronger in the afternoon. Along the coast of Suruga Wan the average temperature in winter is 6˚ to 7˚C, while in summer it is cool due to land and sea breezes. The W wind prevails on the W coast of Izu Hanto due to the effect of the seasonal wind in winter.

At Omae Saki, the prevailing winds are WNW in winter and WSW in summer. The W wind prevails throughout the year, except during September and October.

During SW winds a heavy swell runs into Suruga Wan.

Tides—Currents.—The tidal currents in Suruga Wan set N on the flood and S on the ebb at a slight rate. At the entrance to Utiura Wan (Uchiura Wan), the flood tide current flows into the bay and the ebb flows out of the bay. The directions change within 1 to 2 hours after LW and HW. The flood current is irregular and the current following an extremely low tide is stronger than usual.

Suruga Wan—East Side

5.3 From Iro Saki, the E coast of Suraga Wan trends 7 miles NNW to Hagati Saki (Hakachi Saki) (34˚41'N., 138˚45'E.). This coast is indented by Mera-Koura Ko and is bordered by rocks for a distance of 0.5 mile offshore in places. The coast then trends irregularly N for 7 miles to Ima Yama. Matu Saki Ko indents the coast about halfway between Hagati Saki and Ima Yama. Ima Yama, a rounded headland, is a good mark.

The 20m curve lies 1.25 to 0.7 mile offshore along the coast. A 26m patch lies 0.9 mile W of Iro Saki; fish havens are charted 2 miles W of Iro Saki and outside the 20m curve in Mera-Koura Ko. A patch with a depth 2.9m, lies 1.25 mile SW of Ima Yama. Tago Shima, consisting of two sharp rock islets, lies about 0.8 mile SW of Ima Yama. The W rock is 47m high; the E rock has a light situated on it. Both rocks are visible at some distance. Foul ground extends from Tago Shima SE to the coast. A fish haven lies 0.25 mile SE of Tago Shima Light.

Tago Ko (34˚48'N., 138˚46'E.), a small deep port surrounded by hills, lies close S of Ima Yama and is fronted by Tago Shima. The village of Tago is located at the SE part of the bay. A light is shown close NW of Tago village on the point. Anchorage for vessels with local knowledge can be taken in the harbor, in a depth of 39m, mud. The harbor is open NW and is not tenable in winter. Small vessels can anchor, in a depth of 30m, mud, off the village of Tago, in the inner part of the harbor.

Ose Saki (35˚02'N., 138˚47'E.) is located 12.75 miles N of Ima Yama; there are cliffs and several small inlets in the intervening coast. The 20m curve lies no farther than 0.4 mile off this coast. A light is shown from the N part of the inlet.

Daruma Yama, 982m high, is located 9 miles NNE of Ima Yama; it is the most prominent mountain on Izu Hanto. Sototakumi Yama, 221m high, is located on the coast 3.5 miles NW of Daruma Yama. It is a round mountain covered with short grass and has steep cliffs at its base.

Enasi Yama (Enashi Yama) (35˚00'N., 138˚48'E.), 1.75 miles NE of Sototakumi Yama, rises to a height of 437m. It has a sharp peak, without trees, and can be seen from a point 4 to 5 miles W of Hagati Saki when entering Suraga Wan from the E, and it can also be seen, on a clear day, immediately after passing Omae Saki when entering the bay from the S.

5.4 **Ugusu Ko** (34˚51'N., 138˚46'E.) is an open harbor situated 2 miles N of Ima Yama. The entrance is open to the W, and the other three sides are surrounded by mountains.

A basin protected by two breakwaters, is situated in the S part of the bay and in it are quays used principally by small vessels loading ore. A light stands at the head of one of the breakwaters. There are mooring facilities within the breakwaters with depths of 2.5 to 5.5m alongside. There is a breakwater projecting NE from a point on the S side of the bay, and there are mooring facilities within the breakwater, with depths of 2.5 to 5.5m alongside.

Koshino Hana, a conspicuous red, wooded cliff, is located in the middle of the E beach in the harbor. Anchorage can be taken, in a depth of 13m, W of Koshino Hana.

Caution.—Caution should be used to clear the fish haven obstruction charted near the middle of the bay.

Toi Ko is an open roadstead that is located 3.5 miles N of Ugusu Ko. A breakwater is located on the N side of the river's mouth, which discharges into the harbor on its E side. A breakwater, with a light at its head, projects from the E shore of the bay. There is anchorage, in a depth of 26m, sand and mud, off a pier in the S part of Toi Ko.

Heda Ko (Heta Ko) (34˚58'N., 138˚46'E.), located 4 miles N of Toi Ko, is open to the NW and is surrounded by mountains on the N, E and S. On the W side, Mihama Saki (Ohama Saki) extends 0.4 mile NNE and forms a natural breakwater to protect the port against all winds except from the NW. The entrance between Mihama Saki and the N shore is 0.2 mile wide. The harbor is deep and shoals quickly on nearing the shoreline, where depths drop abruptly from 18 to 2m.

A breakwater, with a light at its head, is situated at the inner end of Heda Ko. A landing jetty, with depths from 2.5 to 4m alongside, lies to the S of this breakwater. A vessel may find good anchorage with the peak of Inari Yama bearing 048˚ and the NE extremity of Mihama Saki bearing 310˚, in a depth of 34m, mud.

5.5 **Utiura Wan** (Uchiura Wan) (35˚03'N., 138˚50'E.) is an open bay that lies 4 miles NNE of Heda Ko, in the NE extremity of Suruga Wan. The bay is about 5 miles in length in a N to S direction and recedes about 5 miles E.

Mito Hakuchi is a small, deep harbor located in the SE corner of Utiura Wan. It is entered by passing between Awa Shima, 147m high, on the N, and Nagai Saki about 0.4 mile to the S. Nishiura Kisho Breakwater extends 0.2 mile NE from a

point 0.4 mile W of Nagai Saki. A light stands at the head of the breakwater. A light stands at the head of Mito Breakwater situated about 1.5 miles ESE of Nishiura Kisho Breakwater Light.

There is good anchorage, protected from all but NW winds with the E extremity of Awa Shima bearing 343˚ and the N extremity of Nagai Saki bearing 282˚, in 35m, mud. A shoal, with a depth of 8.8m, is located 0.14 mile S of the anchorage.

Shizuura Ko (35˚02'N., 138˚54'E.) lies at the head of Utiura Wan, in its E extremity. Shizuura Ko is entered between Awa Shima on the S, marked by a light on its N extremity, and Okubono Hana, about 0.7 mile to the N. Okubona Hana, which has reclaimed land on its S and E side, rises to a height of 142m. In general the bay is too deep for anchoring, however, there is good anchorage with Okubona Hana bearing 293˚, and the N end of Awa Shima bearing 211˚, in 50m, mud. The water is choppy in a W wind, and when winds blow down off the mountains, as a NE wind prevails.

Numazu Ko (35˚05'N., 138˚51'E.), situated 2.5 miles NW of Okubona Hana, is comprised of an inner and outer harbor. The port is located at the mouth of the Kano Kawa (Kano Gama), which flows out between training walls on each bank. The inner and outer harbors are connected by a channel 40m wide that has a least depth of 3.2m. The outer harbor is located on the N bank and is protected by an E and W breakwater. The depth of the channel to the outer harbor is over 6m, with a width of 55m between the 5m curves. Vessels may moor at the N seawall in depths of 5 to 7.5m. The E and S seawalls have depths from 3.5 to 5.5m.

Suruga Wan—West Side

5.6 **Omae Saki** (34˚36'N., 138˚14'E.), marking the W entrance to Suruga Wan, is about 50m high and heavily wooded. Its E and S sides decline sharply and lead to a flat sand beach. The point appears as two belts whose upper half is green and the lower half white. The white belt is particularly conspicuous from the S. The point is fringed with reefs that dry out about 0.2 mile offshore, and shoals with depths of less than 5.5m, lie within 1 mile of the shore.

A light, from which a ramark transmits, stands on the S side of Omae Saki. A radio tower, standing about 0.7 mile NW of the light, is prominent. Gozen Iwa dries 0.9m and lies 1.75 miles E of Omae Saki on One Bae, a reef with a least depth of 3m. A light is shown from a round iron tower on a tripod, 11m high, situated on Gozen Iwa.

Caution.—Due to dense fog, vessels entering Suruga Wan from the W may not recognize the landmarks near Omae Saki; and upon entering the bay they may mistake the pine trees on Yaizu for those further N near Miho Saki; Takakusa Yama is often mistaken for Udo Yama. The light on Gozen Iwa should be given a berth of at least 1 mile and vessels should never pass between the light and Omae Saki. Gozen Iwa is difficult to see at HW when the sea is calm.

A dangerous wreck lies 3.5 miles S of Omae Saki.

Fish havens lie 2 miles and 4 miles W of Omae Saki Light.

5.7 **Omae Saki to Wada Hana.—**Motone Bana is the NE extremity of the peninsula and is located 0.6 mile NNE of Omae Saki; it is a flat point. From Motone Bana, the coast recedes to the NNW, then trends NNE to Wada Hana, a distance of 16 miles; this coast is low and sandy. Between Omae Saki and the coast abreast the town of Haibara, 8 miles N, the coast is backed by a plateau less than 91m high. A light is shown from position 35˚38'N, 138˚12'E. From this position a white sandy beach, backed by rows of pine trees, trends about 8 miles NE to Wada Hana, and for 4 or 5 miles inland the country is flat.

The 20m curve lies up to 2.3 miles off the S part of this area and closes the coast in the vicinity of Wada Hana.

Notari (34˚37'N., 138˚15'E.), a rocky patch with a depth of 9.4m, is located 1 mile NE of Montone Bana. A fish haven is situated 0.15 mile SE of Notari; other shoal patches lie between Notari and the coast.

A rocky patch, with a depth of 8.3m, is located 0.75 mile N of Gozen Iwa.

5.8 **Omaesaki Ko** (34˚36'N., 138˚14'E.) (World Port Index No. 61425) is an open port protected by breakwaters and is entered between the breakwaters about 1.3 miles NW of Motone Bana. The maximum draft limitation in the channel is 11m. The largest vessel that can be accommodated is 110m long, 5,000 dwt, with a draft of 6.8m.

A detached breakwater has been constructed close NE of the entrance to the outer harbor.

Pilotage.—Pilotage is not compulsory but is available. Pilots board close NE of the outer breakwater. Berthing is done during daylight hours only; unberthing may be done until 2100.

Anchorage.—Anchorage may be taken outside the inner breakwater, in depths of 5 to 8m, mud and sand. The holding ground is not very good.

Small vessels can anchor within the breakwaters.

5.9 From Omaesaki Ko, the coast trends N about 4.8 miles to Sagara Ko; a small boat harbor situated in the mouth of a river. A light is shown near the river entrance.

Aitaka Iwa (34˚40'N., 138˚14'E.), about 1m high, lies 1 mile SE of Sagara Ko; it consists of two small rocks that lie in an E to W direction. There are other obstructions charted up to 1.5 miles N.

From Sagara Ko, the coast trends NE 6.5 miles to the mouth of the Oi Kawa, which empties into the bay.

Along this coast is Yosida Gyoko (34˚45'N., 138˚16'E.), which is protected by a breakwater and has a light on it.

Oigawa Ko (34˚46'N., 138˚18'E.) consists of a small harbor protected by two breakwaters, with an inner harbor and facilities; it is located close N of Oi Kawa. The harbor has depths of 2.6 to 11m and is approached through a channel about 59m wide. There are wharves here with depths of 1 to 7.5m alongside.

Ordinary vessels are not allowed within a 50m radius of the oil wall when vessels carrying LPG and other flammables are moored.

Caution.—During the Oi Kawa flood periods, caution is necessary since vessels will be pushed to the N. A wave meter is located 0.75 mile NE of the S breakwater. This meter is marked by a red light and a submarine cable runs from here to the coast. There are wharves here with depths of 1 to 7.5m alongside.

Table of Contents

From Oigawa Ko the coast trends NNE 4 miles to Wada Hana. There are fish havens located along this coast as far as 1.5 miles offshore, reference should be made to the chart.

Seno Umi, located 10.75 miles ESE of Oigawo Ko, is a fish haven obstruction.

5.10 From Wada Hana the coast trends in a general NE direction to Hukiai Saki, a distance of 15 miles. The 20m curve lies up to 1.8 miles offshore in this segment of the coast. The dangers outside the 20m curve are fish havens which are charted.

Kogawa Gyoko (34˚50.7'N., 138˚19.9'E.) is a fishing harbor protected by two breakwaters. A light tower stands on each breakwater. The channel leading through the entrance is about 50m wide. A detached breakwater lies 0.1 mile NW of the S breakwater head. A light is shown at the SE end of the detached breakwater.

A submarine pipeline extends 0.13 mile ENE from the coast, 0.3 mile NW of the S breakwater head.

Takakusa Yama rises to a height of 501m, 1.5 miles inland, 4.25 miles N of Wada Hana. Udo Yama, 308m high, is located near the coast 4 miles SW of Hukiai Saki. When approaching this area in a fog, Takakusa Yama has often been mistaken for Udo Yama, since the coasts are low and similar to each other.

Yaizu Ko (34˚52'N., 138˚20'E.) is an open roadstead, with two basins lying at the head of a bight, 2 miles NNW of Wada Hana. There is an outer, central, and inner district, protected by a N and S breakwater. Within the basins there are depths of 5 to 7m.

The middle harbor is entered between the N breakwater and the S breakwater. A light stands at the head of each. The entrance to the harbor is exposed to E winds which send in a swell and hamper maneuvering. A detached breakwater, 150m long lying in NNE to SSW direction, is situated about 0.2 mile SW of the S breakwater.

Reclamation work has been carried out 1 mile S of the harbor. A light stands at the head of a breakwater extending about 0.4 mile N from the shore, about 1.3 miles S of Yaizu Ko.

Ogawa, a boat harbor protected by a N and S breakwater, is situated 1 mile S of Yaizu Ko, and is considered part of Yaizu Ko. The depths in Ogawa are from 2 to 3.8m.

From Yaizu Ko the coast trends NNE 5 miles to Abe Kawa, which flows into the bay, then 8.5 miles NE to Hukiai Saki (Miho Saki).

Simizu Ko (Shimizu Ko) (35˚01'N., 138˚30'E.)

World Port Index No. 61460

5.11 Simizu Ko, located in the NW portion of Suruga Wan Special Port, is the most important port in the bay. It is a Special Port, Open Port, Quarantine Port, and Port of Entry.

Winds—Weather.—In the spring and summer SW and W winds prevail and the sea is calm. During the fall and winter, NE and E winds prevail; the most frequent wind direction is ENE, and its maximum velocity is 24 knots.

Tides—Currents.—The flood tidal current sets W into the harbor and the ebb current sets E. The change of directions occur at HW and LW; the rate is less than 0.3 knot.

Depths—Limitations.—The port is divided into three sections. Section 1, the S part of the harbor, is approached through a channel dredged to a depth of 12m (1991). The depths at the berths in this section range from 5.5 to 12m.

Orido Wan, in Section 1, is a large basin with depths from 4.2 to 10.5m. Section 2 lies at the W end of the entrance fairway and has berths within the basin from 3.3 to 11.2m. Section 3 lies on the S and N side of the entrance fairway. Tonen Dolphin Sea Berth is on the N side of the Fairway. There are two container berths in this section at Okitsu Wharf No. 2, with depths of 11 to 12m alongside. Vessels of 30,000 dwt can be accommodated. Sodesi Wharf No. 1 will accommodate vessels of 30,000 dwt and has depths of 12m alongside. The Nikkei Bauxite Wharf has a depth of 11m alongside for vessels of up to 32,000 dwt.

The approach to the Tonen Dolphin Sea Berth is dredged to a depth of 21.5m. Vessels of up to 250,000 dwt, with a draft of 20m, may use this berth. Numerous oil tanks and chimneys stand on the reclaimed land.

Reclamation work is being carried out (1990) in an area centered 0.5 mile SW of Ma Saki.

The harbor offices stand on the S side of Shimizu basin, about 1 mile SW of Ma Saki.

Aspect.—There are numerous charted chimneys and radio towers which are conspicuous.

Pilotage.—Pilotage is not compulsory. A request for pilotage should be sent 24 hours in advance through the vessel's agent. The pilot boards in an area about 1 mile NE of Shimizu Light. Pilots for 250,000 dwt vessels embark about 0.8 mile NE of Fukiaino Misaki Light.

Anchorage.—Quarantine anchorage is situated on the E side of the N breakwater. Depths in the anchorage range from 18.4 to 29m, mud and sand. Vessels with dangerous cargo are required to anchor in Section 3. The best anchorage here is SW of Ma Saki, in depths of 21 to 26m. This anchorage is frequently congested; vessels may have to wait offshore before entering.

Suruga Wan—Head

5.12 From Simizu Ko to Numazu Ko, 18 miles ENE, there is a long, low crescent shaped, continuous sand beach. Fuji Kawa (Huzi Kawa) enters the bay 9 miles NE of Simizu Ko. The area E of Fuji Kawa to Kano Kawa is known as Tagono Ura.

The depth of the water is 200m, 0.3 mile from the shore near Tagonoura Ko. Depths continue to be unusually deep closer to the shore along the coast.

Fuji San (Huzi San) (35˚22'N., 138˚44'E.) rises to a height of 3,776m, 13 miles N of Tagono Ura Ko. This volcano, with a symmetrical cone shape, is the highest point in Japan. Its peak is often enveloped in clouds and there are few days when the entire mountain is visible.

Tagonoura Ko (35˚08'N., 138˚42'E.)

World Port Index No. 61415

5.13 Tagonoura Ko is situated at the head of Suruga Wan, 11 miles NE of Simizu Ko. The port is protected by an E and

W breakwater; a light is situated on the head of each breakwater. There are three public wharves in the port. Leading lights are shown in line bearing 323.5˚ and lead through the dredged channel into Tagonoura Ko.

Depths—Limitations.—The entrance channel is maintained at a minimum depth of 9m at HW. The maximum size vessel to enter the port is limited to a loa of 213m and a beam of 30m. The draft may vary, therefore, it is requested that the allowable draft should be verified by ships agent before arrival. There are depths alongside the wharves from 5.5 to 9m. The entrance is about 91m wide and the basin affords little room for maneuvering.

Pilotage.—Pilotage is not compulsory; however it is available and should be ordered at least 24 hours in advance through ships agent. Pilot will embark the vessel about 1 mile SSW of Taganoura West Breakwater Light; in bad weather, the pilot boards inside the breakwaters. Service is available from 0500 to 1600 for berthing and anytime for sailing.

Anchorage.—The approach to the harbor is deep and exposed. It affords no anchorage; ships having to wait entry should proceed to Simizu Ko.

There are three anchorages in the port, known as Suzukawa, Chuo, and Gyoko.

Ordinary vessels are prohibited from entering an area within a 50m radius of vessels carrying petroleum and other dangerous cargo. Vessels (ordinary) are not allowed to move within a 30m radius of vessels alongside. Fuji Wharf and Asahi Kasei Wharf use by vessels which are carrying high pressure gas. Vessels carrying this gas are marked by red buoys during the day and three red lights at night.

Enshu Nada

5.14 Enshu Nada is the name given to the open bight formed in the coast between Omae Saki and Daio Saki, located 70 miles WSW. Between Omae Saki and Irago Saki, the E entrance to Ise Wan, 60 miles W, the coast is almost unbroken, while the coast from Irago Saki to Daio Saki, 14 miles S, is much indented.

From Omae Saki, a sandy beach stretches 21 miles W in a gentle arc to the delta of Tenryu Kawa, which projects slightly and has two mouths. Lights are shown close W and E of the entrance to the river mouth.

Hamana Ko (34˚40'N., 137˚36'E.), an extensive salt water lagoon, indents the coast 10 miles W of Tenryu Kawa. Lights are shown at the entrance. From Hamana Ko the coast trends WSW 30 miles to Irago Saki and consists of yellow cliffs broken by a number of gorges. Irago Saki is a small rocky peninsula and forms the E entrance point of Ise Wan.

The 20m curve lies within 1 mile from shore in the E part of the coast, and gradually leaves the shore W of the entrance to Hamana Ko and lies 6.5 miles from shore in the offing to Irago Saki. There are no dangers less than the 10m depth which is about 1 mile from shore or beyond along this coast, however there is an 8 mile stretch W of Omar Saki with less depths.

Winds—Weather.—Strong W winds are common in the winter throughout Enshu Nada. In the summer, high waves often occur with sudden S or SE winds. Water spouts occur in the summer in the vicinity of Daio Saki.

Tides—Currents.—The tidal currents S of Enshu Nada flow WSW on the flood and ENE on the ebb tide current. The direction changes at almost the time as LW and HW water S of Omae Saki, while it changes within 1 and 2 hours after LW and HW at the center of Enshu Nada. The average current velocity at the time of a major tide is 1 knot S of Omae Saki and 0.25 knot at the center of Enshu Nada.

Tidal currents 1 mile E of Matoya Ko, in the vicinity of Daio Saki, are circuitous. The flood current is almost an inshore flow, turning toward the N and S through W, while the ebb current flows S almost parallel to the coast. Current velocity is low it does not attain a speed of more than 0.8 knot. Tidal currents 2 miles E of Daio Saki are controlled by the season, wind direction, and ocean currents; both current direction and current velocity are changeable; the velocity is less than 1 knot.

Fukuda Ko (34˚40'N., 137˚54'E.) is located at the mouth of Ota Kawa, 17 miles WNW of Omae Saki; it can only be used by small vessels.

Only small vessels with local knowledge can navigate the mouth of the Tenryu Kawa, 5 miles WSW of Fukuda Ko. The depth of the water is inconsistent, becoming deepest during the months of August through October and shallowest from March through May. Strong winds are common in this area and there are few days without wind. There is a sand spit at the river mouth. When there is a W wind, anchorage is available, in depths of 12 to 18m, at places on the leeward side of the spit.

Ise Wan

5.15 **Ise Wan** (34˚45'N., 136˚45'E.) is an extensive bay entered between Irago Saki (Misaki) and Kaburako Saki, a mainland projection about 9.25 miles SW. The fairway through this entrance is greatly restricted by islands and reefs; the principal passage, Irago Suido, lies between Irago Saki and Kami Shima, an island 2.25 miles SW. Within the entrance Mikawa Wan leads off in an NNE direction, and is further divided into Atsumi Wan on the E and Tita Wan on the N. The principal part of Ise Wan recedes about 35 miles N of Irago Saki and is bound by Tita Hanto on the E and the mainland on the W. The important port of Nagoya Ko is located at the head of the bay.

Winds—Weather.—In Ise Wan, the N wind prevails in winter. Strong winds in Ise Wan are generally caused by S or SSE seasonal winds in summer and by typhoons. Studies have shown that wind direction and velocity vary in separate parts of the bay. In the vicinity of Irago Saki, over a 30-year period, the wind direction was NW for the months of September through May at an average velocity of 11 knots. During the months of June, July, and August, the winds were S at an average velocity of 8 knots. During the month of January, there were 20 days of gale force winds observed.

In the vicinity of Nagoya, in the same period of time, the wind direction from January through April was NW at an average velocity of 7 knots. The winds in May were from the N at 7 knots, shifting to SSE during the months June, July, and August at about 5 knots velocity. From September through December, the winds were from the N at an average daily rate of about 5.5 knots. In the month of March, there was an average of 10 days of gale force winds observed.

Table of Contents

Pilotage—Pilotage is compulsory for all vessels. The pilot will board from an orange pilot boat. Vessels carrying liquified gas will embark the pilot 6.5 miles E of Yori Saki (34˚24.6'N., 136˚55.8'E.).

Vessels with a draft of more than 14m will embark the pilot in position 34˚25'N, 137˚00'E, about 3.4 miles E of Yori Saki.

Vessels with a draft of less than 14m, approaching from the E, will embark the pilot about 2.5 miles E of Fairway Lighted Buoy No. 1. Vessels approaching from the S and from the W will embark the pilot about 2.5 miles S of Fairway Lighted Buoy No. 1.

Irago Suido

5.16 Irago Suido (34˚34'N., 137˚00'E.), the channel between Irago Saki and Kami Shima, 2.25 miles SW, is the main entrance of Ise Wan and Mikawa Wan.

Irago Suido Lighted Beacon stands 2.75 miles SE of Kami Shima Light.

A wreck was reported 1.7 miles ENE of Kami Shima Light

A traffic route, prescribed by the Maritime Traffic Safety Law and shown on the chart, is in effect in Irago Suido. The Fourth Regional Maritime Safety headquarters in Nagoya should be notified of a vessel's ETA by noon of the day prior to the date of entering the Irago Suido Traffic Route. Notification may be made by telephone, telegram, VHF, or in writing. Vessels carrying dangerous cargo should further advise concerning their arrival 3 hours prior to entering the traffic route.

Tides—Currents.—The tidal currents between Kami Shima and Irago Saki flow NW and SE. The NW (SE) current flows from 20 minutes after LW (HW) tide at Nagoya until 20 minutes after HW (LW) at Nagoya. During spring tides there are two currents daily at a velocity of 2 knots. A SE current of 2.7 knots has been observed, and a NW current of 2.1 knots occurs during the summer major tides.

The current near Irago Saki turns about 1.3 hours before the current in the central part of Irago Suido. The current near Kami Shima is about 30 minutes after that in the channel. The current along Irago Saki is about 3 knots, and 1 knot along Kami Shim. Vortices are generated.

Pilotage.—Pilots board 4 miles S of Ise Wan Sea Berth.

Regulations.—A voluntary traffic separation scheme has been established off Daio Saki, in the vicinity of the entrance to Ise Wan. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation.

The following information is for Rules of the Road in Japanese waters.

In Irago Suido Traffic Route and its vicinity, it is requested that vessels take the following safety measures:

1. Taking pilots on board—The vessels listed below should take pilots on board:
   a. Huge vessels, as specified in the Maritime Traffic Safety Law, and super tankers.
   b. A vessel of foreign flag.
   c. A vessel of Japanese flag of 130m or greater in length, specified as a vessel carrying dangerous cargo.
2. Arrangement of vessels for guarding the course.—A vessel should arrange vessels for guarding the course until it confirms her safe navigation even after leaving the traffic route.
3. Sailing rules in the vicinity of each entrance and exit of the traffic route:
   a. North side of traffic route—A vessel intending to enter or leave the traffic route should pass Ise Wan Lighted Buoy No. 3 (34˚35.1'N., 136˚38.5'E.) (approx.) on its port side before heading for the prescribed course.
   b. South side of traffic route—A vessel intending to enter or leave the traffic route should pass Ise Wan Lighted Buoy No. 2 (34˚32.2'N., 137˚02.1'E.) (approx.) on its port side before heading for the prescribed course.
4. Restriction on overtaking—A vessel should avoid overtaking another, as far as practicable, in traffic route and its vicinity.
5. Notification of change and confirmation—A huge vessel, or a special vessel carrying dangerous cargo, a vessel towing or pushing a long object should strictly observe the following instructions:
   a. A vessel intending to make a great change in the estimated time of entering the traffic route should give notification of the change as soon as possible, even though it is more than 3 hours before the estimated time of entering the traffic route.
   b. A vessel should confirm its ETA 3 hours before entering the traffic route.
   c. A vessel should give notice of a change of 5 minutes or more within 3 hours before the estimated time of entering the traffic route.
   d. A vessel should contact the Traffic Control Officer 1.5 hours and 0.5 hour before the estimated time of entering the traffic route and confirm the accurate estimated time of entering the traffic route.

   Special vessels carrying dangerous cargo mentioned above are defined as vessels of 50,000 grt or more carrying dangerous cargo or vessels of 25,000 grt or more carrying liquefied gas.
6. Confirmation of traffic control:
   a. A vessel navigating in the traffic route should pay attention to the signals at the Irago Suido Traffic Control Signal Station.
   b. A vessel of 130m or greater in length, should contact the Traffic Control Officer by VHF channel 16 to confirm the conditions of traffic control before approaching the traffic route, unless it has confirmed the signals in the preceding paragraph.
7. Waiting places under limited visibility—A vessel prohibited to enter the traffic route under limited visibility should observe the following:
   a. A northbound vessel should wait in an area seaward of Ise Wan Lighted Buoy No. 1 (34˚30.8'N., 137˚03.8'E.) approx.), keeping clear of other vessels.
   b. A southbound vessel should adjust the time of departure as far as practicable, but a southbound vessel underway should wait in the area which does not reach Ise Wan Lighted Buoy No. 3, keeping clear of other vessels.
8. Prohibition of discharging boil-off gas—A vessel carrying liquified gas, navigating through the traffic route, should not discharge boil-off gas.
9. Provision of emergency fire wires—A vessel carrying dangerous cargo as specified in the Maritime Safety Law

should provide, on board, the following emergency fire wires and auxiliary ropes, on its bow and stern:

a. The fire wires, with an eye in each end, strong enough for vessel to be towed by another vessel and long enough to reach the water surface.

b. The auxiliary ropes, with an eye in each end, strong enough to lead the fire wires to the water surface, hanging down by the board, as close to the water surface as practicable without impeding safe navigation.

10. Regulations for speed—Vessels shall not exceed a speed of 12 knots through the water when within the traffic route.

11. The owner or operator of a liquified gas tanker of 25,000 grt or more must submit "The Written Pledge for Safety Measures" to the Maritime Safety Agency and fulfill its requirements before entering Japanese waters for the first time.

Arrangements for escort vessels may be required. A vessel of 50,000 grt or more carrying dangerous cargoes, or a vessel of 25,000 grt or more carrying liquefied gas, are required to be accompanied by an escort vessel having fire-fighting capabilities. These vessels shall not enter the traffic route between sunset and 1 hour after sunrise.

In addition to the above safety measure, the following rules are in effect in Irago Suido Traffic Route:

1. Vessels should navigate, as far as practicable, that portion of the traffic route which lies on the starboard side of the central line of the traffic route.

2. Any vessel which is in a meeting situation with a huge vessel in the traffic route, should keep out of the way of the huge vessel.

3. In order to avert danger in meeting situations of a huge vessel and other vessel, the other will be directed to wait outside of traffic routes.

Vessels should notify the Maritime Safety Agency and provide the following information:

1. The abbreviation of the addressee for each traffic route the vessel intends to navigate. (For the Irago Suido Traffic Route (IRAGO), the addressee is Commander, 4th Regional Maritime Safety Headquarters, abbreviated as YONKAN)

2. Name and grt of vessel.

3. Length of vessel in meters.

4. Maximum draft, in meters, down to two places of decimals.

5. Types of dangerous goods carried and amount (in tons) of each type. (Vessels of 1,000 grt or over which have carried inflammable liquids or high pressure gas loaded in bulk, and are still subject to risk of fire or explosion, should indicate the amount of dangerous cargo as O.)

6. Distance between the bow of a towing vessel and the stern of the object being towed or distance between the stern of a pushing vessel and the bow of the object being pushed, in meters.

7. Description of the object being towed or pushed.

8. Port of destination.

9. Section of the traffic route to be navigated. (Use abbreviations.)

10. Estimated date and time of entry into a traffic route from outside the traffic route. (Times denoted by 24-hour system.)

11. Estimated date and time of departure from a traffic route.

12. Call sign or call name of the ship radio station.

13. Method of communications with maritime safety agency.

Vessels should start the report with the word NOTIFICATION and include the information listed above using the corresponding number as a prefix to the message. If an item is not applicable, use NA.

Vessels can communicate by radio with the coastal radio station at Nagoya. The stations call sign and call name are JNT and Nagoya-hoan. The watch frequencies and communication frequencies are 500kHz, 2,182 kHz, 156.8 MHz and 464 kHz, 2,150 kHz, 156.6 MHz, respectively.

Signals.—Irago Suido Traffic Route Control Signaling Station, situated in position 34˚34'35"N, 137˚01'10"E, close NNE of Irago Saki Light, displays Control Signals, which are described in the accompanying table.

When the Irago Suido Traffic Route Control Signals, mentioned above, cannot be used, the following Alternate Control Signals, described in the accompanying table, will be displayed, as follows:

1. In the vicinity of a point bearing 340˚, 3,540m distant, from Kami Shima Light (34˚32'44"N., 136˚59'21"E.).

2. In the vicinity of a point bearing 160˚, 3,500m distant, from Irago Misaki Light (34˚34'34"N., 137˚01'09"E.).

Control Signals—Irago Suido Traffic Route

Day	Night	Meaning
A white light flashing every 2 seconds or a black cone shape	A white light flashing every 2 seconds	Vessels of 130m or greater in length (excluding huge vessels) intending to navigate SE through Irago Suido Traffic Route are required to wait outside of the traffic route.

Table of Contents

Control Signals—Irago Suido Traffic Route		
Day	**Night**	**Meaning**
A red light flashing every 2 seconds or a black square shape	A red light flashing every 2 seconds	Vessels of 130m or greater in length (excluding huge vessels) intending to navigate NW through Irago Suido Traffic Route, are required to wait outside of the traffic route.

Alternate Control Signals—Irago Suido Traffic Route		
Day	**Night**	**Meaning**
International Code Flag L under the First Substitute	Morse code RZS by signal light	Vessels of 130m or greater in length (excluding huge vessels) intending to navigate SE through Irago Suido Traffic Route are required to wait outside of the traffic route.
International Code Flag L under the Second Substitute	Morse code RZN by signal light	Vessels of 130m or greater in length (excluding huge vessels) intending to navigate NW through Irago Suido Traffic Route, are required to wait outside of the traffic route.

Gas-carrying vessels transiting Irago Suido must display:

1. By day—two black cylinders, vertically disposed; on a separate yard, International Code Bravo under First Substitute.
2. At night—An all round green flashing light and, separately, either vertically or horizontally disposed, an all round red flashing light.

Caution.—In Irago Suido, vessels of 10,000 grt or over, carrying dangerous cargo (except for huge vessels and vessels of 25,000 grt or over carrying liquefied gases) are prohibited to enter the traffic route when visibility is less than 1 mile. Vessels towing or pushing objects and vessels of 130m in length or over carrying dangerous cargo are also prohibited entry into the traffic route when visibility is less than 1 mile.

Asahi Syo (Asahi Sho) lies at the outer end of a reef that extends 0.75 mile SW from Irago Saki; it has a swept depth of 9.1m.

The W side of the channel is encumbered with reefs and is dangerous. Simosa Syo (Simosa Sho), with a least depth of 2m, lies 0.6 mile E of Kami Shima. Kozukami Syo (Kozukami Sho), with a least depth of 2.2m, and a 9.7m patch, lie 0.6 mile ENE and 0.8 mile NNE, respectively of Kami Shima.

Kami Shima

5.17 **Kami Shima** (34˚33'N., 136˚59'E.), 171m, high has a reddish summit, and a steep vertical cliff stands on the E side of the island.

Kami Shima Light, from which a racon transmit, stands on the NE extremity of the island.

Segyo Se Buoy (34˚30.4'N., 137˚01.3'E.), marking the boundary of the Maritime Safety Law, situated about 2.8 miles SE of Kami Shima Light. Two fish havens lie close together 0.7 mile SE of Kami Shima.

Depths—Limitations.—Foul ground fringes the island for as much as 0.3 mile; a chain of reefs extends 0.5 mile S of the island.

Tainoshima Syo (Tainoshima Sho), with a least depth of 8.2m, lies 3.5 miles S of Kami Shima. The sea within the 20m curve that encircles this depth becomes rough during violent weather.

Sakate Dasi, Asamao Se, and Segyo Se, with least depths of 6.4m, 9.6m, and 9.6m, respectively, lie SSE of Kami Shima, N of Tainoshima Syo.

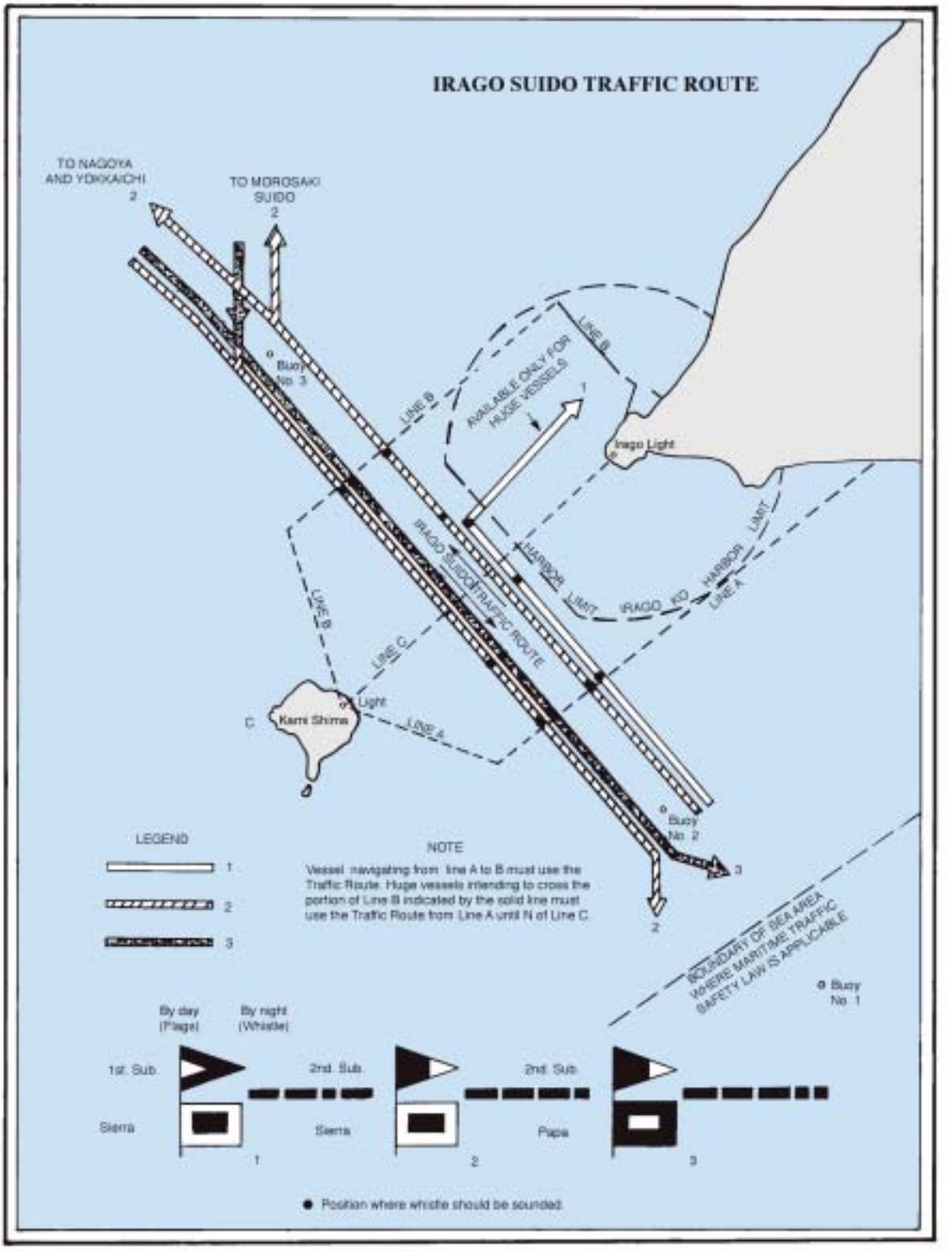
Caution.—A wreck was reported (1996) to lie1.7 miles ENE of Kami Shima Light.

Entrance to Ise Wan—West Side

5.18 From the SW side of Kami Shima, a chain of detached reefs extends SW for about 3 miles, terminating at a 7.7m rocky patch. This entire area is encumbered with reefs and shoal areas which are charted.

Suga Shima (34˚29'N., 136˚54'E.), located 4.25 miles SW of Kami Shima, is about 2 miles long on a NE to SW axis, 237m, high and appears flat from the S, but looks pointed when seen from the E. Sira Saki, the NE extremity of the island, is fronted by reefs for a distance of 0.5 mile. There is a channel between these reefs that is 0.9 mile wide between the 10m curve. Tide rips are frequently seen on the shoal areas.

Kaburako Suido (34˚28'N., 136˚54'E.) is situated between Suga Shima and the mainland to the S and SW. From the E entrance the passage trends W for about 1.5 miles, and then, narrowing abruptly, leads NW for more than 1 mile to Toba Ko. Since this channel is short and well-marked, it is not



Irago Suido Traffic Route

Table of Contents

difficult to navigate. However, it is not suitable for large vessels as the fairway is somewhat constricted and the dangers of submerged rocks exist. An overhead cable, 34m high, spans the channel between Suga Shima and Sakate Shima, 0.4 mile W. Submarine cables also cross the strait in this area. Submarine cables also cross Irago Suido, about 6 miles E of Kaburako Suido.

Sugashima Suido (34˚30'N., 136˚54'E.), a straight channel about 1 mile wide, is situated between Suga Shima on the S and Tosi Shima on the N. From its E entrance between Kami Shima and Yoko Se, a rocky patch with a least depth of 14.6m 1.5 miles NW, the channel leads SW for about 7 miles to Toba Ko.

Depths—Limitations.—The least depth on the range line is 10.9m, with a least width of 0.2 mile between the 10m curves, N of Sira Saki.

Tosi Shima (34˚31'N., 136˚53'E.) is about 3.5 miles long on a NE to SE axis, and forms the NW side of the inner part of Sugashima Suido, and the NE part of Toba Ko. Tukiage Saki, the SE extremity of Tosi Shima, is a small peninsula, and when seen at a distance from certain directions, appears to be a small island.

O-Zukumi Shima and Ko-Zukumi Shima lie on foul ground that extends from close off the NE extremity of Tosi Shima for a distance of about 1.5 miles NE.

Toba Ko (34˚29'N., 136˚51'E.)

World Port Index No. 61500

5.19 Toba Ko, at the inner end of Sugashima Suido, consists of a port, harbor facilities, and a town. The port opens ENE and heavy seas run into it when strong E winds prevail otherwise the port is well-sheltered.

Tides—Currents.—In Toba Ko, the flood current setting SW through Sugashima Suido combines with the branch setting NW through Kaburako Suido, and then flows NW through Momotori Suido at a rate of about 1.5 knots. The ebb current flows in a reverse direction at a maximum rate of about 2.5 knots in the narrows between the W extremity of Tosi Shima and Hinata Shima, 0.4 mile W. The mean range of tide in Toba Ko is 1.2m and the spring range is 1.6m.

Depths—Limitations.—General depths in Toba Ko range from 9.1 to 46m. There are several wharves with depths of 2.1 to 4.9m alongside.

Aspect.—Asama-ga Take rises to a height of 555m, about 4.8 miles W of Kaburako Saki; its wooded dome-shaped summit is conspicuous.

Pilotage.—Pilotage is compulsory for all vessels. The pilot embarks on a vessel from a orange pilot boat. Vessels carrying liquidfied gas embark a pilot 6.5 miles E of Yoroi Saki.

Anchorage.—Deep-draft vessels anchor outside the harbor limits of Toba Ko in the vicinity of the entrance range line, in a position about 2 miles from the front range structure. The depth is about 14.6m, sand and mud. Anchorage can also be obtained about 0.3 mile N of the W extremity of Sakate Shima, in a depth of 8.5m, mud; the holding ground is not good.

Caution.—Numerous fish havens lie between and close N of the above boarding area.

5.20 **Momotori Suido** (34˚31'N., 136˚50'E.), a winding passage, which is somewhat narrow in places, leads N from Toba Ko to the W extremity of Tosi Shima. The passage then trends W between the mainland on the S and a chain of islands on the N, about 0.5 mile offshore, and finally NW between two shallow areas into Ise Wan for a total distance of about 3.5 miles.

There is an overhead cable, with a clearance of about 41m, between the W extremity of Tosi Shima and Hinata Shima, about 0.35 mile W. This is also the most narrow part of the channel, with a width of 0.23 mile between the 10m curve, directly under the overhead cable.

A light stands on Shimaga Shima, the SW extremity of Tosi-Shima, and there is a tower on the S end of Hyuga Shima.

Kohana, a fishing harbor marked by a light, is situated close SSW of the latter tower. An obstructed fish haven lies within Momotori Suido.

Although the channel is tortuous, it is deep and safe, and there are many marks. It is a good route for small and medium vessels entering Ise Wan from the S.

Ise Wan—East Side

5.21 From Irago Saki the coast trends NNE for 5.5 miles to Tatuma Saki, the SE entrance point of Mikawa Wan. This stretch of coast, which is formed by Atumi Hanto, consists of sand beach with low pine trees.

Tatuma Saki is a low point but it is conspicuous from the SW or NE. There are chimneys, 152m and 203m high, situated 0.4 mile SW of the light on Tatuma Saki.

A lighted buoy is moored 0.5 mile NNW of Tatuma Saki at the seaward end of a pipeline laid N from the power station chimney, 152m high. Dredging operations were in progress (1988) close E of the pipeline.

Tono Se (34˚38'N., 137˚01'E.), a dangerous, steep-to reef with a depth of 3.5m, is located about 1.3 miles offshore, 3.5 miles N of Irago Saki Light.

Irago Ko (34˚35'N., 137˚01'E.) is a small port, protected by a breakwater, situated close NE of Irago Saki. A light stands at the head of the breakwater. A detached breakwater lies 0.2 mile NE of the harbor entrance. There are depths within the breakwater from 1.8 to 7.1m. The entrance, which opens N, is about 82m wide and has depths of 3 to 5m. The port provides good anchorage for small vessels with local knowledge.

A sea berth, consisting of an SBM, is situated 0.5 mile NW of Tatuma Saki Light. The berth, which is for the exclusive use of the power plant situated near the light, will provide a berth for a vessel of 15m draft and of 210,000 dwt.

There is also a dolphin berth alongside the head of a pier, about 0.3 mile NE of the light, for a vessel of 11m draft and of 5,000 dwt The area around this berth is dredged to 14m (1980).

Vessels awaiting a berth usually anchor 4 miles NW of Kami Shima; a berthing master embarks in this position. Berthing and unberthing are undertaken in daylight only.

Hazu Saki (Hazu Misaki) (34˚42'N., 136˚58'E.), the S extremity of Tita Hanto(Chita Hanto), is located about 5 miles WNW of Tatuma Saki. The S coast of the cape is a red cliff and is easily identified. There is an observatory, 38m high, situated near the point.

Return to paragraph: 5.29

Nakayama Suido and Morosaki Suido lie between Tatuma Saki and Hazu Saki and will be discussed with Mikawa Wan.

From Hazu Saki, the W coast of Tita Hanto trends NW for 7.5 miles to Noma Saki (Hugu Saki), a conspicuous headland, then N in a gentle concave curve for 8.5 miles to Oniga Saki. From Oniga Saki the coast trends N 2 miles to the harbor limit of Nagoya Ko.

In Tita Hanto, a low range of hills lie, in a N to S direction. The hills in the S range from 100 to 130m high, with many pines, but they become lower toward the N and the pine trees become sparser. From Hazu Saki to Noma Saki the coast is primarily rocky; N of Noma Saki the coast is a sand beach, with a sand bar extending from 2 to 3 miles offshore in places. Hiro Se, a sandbar with a least depth of 2.1m, lies 5.5 miles NNW of Noma Saki and Toga Se, a sand bar with a least depth of 1.8 lies 2 miles farther N. The 20m curve lies about 0.5 mile off Noma Saki and as much as 3.25 miles offshore between Noma Saki and Oniga Saki.

Ise Wan—West Side

5.22 The W side of Ise Wan between Toba Ko and Yokkaichi Ko, 30 miles NNW, deeply penetrates the coastline; Oguchi Wan is located near the center. The coast is low and flat, with white sand and many pine trees. Mountains of almost the same height are located about 11 miles inland, and landmarks are few. The 20m curve lies up to 5 miles off this coast and a sandbar extends 2 miles offshore, about 11.5 miles NW of Toba Ko.

There is no safe berth for large vessels in strong E winds along the coast.

Uji-Yamada Ko (34˚31'N., 136˚45'E.), a small port at the mouth of the Seta Kawa is situated about 5 miles WNW of Toba Ko, and is available to vessels with local knowledge.

Anchorage can be taken off the port, according to draft, but strong E winds are sometimes experienced in the spring and autumn. Anchorage can also be affected by the tidal currrent in the area.

Between Uji-Yamada Ko and Yokkaichi Ko, about 26 miles NNW, there are several fishing ports, and numerous rivers flow into the bay. The ports and rivers are marked by lights.

5.23 **Matsusaka Ko** (Matsusaki Ko) (34˚36'N., 136˚34'E.) (World Port Index No. 61495), situated at the head of Oguchi Wan, about 11 miles NW of Uji-Yamada Ko, is designated an important port. This is a dredged port, sheltered by breakwaters. The port is open NNE and is entered through a channel dredged to a depth of 7.5m the E side of the basin within the breakwater is dredged to the same depth. A wharf, 300m long, in the SE part of the harbor has a least depth of 7.1m alongside.

Pilotage.—Pilotage is compulsory for vessels over 10,000 grt. For daytime service only, pilot comes from the Moro Saki Pilot Station.

Anchorage.—Anchorage is available off the harbor, according to draft, in depths from 7 to 12m, with a mud bottom, good holding ground, although swells may be high when a N wind prevails.

The N mouth of the Kumozu Gawa empties into Ise Wan 3 miles N of Matsusaka Ko. A light is shown on the head of a breakwater on the S side of the river.

5.24 **Ikuratsu Ko** (Igurazu Ko) (34˚41'N., 136˚33'E.) (World Port Index No. 61498), built on reclaimed land close N of Komozu Gawa, consists of a basin about 0.4 mile square, with wharves on three sides and a breakwater protecting its NE side. A light stands at the head of the breakwater. There are depths of about 5.2 to 9.4m in the basin. The harbor limit, shown on the chart, extends about 1.5 miles to seaward of the breakwater.

Tsu Ko (34˚42'N., 136˚32'E.) is an open and important port situated at the mouth of Iwata Gawa, 2 miles NNW of Ikuratsu Ko. This port, which is protected by a breakwater, has depth of 2 to 3m.

Anchorage.—Anchorage is provided 1.5 miles off the mouth of Iwata Gawa. The bottom is mud and affords good anchorage, even when N winds prevail. Southeast gusts during September must be carefully watched.

Yokkaichi Ko (Yokkaiti Ko) (34˚58'N., 136˚38'E.)

World Port Index No. 61490

5.25 This is an Open, Quarantine, Emigration-Immigration, and designated Special Important Port situated 10 miles WSW of Nagoya Ko. It is divided into three sections and is protected by breakwaters and an island of reclaimed land. There is an inner and outer harbor and offshore oil berths.

Winds—Weather.—During the winter WNW winds prevail and SE winds during the summer. Southeasterly winds may blow with great force during the typhoon season, from August to October, causing vessels at anchor to drag. As the prevailing NW winds of winter come off the land, vessels at anchor are not endangered by them.

Tides—Currents.—The mean range of tide is 1.4m and the spring range is 1.8m. The tidal currents in the harbor do not exceed a rate of 0.5 knot and turn at the times of HW and LW.

Depths—Limitations.—Passage I leads into the inner section of the S part of the harbor: it has a dredged depth of 12m, and is 300m wide. This passage leads to alongside berths that will accommodate vessels with a draft of 3 to 8.5m, and up to 25,000 dwt at Wharf No. 1, Wharf No. 2, and Wharf No. 3. Umakosi Passage, 200m wide with a 12m depth, leads NW from the W end of Passage I. There are two buoy berths on the W side of Umaokosi Passage that will accommodate a vessel with a draft of 10.9m and of 65,000 dwt, between Buoy No. 1 and Buoy No. 2, and a vessel with a draft of 9m and of 15,000 dwt, between Buoy No. 2 and Buoy No. 3.

The Showa Sekiyu Company Sea Berth No. 1 and Sea Berth No. 2 are situated in the SE approach to Passage I; Sea Berth No. 1 is situated about 2.5 miles offshore and will accommodate a vessel with a draft of 19.9m and of 275,000 dwt. Sea Berth No. 2, about 0.6 mile W of Sea Berth No. 1, will accommodate a vessel with a draft of 16.57m and of 170,000 dwt. A submarine pipeline extends from Sea Berth No. 1 to the shore.

Daikyo Sea Berth, belonging to Tokyo Sekiyu Company, is also an SBM, and is situated 1.25 miles NNE of Showa Sekiyu Sea Berth No. 1. This berth will accommodate a vessel of 18.9m draft and of 230,000 dwt. Circular areas, with a radius of 0.16 mile centered on buoys of all three sea berths, are designated as prohibited areas.

Table of Contents

Submarine pipelines are laid from these sea berths W and NW to the coast. Vessels should refer to the chart for the exact location of these.

Passage II leads to Section III in the inner harbor and has been dredged to a depth of 12m; it is 300m wide. There are two oil piers within this section that will accommodate a vessel of 10.5m draft and of 60,000 dwt and 90,000 dwt, respectively.

An island of reclaimed land, Kasumiga Ura, extends N of Section III, on the N side of the dredged channel. A pipeline bridge, with a clearance of 21m, extends from the SW extremity of the island S to the mainland. Lights are shown to indicate the channel beneath the bridge. The island has a bridge to the mainland about 1 mile N of the pipeline bridge. A breakwater, with a light at its N end, lies within a prohibited area 0.4 mile E of Kasumiga Ura.

Ocean Berth, with a reported depth alongside of 14m, lies at the E end of the S side of Kasumigaura. LPG vessels up to 68,000 dwt, with a maximum length of 260m and a maximum draft of 11m, can be accommodated.

A prohibited area as indicated on the chart lies on the NE side of NE Kasumigaura. A container berth with a depth of 12m is situated on the NE side of the island. It will accommodate a vessel with a draft of 10.9m and of 25,000 dwt. There is a berth E of the container berth that will accommodate a vessel of 10.9m and of 40,000 dwt. Lights are shown on the NE corner of the island. These two berths are approached through a buoyed channel dredged to a depth of 12.8m (1997).

Another buoyed channel, dredged to a depth of 7.5m (1976), leads to berths on the NW side of the island with depths from 4.5 to 7m.

An LNG pier, with a dredged depth of 14m alongside and an approach channel dredged to a depth of 14m, is located close N of the dredged channel leading to the container wharf.

Aspect.—A chimney 186m high is situated on the W side of the Kasumiga Ura reclaimed land. There are innumerable chimneys and tanks within the port area, whose positions are charted, that are good marks.

Pilotage.—Pilotage is compulsory for vessels exceeding 10,000 grt. Vessels are requested to cable the agent in advance, at least 24 hours advising ETA at pilot station. The pilot boarding area for vessels enroute:

1. Yokkaichi Ko—3 miles E of the breakwater.
2. Ise Wan Sea Berth—4 miles S of the Ise Wan Sea Berth.
3. Showa Sea Berth and Cosmo Sea Berth—3.25 miles SSE of Showa Sea Berth.
4. Showa Oil No. 1 Berth, Showa Oil No. 2 Berth, and Daikyo Oil Berth—A 1-mile diameter circle, with a center bearing 200˚, distant 3 miles from the Ise Wan Sea Berth.

Vessels requiring a pilot should give 24 hours notice. Vessels berth during the day only and can unberth anytime; however tankers are restricted to daytime berthing. Pilots are not available after 2100 for vessels entering the port.

Yokkaichi Port Radio may be reached on VHF channel 16.

Regulations.—There are two traffic routes (No. 1 Traffic Route and No. 2 Traffic Route) and three channels in this harbor. No. 1 Traffic Route runs from the W side of the quarantine anchorage to Section I, and connects with No. 2 Traffic Route. No. 2 Traffic Route runs to Gaki Pier in the NW. Navigation control is in effect in No. 1 Traffic Route and No. 2 Traffic Route. Vessels navigating in the traffic routes must follow the navigation control signals given out by each signal station.

In the N part of the port, there are three channels leading to Gaki Pier, Kasumigaura Wharf, and Fuso Wharf. These channels and the traffic routes are marked by lighted buoys.

Vessels without spark arrestors on the stacks, vessels using open fires, and vessels with inadequate fire control equipment may not approach within 30m of any tanker carrying dangerous inflammable cargo when it is moored within the harbor. This does not apply to vessels that have received special permission from the harbormaster.

Tankers carrying dangerous inflammable materials should display a banner visible at night, reading "Dangerous Inflammable Cargo Aboard," when moored in the harbor.

Signals.—Anchorage and navigation control signals are provided by the Yokkaichi Bohatei Signal Station, on the Yokkaichi Ko Breakwater and the Yokkaichi Signal Station, on the roof top of the Komukyoku Chosha building at Seawall No. 6.

The following traffic signals are shown:

1. Black cone, point up (by day), green light (by night)—Inbound traffic and outbound vessels of less than 500 grt in Passage I and Umaokosi Passage may proceed.
2. Black cube or red light—Outbound traffic in Passage I may leave. Outbound vessels of more than 500 grt in Umaokosi Passage should stop; vessels of less than 500 grt may leave. Inbound vessels of more than 500 grt should stop in the outer part of Passage I and keep clear of outbound traffic; vessels of less than 500 grt may enter by either passage.
3. Black cube above a square red flag or two red lights, vertically disposed—Outbound traffic in Umaokosi Passage may leave. Outbound vessels of more than 500 grt in Passage I should stop; vessels of less than 500 grt may leave. Inbound vessels greater than 500 grt should stop in the outer part of Passage I and keep clear of outbound traffic; vessels less than 500 grt may enter by either passage.
4. Two black cones, points together, above a square red flag or a green light above a red light—Inbound and outbound traffic are prohibited.

Berthing signals and anchorage signals are also displayed from these signal stations. These signals consist of a designation flag and alphabetical or numerical flags of the International Code of Signals. The designation flag is a red square flag with two white squares, one in the middle of the upper edge and one in the middle of the lower edge.

For anchoring, the designation flag above the following flags means:

1. E flag—Anchor in East Anchorage.
2. W flag—Anchor in West Anchorage.
3. P flag—Anchor in Section III, except in East Anchorage or West Anchorage.

The vessel replies with the Answering Pennant above the alphabetical flag of the berth.

For berthing, the berthing flag above the numerical and/or alphabetical flags of the International Code of Signals indicates the alongside berth which has been allocated. The vessel replies with the Second Substitute above the alphabetical and numerical flags of the berth.

Anchorage.—The quarantine anchorage, about 0.3 mile in radius, is situated close S of the entrance to Passage I, 0.6 mile SE of the head of Asahi Breakwater. Depths in the anchorage

Photo courtesy of Nagoya Port Authority

Nagoya Ko—Kingo Pier

are from 11.4 to 14.2m, mud bottom. Vessels carrying dangerous materials can anchor in the designated areas in Section No. 2 and Section No. 3.

Caution.—Vessels are prohibited from entering the areas within a 300m radius of each of the three sea berths. The other prohibited areas within the harbor are 0.9m NE of the NE end of the E breakwater; the E side of Quay 25 of Kasumiga Ura South Wharf; and the area NE of Tomifuta Wharf.

5.26 From Yokkaichi Ko to Nagoya Ko, the coast trends NE 8 miles to the mouth of the Kisko Gawa, which is on the W side of Nagoya Ko harbor limits. Ibi Gawa flows into the head of the bay close W of Kisko Gawa and mud flats extend S 2 miles from the mouth of each of these two rivers. A groin extends S from the W bank of the rivers.

Ise Wan Sea Berth (Idemitsu Toa Sea Berth) (34˚55'N., 136˚44'E.) is situated near the center of Ise Wan, 4 miles ESE of Yokkaichi Ko Breakwater. It is a dolphin berth aligned on a N to S axis about 80m long, and 26m deep that will accommodate two tankers up to 310,000 dwt. It is marked by numerous lights, a siren, and a radar reflector. The berth is protected by a submersible oil boom. A submarine pipeline extends NE from the berth to the oil refinery at Nogoya.

Nagoya Ko (35˚04'N., 136˚52'E.)

World Port Index No. 61480

5.27 Nagoya Ko is designated a Special, Open, Quarantine, Emigration-Immigration, and Special Important Port. The harbor has been excavated out of the shallow flat that occupies the head of Ise Wan, and consists of an outer harbor and an inner harbor. The port is divided into six districts.

A storm tide breakwater, about 2.8 miles long, stretches NW across the mouth of the bay; its position may be seen on the chart. There are two openings in the breakwater; the E opening is about 0.18 mile wide while the W opening is about 0.1 mile wide. Dredged channels lead through each of the openings.

Winds—Weather.—During the winter, W winds frequently prevail in the port, but the strongest winds blow from the NW. The mean wind velocity is about 6 knots, with an average of 10 days of gale force winds from the NW in March.

Table of Contents

Photo courtesy of Nagoya Port Authority

Nagoya Ko—VTS Signal Information Center

The months with the greatest number of days of rain are March through September, which average 11 days each. The months of January and February average 7 days of snow each.

Tides—Currents.—The flood tide current sets inward and the ebb sets outward. In general, the flow of the current follows the direction of the channels. At the main entrance of the High Tide Breakwater the tide changes 35 minutes earlier than at Irago Suido and 30 minutes earlier than that at the secondary entrance.

The mean velocity at spring tide is 0.7 knots at the main entrance of the High Tide Breakwater and 1.3 knots at its secondary entrance.

When the declination of the moon is great, two flood tidal currents and two following ebb tidal currents show an equal disparity. A flood current immediately following a low tide and an ebb tidal current preceding it are stronger than other currents. This strong flood current occurs during the day in summer and fall, and at night in winter and spring.

Depths—Limitations.—The port is divided into six sections. There are three designated traffic routes; Naiko, Gaiko No. 1, and Gaiko No. 2.

East Passage, the main ship channel commencing 3 miles outside the breakwater, is dredged to a depth of 14m. West Passage, to the NW of East Passage, is dredged to 12m from about 2 miles SW of the breakwater, to 14m in the vicinity of the breakwater, and then to 12m inside the breakwater.

In the outer harbor are oil piers with dredged depths of 14m. There are dolphin berths here with submersible oil booms. Reclamation work has been reported (1992) S of the oil refinery. Vessels up to 100,000 dwt can be accommodated at the inner harbor, and vessels up to 250,000 dwt can be berthed at the outer harbor.

The outer harbor also has general cargo berths with depths ranging from 3.5 to 12m, timber wharves with depths of 10m, grain terminals, with depths alongside ranging from 13.5 to 15m, and Nagoya Container Wharf, with depths alongside of 10 and 12m.

The inner harbor contains berths for general cargo, car, fertilizer, and coal vessels. The depths alongside range from 5 to 10.4m on the N side, 10 to 14m at the Garden Wharf, 7.5 to 10.5m on the W side, and 7.5 to 9m on the E side.

New wharfage has been completed S of Inaei Wharf No. 2, with depths of 8.7 to 9.2m alongside its N face and depths of 6 to 10.4m alongside its S face.

The Naiko Traffic Route runs between the SW part of Naiko Hakuchi and the SE end of the Kinzyo Wharf. The Gaiko No. 1 Traffic Route runs from the S entrance of the Naiko Traffic Route to the harbor limit. The Gaiko No. 2 Traffic Route runs from the N part of the No. 1 Traffic Route to the lumber pool.

These routes are indicated by lighted buoys and navigation control is in effect in this area. Vessels should navigate with caution and follow the navigation control signals given out by the signal stations.

Vessels should refer to the following table of signals for designation of anchorage or assignment of mooring signals.

Pilotage.—Pilotage is compulsory for vessels of 10,000 grt and over and is recommended for all vessels. A request for a pilot should be made at least 10 hours prior to arrival. Pilots will board from an orange painted boat with the letters PILOT on the hull.

Vessels of 20,000 grt or over, or vessels with length overall of 200m or over, will embark the pilot in a position 2.25 miles SW of Ise Wan Light (34˚56'N., 136˚48'E.).

Vessels may sail at any hour but entry is only permitted from sunrise to sunset.

Nagoya Port Radio may be contacted on VHF channels 12, 18, and 20, in addition to VHF channel 16.

Regulations.—In addition to regulations for specified harbors, the following regulations are in force for Nagoya Ko:

1. Vessels of 20,000 grt or more, and tankers of 5,000 grt or more, shall report to the Captain of the Port their ETA at the entrance to Outer Harbor Fairway No. 1 by noon on the preceding day. An advanced report should be sent to Nagoya Harbor Radar by VHF channel 12 or 16 to Nagoya Hoan (JNT) or by telephone/fax to Nagoya Harbor Radar.
2. A vessel using Outer Harbor Fairway No. 1 has the right of way over a vessel using Outer Harbor Fairway No. 2.
3. Vessels of 500 grt or more shall display the International Code pennan t above pennant 1 to indicate they have right of way over vessels of less than 500 grt.
4. Overtaking is permitted in the fairways, provided there is adequate sea room, except within 500m of a junction or a bend. An overtaking vessel shall sound one prolonged blast followed by one short blast, if passing on the starboard side of the overtaken vessel, and one prolonged blast followed by two short blasts, if passing on the port side of the overtaken vessel.
5. Vessels intending to leave port shall report their ETD to the Captain of the Port, by noon of the previous day.

Nagoya Traffic Advisory Service (TAS) provides vessels with information, controls traffic routes, and ensures safe navigation. The following vessels should report to Nagoya Harbor Radar, on VHF or by telephone, when passing the Reporting Points:

1. All vessels of 5,000 gross tons and over.
2. All vessels of 500 gross tons and over when departing from the Kinyo area.

The report should include the following information:

1. Vessel's name and gross tonnage.
2. Time passing Reporting Point or navigation start time.
3. Abbreviation of Reporting Point—only when entering port.
4. Name of wharf or location of anchorage.
5. Name of seaway transiting.

Reporting Point	Abbreviation	Description
Nagoya West	NW	A line bearing 000˚ and extending 6,100m from Ise Wan Sea Berth Light (34˚55'25"N., 136˚46'36"E.) and a line bearing 180˚ and extending 3,600m from the Sea Berth Light.
Nagoya South	NS	A line bearing 270˚ and extending 4,500m from Togase North Lighted Buoy (34˚53'30"N., 136˚47'33"E.).

Signals.—Traffic signals, described in the accompanying table, are shown from the signal stations on the SE end of Middle Breakwater and at the Harbor Office

Vessels sailing at night and intending to use the Inner Harbor fairway shall sound three prolonged blasts 15 minutes before getting underway.

A vessel of 500 grt or more, when leaving harbor, shall display one of the following signals:

1. If proceeding by Outer Harbor Fairway No. 1—Flag E below the First Substitute of the International Code.
2. If proceeding by Outer Harbor Fairway No. 2—Flag W below the First Substitute of the International Code.

Traffic Signals		
Day Signal	**Night Signal**	**Meaning**
A white flashing light every 2 seconds, or a black cone.	A white flashing light every 2 seconds.	Inbound traffic and outbound vessels of less than 500 grt may proceed. Outbound vessels of more than 500 grt should stop, except those in the Outer Harbor fairways at night, which may proceed.
A red flashing light every 2 seconds or black cube.	A red flashing light every 2 seconds.	Outbound traffic and inbound vessels of less than 500 grt may proceed. Inbound vessels of more than 500 grt should stop and keep clear of outbound traffic, except those in the Outer Harbor fairways at night, which may proceed..

Table of Contents

Traffic Signals		
Day Signal	**Night Signal**	**Meaning**
Two green square flags, disposed vertically.	—	A vessel of more than 20,000 grt or a tanker of more than 5,000 grt is entering the dredged channel from one of the berths on either side of the Inner Harbor fairways. Inbound vessels should accordingly navigate with caution.
Two green square flags, disposed vertically.	—	A vessel of more than 20,000 grt or a tanker of more than 5,000 grt is entering the dredged channel from seaward. Outbound vessels should accordingly navigate with caution.
Two flags B of the International Code, disposed vertically.	—	A vessel of more than 5,000 grt is entering the channel, or shifting berth, from one of the berths on either side of the Inner Harbor fairway. All traffic should accordingly navigate with caution.
A light showing three red flashes and three white flashes every 6 seconds, or two black cones, points together, above a red square flag.	A light showing three red flashes and three white flashes every 6 seconds.	Inbound and outbound traffic prohibited except for the vessels with permission from the Captain of the Port.

If failure of the flashing light traffic signals occurs at night, the alternate light signals below will be used:		
Fairway	**Light Signal**	**Meaning**
Inner Harbor Fairways	Green light	Inbound traffic and outbound vessels less than 500 grt may proceed. Outbound vessels of more than 500 grt should stop.
	Red light	Outbound traffic and inbound vessels of less than 500 grt may proceed. Inbound vessels of more than 500 grt should stop and keep clear of outbound traffic.
Inner and Outer Harbor Fairways	Two green lights and two red lights, vertically disposed.	Inbound and outbound traffic prohibited, except for the vessels with permission from the Captain of the Port.

Berthing and anchoring signals are also displayed from the signal stations on the Middle Breakwater and at the Harbor Office. These signals consist of the Designation flag (a red square flag with two white squares on it, one in the middle of the upper and lower edge) above an alphabetical and/or numerical flag of the International Code of Signals.

Berthing and Anchoring Signals	
Signal	**Meaning**
2A	Moor between Buoy No. 2 and Buoy No. 3 in Section I.

Berthing and Anchoring Signals	
Signal	**Meaning**
3A	Moor between Buoy No. 3 and Buoy No. 4 in Section I.
4A	Moor between Buoy No. 4 and Buoy No. 5 in Section I.
5	Moor to Buoy No. 5 in Section I.
6	Moor to Buoy No. 6 in Section I.
8A	Moor between Buoy No. 8 and Buoy No. 9 in Section I.

Berthing and Anchoring Signals	
Signal	**Meaning**
9A	Moor between Buoy No. 9 and Buoy No. 10 in Section I.
10A	Moor between Buoy No. 10 and Buoy No. 11 in Section I.
11A	Moor between Buoy No. 11 and Buoy No. 12 in Section I.
12	Moor to Buoy No. 12 in Section I.
15A	Moor between Buoy No. 15 and Buoy No. 16 in Section I.
16A	Moor between Buoy No. 16 and Buoy No. 17 in Section I.
17C	Anchor with stern moored to Buoy No. 17 and bow headed NE in Section I.
19B	Moor between Buoy No. 19 and Buoy No. 20 in Section I.
20A	Moor between Buoy No. 20 and Buoy No. 21 in Section I.
21A	Moor between Buoy No. 21 and Buoy No. 22 in Section I.
22C	Anchor with stern moored to Buoy No. 22 in Section I, with bow headed NE.
50A	Moor between Timber Harbor Mooring Buoy No. 50 and Buoy No. 51 in Section IV.
51A	Moor between Timber Harbor Mooring Buoy No. 51 and Buoy No. 52 in Section IV.
52A	Moor between Timber Harbor Mooring Buoy No. 52 and Buoy No. 53 in Section IV.
53A	Moor between Timber Harbor Mooring Buoy No. 53 and Buoy No. 54 in Section IV.
54A	Moor between Timber Harbor Mooring Buoy No. 54 and Buoy No. 55 in Section IV.
55A	Moor between Timber Harbor Mooring Buoy No. 55 and Buoy No. 56 in Section IV.
59A	Moor between Timber Harbor Mooring Buoy No. 59 and Buoy No. 60 in Section IV.
60A	Moor between Timber Harbor Mooring Buoy No. 60 and Buoy No. 61 in Section IV.

Berthing and Anchoring Signals	
Signal	**Meaning**
1B	Anchor with two anchors within the area surrounded by the line drawn from the SE extremity of Area No. 9 (35˚02.8'N., 136˚52.5'E.) bearing 180˚ distant 290m, then bearing 263.5˚ distant 220m, then bearing 000˚ to the S side of Area No. 9.
2B	Anchor with two anchors within the area surrounded by the line drawn from the SE extremity of Area No. 9 bearing 180˚ distant 400m then bearing 295˚ distant 230m, then bearing 000˚ to the S side of Area No. 9.
3B	Anchor with two anchors within the circle, radius 300m, with its center bearing 088˚ distant 1,260m from the light at the SE end of Middle Breakwater.
4B	Anchor with two anchors within the circle, radius 400m, with its center bearing 022˚ distant 2,080m from the light at the SE end of Middle Breakwater.
5B	Anchor with two anchors within the area surrounded by the line drawn from a position bearing 144˚ distant 800m from the light at the SE end of Middle Breakwater, then bearing 214˚ distant 800m, then bearing 128˚ distant 250m, then bearing 066.5˚ distant 460m, then bearing 034˚ distant 400m, then bearing 305˚ distant 550m.

Vessels should reply with the Answering Pennant above the alphabetical and numerical flags of the berths.

Anchorage.—A quarantine anchorage in the form of a semicircle with a radius of 0.8 mile is centered about 2.3 miles SW of the E end of Middle Breakwater. The depths within the anchorage range from 11 to 16m mud, sand and gravel.

Inner anchorages are located in 2B, 3B, 4B, and 5B as shown on chart. Use of these anchorage is designated by the Port Captain.

Vessels should refer to the table containing the special signals for designation of anchorage and assignment of mooring facilities.

Anchoring is prohibited in the mouth of the Hori Kawa and the NE side of High Tide Breakwater.

Mikawa Wan

5.28 Mikawa Wan (34˚45'N., 137˚03'E.), with its branches of Atumi Wan (Atsumi Wan) and Tita Wan (Chita Wan), lead off the E side of Ise Wan between Tatuma Saki and Hazu Saki, about 5 miles WNW. From its entrance, Mikawa

Table of Contents

Wan trends ENE for about 17 miles to the head of Atumi Wan, and a slightly lesser distance to the head of Tita Wan.

The entrance to Mikawa Wan is divided into two main entrances by a chain of islands that extends in a NNE direction from No Shima, an island 3 miles W of Tatuma Saki, for a distance of 5 miles. Nakayama Suido, the E passage, leads into Atumi Wan and Morosaki Suido, the W passage, leads N into Tita Wan.

Depths—Limitations.—Inside the bay the bottom is almost flat with even depths which do not exceed 20m, except near the entrance. The sea bottom is mud and sand, which provides good anchorage.

Pilotage.—Pilots for any part of Mikawa Wan are available at Morosaki Ko, a shallow cove on the W side of Morosaki Suido, close N of Hazu Misaki. Pilotage is compulsory.

Anchorage.—Anchorage can be taken in Mikawa Wan where the depths are suitable; the bottom of mud and sand affords good holding ground. Kinuura Ko, in the N extremity of Tita Wan, is the best anchorage within Mikawa Wan.

Nakayama Suido

5.29 Nakayama Suido (34˚39'N., 137˚02'E.) has a least width of 2.5 miles between No Shima and Atumi Hanto. This is the principal channel used by vessels bound for Atumi Wan.

The deepest passage through Nakayama Suido is entered about 0.8 mile NW of Irago Saki Light, and is marked both by buoys and range beacons. This passage runs nearly parallel to Atumi Hanto for a distance of nearly 3 miles then alters to the N. A depth of 18m can be carried through this passage.

Tides—Currents.—Tidal currents in Nakayama Suido flow NE and SW. The flood current from the LW at Nagoya to HW at Nagoya, and the ebb current flows from HW to LW at Nagoya. The maximum flood and ebb current is 1.5 knots.

Caution.—Tono Se, previously described in paragraph 5.21, lies near the middle of Nakayama Suido. There is a sand bar, with a least depth of 8.6m, centered about 2.8 miles NNW of Irago Saki Light. The sand bar is about 1.5 miles long in a N and S direction. There are fishing reefs charted in the passage.

Atumi Wan (Atsumi Wan)

5.30 Atumi Wan (Atsumi Wan) (34˚44'N., 137˚10'E.) is entered between Tatuma Saki and Ikuta Hana, 7.25 miles NNW; this arm of Mikawa Wan trends ENE almost 14 miles to the drying flats, where Toyo Gawa flows into the bay.

The S shore of Atumi Wan is formed by Atumi Hanto, and the E and N shores are formed by the mainland. Close within the coast of Atumi Wan the hills rise to a height of 279m. The N coast is fringed by mountains; Goi Yama (Goi Zan) rises to a height of 454m about 2 miles within the NE part of the bay.

Atsumi (34 40'N., 137 04'E.) is a tanker discharging port located 0.5 mile ENE of Tatsuma Saki. Vessels up to 79,900 dwt, with a maximum length of 253m, can be accommodated. There is a limiting draft of 12.5m at this berth.

The bay narrows between Hime Shima, a rocky islet 62m high that lies 1 mile off the S coast, and Hashida Hana, 5 miles NNW.

The 10m curve lies up to 1.5 miles off the S coast of the bay, about 4.5 miles off the head, and 2.5 miles off the N coast. There are no dangers charted outside the 10m curve.

Fuke Ko (Hukue Ko) (34˚39'N., 137˚07'E.) is entered 2.5 miles ESE of Tatsuma Saki. The depths in the approach to the harbor are less than 5m.

Although Fuke Ko is extensive, its greater part is obstructed by drying banks of mud, sand, or pebbles and local knowledge is essential.

About 1.5 miles E of the E entrance to Fukue Ko lies Izumi Ko, a small harbor protected by two breakwaters displaying lights. Fish havens lie 0.1 mile N and 0.9 mile NW respectively of Izumi Ko.

Tahara Ko (34˚42'N., 137˚16'E.), located 5.5 miles ENE of Izumi Ko. Reclamation has taken place S and SE of Hime Shima. On the N side of the basin breakwater extend NNe from the E side of Hime Shima and W from the W point of Midorigahama. A unmarked channel dredged to 10m leads SE from close WSW of Lighted Buoy No. 2 to the breakwaters. Harbor Law is applicable. A light stands on the head of a short breakwater 1.25 miles SSW of Hime Shima. A spoil ground is situated in the NE part of the basin.

A quarantine anchorage is centered 2 miles NW of Hime Shima.

Take Shima is 42m high to the tree tops, and lies within the port area of Gamagori. It lies close SE of the entrance to the inner basin and is connected to the shore NNE by a causeway.

5.31 Toyohasi Ko (Toyohashi Ko) (34˚43'N., 137˚18'E.) (World Port Index No. 61465) is a harbor being constructed on reclaimed land in the SE extremity of Atumi Wan. Harbor Law is applicable to this port situated NE of Tahara Ko. This is an Open and Immigration-Emigration Port.

Depths—Limitations.—The entrance to the approacch channel to Toyohashi Ko is situated 2 miles WNW of Hime Shima. From its entrance the channel, marked by lighted buoys, leads ENE for 3.5 miles and then ESE to the harbor entrance, it is dredged to 12m.

Jinno North detached breakwater is situated N of the turning point in the approach channel; a light is shown from its SW extremity. Another detached breakwater is located SW of the turning point.

Berth No. 1 to Berth No. 4 lie at Jinno Wharf on the N side of the channel leading E of the harbor entrance. No. 4 Quay has the capacity to accept vessels of up to 30,000 dwt and has depths of 10m alongside. Funato Wharf, a private quay with depths of 5.5m alongside, lies on the S side of the channel opposite Jinno Wharf.

A channel extends S from a position about 3 miles ENE of Hime Shima and is dredged to a depth of 10m. Sogo Kaihatsu Akemi Quay No. 1 to Quay No. 6 lie on the E side of the channel leading S from the harbor entrance. There are depths of 12m alongside Quay No. 3, Quay No. 4, and Quay No. 5.

Berth T1 to Berth T3, dredged to 10m, are on the W side of the channel. A pair of mooring buoys suitable for a 10,000 grt vessel lie at the head of this channel. At the N end of this dredged channel, there is a patch with a least depth of 9.6m. An overhead cable spans the S channel; it has a vertical clearance of 52m.

Pilotage.—Pilotage is compulsory for vessels exceeding 10,000 grt. Pilots board near Ise Buoy No. 1 (34˚30'48"N., 137˚03'48"E.). Pilotage is not compulsory for vessels under 10,000 grt. Harbor pilots are available if required at the anchorage or at Gamagori quarantine anchorage.

Caution.—Depths in the N part of the harbor may be as much as 1.3m less than charted. A overhead power cable with a verticle clearance of 54m spans the channel abreast Quay No. 6. A submarine pipeline is laid across the channel at the S end of Quay No. 1.

5.32 Miya Ko (34˚48'N., 137˚15'E.), an important fishing harbor, is situated in the NE section of Atumi Wan, 5.5 miles NNW of Toyohasi Ko. The port is protected by breakwaters. There are berths with depths up to 4.5m alongside. The entrance to the port is 80m wide and 3.5m deep. A power cable, with a vertical clearance of 12m, crosses the entrance to the port.

Gamagori Ko (34˚48'N., 137˚13'E.) (World Port Index No. 61475) is backed by a large industrial area and is situated 2 miles W of Miya Ko. This is an Open, Quarantine, Emigration-Immigration, and designated Important Port. Harbor Law applies here.

Depths—Limitations.—A dredged channel, 10m deep, connects an area 2.2 miles ESE of Hashida Hana to the Gamagori Wharf. Another dredged channel, 10m deep, runs from the N side of the main channel to the Hamacho Wharf, 1 mile NW. Both channels are marked by buoys.

The depths alongside Hamacho Wharf are 7.5tyo 10m. Alongside Take Shima Wharf, the depths range from 6 to 7.5m. The depths alongside the wharves at Gamagori range from 5.5 to 10m, for vessels of 2,000 to 15,000 dwt.

Tosai Oil Terminal and Nihon Sekiyu are two private dolphin berths situated at the S end of the reclaimed area, with a depth of 4.5m and 6.3m, respectively.

Pilotage.—Pilotage is compulsory and available for vessels over 10,000 grt. The pilot boards near the Ise Buoy No. 1, located at position 34˚30.8'N, 137˚3.8'E.

Anchorage.—A quarantine anchorage with a radius of 0.33 mile is situated 2 miles SE of Hashida Hana. The depths range from 9.5 to 11.6m, mud bottom.

Anchorage can be found inside the breakwater, in a depth of 4m, mud. Outside the breakwater is good anchorage on the W side of the center of the harbor between Take Shima and O Shima. The depth here is 6m. When the W winds prevail, during the winter, it is safer to anchor on the E side of O Shima.

5.33 Katahara Ko (34˚47'N., 137˚12'E.), situated close SW of Gamagori Ko, is a fishing harbor protected by two breakwaters. A light stands at the head of each breakwater. Another breakwater, with a light on its E head, lies 0.25 mile S of the fishing harbor, and a detached breakwater 0.3 mile long lies to seaward of the above three breakwaters. A light stands at the S head of the detached breakwater. The depths within the harbor range from 1.7 to 3.5m.

Hashida Hana (Hasida Hana) (34˚46'N., 137˚10'E.), consisting of black rocks, is located at the SW extremity of a peninsula, 2 miles SSW of Katahara Ko. A number of resort hotels are situated within the point.

From Hashida Hana, the coast is indented by a number of coves which have several fishing harbors that are protected by breakwaters. The E entrance point to Yosida Ko lies 4.25 miles W of Hashida Hana.

Yosida Ko (Yoshida Ko) (34˚47'N., 137˚05'E.) lies on the W side of the mouth of the Yasaki Gawa; there is a fishing harbor here.

From Yosida Ko to Ikuta Hana, 2.5 miles W, the coast is low and fringed with a stone embankment.

5.34 Morosak Suidoi (Morosaki Suido) (34˚41'N., 136˚59'E.), the principal entrance to Tita Wan, leads in N between Tita Hanto on the W and the chain of islands on the E side.

Tides—Currents.—The tidal currents in Morosaki Suido, as observed after a full moon in September, set N on the flood and S on the ebb. A maximum rate of 2 knots on the flood was observed about 3 hours after LW at Sino Shima, and the maximum rate of the ebb, 1.75 knots, occurred about 4 hours after HW at the same place. The turn of the current coincided with the times of HW and LW at Sino Shima and the periods of slack water were of short duration.

Depths—Limitations.—The fairway has a least width of 0.3 mile between the 20m curves. There is a fishing reef charted in the channel 0.5 mile ENE of Hazu Misaki, and a patch with a depth of 1.3m lies 0.2 mile NNW of the fishing reef, in the most narrow part of the channel.

Pilotage.—Pilotage is compulsory for vessels of 10,000 grt or more passing through Morosaki Suido. Pilotage is also strongly recommended for all foreign vessels passing through Morosaki Suido at night and for all vessels unfamiliar with the passage.

Caution.—Mariners are advised that many regular ferry services cross the narrows daily. Many other irregular ferry services and small boats also cross the narrows, especially on weekends and holidays. Large fleets of fishing boats move in and out of the narrows, concentrating before sunrise and sunset.

5.35 Tita Wan (Chita Wan) (34˚47'N., 136˚58'E.)**, f**rom its entrance between Hazu Misaki and Ikuta Hana, a distance of 5.5 miles, penetrates the coastline 15 miles. The N half of the bay is occupied by Kinuura Ko. The W shore of the bay is formed by Tita Hanto and the E shore is formed by the mainland N of Ikuta Hana.

The W side is backed by a range of low hills, sparsely covered with trees. The S part of this side is fringed with a bank, with depths of less than 5.5m, which extends about 0.5 mile offshore in places. The S part of the E side of Tita Wan consists mostly of stone embankments, and on this side are the shallow mouths of several rivers; the coastal bank, with depths of less than 5.5m, extends from 0.75 to 2.5 miles offshore in places. The whole of Tita Wan N of the parallel of latitude 34˚48'N. is within the harbor limit of Kinuura Ko.

Depths—Limitations.—General depths of 9.1 to 18.3m prevail in the fairway of the S half of Tita Wan.

Anchorage.—A quarantine anchorage with a radius of 0.33 mile is situated near the center of the fairway on Kinuura Ko's S harbor limit.

Table of Contents

Morosaki Ko (34˚42'N., 136˚59'E.) is located immediately N of Hazu Misaki on the SE extremity of Tita Hanto. A light stands at the head of a jetty inside the harbor and also on the detached outer breakwater 0.19 mile N. Northwest winds are prevalent from November through March. East to ESE winds are frequent from May through September.

Kinuura Ko (34˚51'N., 136˚57'E.)

World Port Index No. 61470

5.36 Kinuura Ko is a Special, Open, Quarantine, Emigration-Immigration, and Important Port occupying the N half of Tita Wan. The harbor lies on both banks of the Sakai Kawa (Sakai Gawa) which discharges into the bay. A dredged channel extends 6 miles NNE from the outer breakwaters. The port is subdivided into 13 areas. Even numbered areas are situated on the E side of the channel; odd-numbered areas are situated on the W side of the channel.

To the E of the port lie flatlands where Yahagi Kawa discharges into the bay. On the W side are the low mountains of Tita Hanto, which run N and S.

Depths—Limitations.—At the entrance between the breakwaters there is a width of 0.2 mile between the 10m curves. A channel dredged to 12m extends N into the harbor from the breakwaters for a distance of 7 miles; at this point the harbor is constricted wharves to a width of about 0.2 mile. Another channel, dredged to 10m, leads NW to Coal Wharf Quay and a steel works wharf from a position 0.5 mile NNE of Lighted Bouy No. 3 and Lighted Bouy No. 4. At the Central Wharf the depths alongside the quays range from 4 to 12m. Depths at the dolphin berths range from 7.5 to 12m. The two tanker terminals have depths alongside of 9m and 13m. The public wharves can accommodate vessels of up to 40,000 dwt. There are numerous private quays with depths up to 12m capable of accommodating vessels up to 45,000 grt, on both sides of the harbor.

Aspect.—A chimney, 204m high, marked by red obstruction lights, stands on the W shore 0.2 mile N of the foot of the W breakwater. A breakwater have been completed in the harbor. A light is shown from the head of the breakwater. There are numerous chimneys on either shore of the harbor.

Pilotage.—Pilotage is compulsory at the port and in Irago Suido Traffic Route for vessels exceeding 10,000 grt. The pilot boards off Irago, off Morosaki, and at the quarantine anchorage. Pilots are available from the Irago-Mikawa Bay Pilot Association. Mikawa-wan Port Radio uses VHF channel 16 (calling) and VHF channels 11 and 12 (working).

Anchorage.—The quarantine anchorage, at the line marking the Harbor Limit, has depths of 12.8 to 14.8m, mud bottom.

Caution.—A starboardhand lighted buoy marks the limit of shoal water 0.3 mile SE of the above anchorage and a porthand lighted buoy marks the limit of shoal water 0.6 mile SW.

Hansu Hana to Daio Saki

5.37 Hansu Hana, about 1 mile SSE of Kaburako Saki, the W entrance point of Ise Wan, rises to a height of 118m close within the point. Ijika Light stands on Hansu Hana and is a good mark when approached from the S.

A large fish haven, 1.5 miles in diameter, lies 5.5 miles ESE of Hansu Hana.

From Hansu Hana to Daio Saki, 10 miles S, the coast is indented. Matoya Ko penetrates the coastline at its center. The mountains lie close inland, but conspicuous landmarks are few.

Depths along this coast are irregular; the 20m curve lies up to 1.8 miles offshore. The coast from Hansu Hana to Suga Saki (34˚22'N., 136˚55'E.), 4.25 miles S, is fronted by rocks reefs for a distance of 0.75 mile in places.

Matoya Ko (34˚22'N., 136˚55'E.) is entered between Suga Saki and Anori Saki, 0.65 mile to the S. The port entrance is narrowed to about 0.3 mile by reefs extending from both sides. The port is limited to vessels with local knowledge.

From Anori Saki, the coast trends generally S for about 5 miles to Daio Saki, the W entrance point of Enshu Nada.

This coast is fringed with dangers to a distance of 0.5 mile in places. A reef, with a depth of 5m, lies 1.25 miles offshore, 2.5 miles S of Anori Saki.

A submarine cable runs from Anori over to the vicinity of Irago.

Nakiri Ko (34˚17'N., 136˚54'E.) is a small fishing harbor, protected by breakwaters, situated on the N side of Daio Saki.

Daio Saki, located at the SE end of Shima Hanto, is a low rock-fringed point.

A light stands on the SE extremity of Daio Saki. A ramark transmits from the light; a radiobeacon transmits from a position 0.15 mile NNE of the light. Daio Shima (Daio Iwa), a rock 8.4m high, is located 0.38 mile E of Daio Saki. Swells break near Daio Shima when winds are strong or swells are high. Daio Shima is illuminated by a spotlight from Daio Saki. Fish havens lie 16.25 miles SSE and 20 miles SE, respectively, from Daio.

A voluntary Traffic Separation Scheme is in operation SE of Daio Saki. See Pub. 120, Sailing Directions (Planning Guide) Pacific Ocean and Southeast Asia for further information.

5.38 Kumano Nada (33˚55'N., 136˚30'E.) is formed between Daio Saki and Shiono Misaki, 75 miles SW, the S extremity of Kii Hanto. The coast forming the NW shore of Kumano Nada is for the most part indented, rocky, and faced with steep cliffs; the land gradually increases in elevation as the latitude decreases. Most of the inlets are small and exposed to both wind and sea.

From Daio Saki to Goza Saki, 7.5 miles W, the coast trends SW to Mugi Saki, 3 miles distant, then WNW along the S side of a peninsula to Goza Saki, the W extremity of the peninsula. Goza Saki rises to a height of 110m and is heavily wooded; it appears to be black, and is conspicuous from a distance.

Caution.—Kamino Shima (34˚12'N., 136˚49'E.), a rock that dries 1.2m, lies 3.25 miles SSW of Mugi Saki. A rock, with a depth of 3.7m, lies 0.3 mile SW of Kamino Shima. The water N of Kamino Shima to the peninsula is shoal; there are numerous rocks and islets located on the shoals.

Fuseda Suido, marked by lights and buoys, some of which are fitted with radar reflectors, leads through the shoal water in an E and W direction, about 0.8 mile from, and parallel to, the coastline. The navigable width of the channel is about 350m and the depth is greater than 6m. Only vessels of less than 700 grt, with local knowledge, use this regularly.

5.39 From Goza Saki to Aikuchi Hana, 24 miles WSW, the mountains are close to the shore and form a jagged coastline with many bays and inlets. In most areas cliffs face the ocean.

Along this coast the water is deep close to shore; the 10m curve lies within 0.3 mile of the coast. From Goza Saki to Meto Hana, there are no dangers beyond 0.6 mile of the shore, but from Meto Hana to Aikuchi Hana, there are many isolated islands and dangers off the shore.

Ago Wan (34˚17'N., 136˚47'E.) is entered between Goza Saki and Meto Saki about 1.5 miles N. The bay is open W and penetrates deeply to the E; there are many branches and islets in the bay. Although the bay is protected against winds it has several dangerous rocky, oyster beds, and fixed fishing nets, all of which narrow the traffic routes and make it suitable only for small vessels with local knowledge.

Anchorage.—Temporary anchorage can be found, in depths of 12 to 14m, in the entrance of Ago Wan, about 1 mile NE of Goza Shima. Vessels may shelter here from the winds except from winds between the S and W.

Hamashima Ko (Hamazima Ko) (34˚18'N., 136˚46'E.), protected by a breakwater on its SW side, lies close within Ago Wan's N entrance. A sand bar, with depths of 1.9 to 4m, is located in the entrance; only small vessels with local knowledge should attempt to use this harbor.

Mi Saki (34˚17'N., 136˚41'E.), approximately 3 miles WNW of Goza Saki, has many rocks and a heavily-grassed summit 72m high. A light, shown from a round concrete tower 12m high, is situated on a hill 0.25 mile N of Mi Saki.

Gokasho Ko (34˚18'N., 136˚41'E.) is entered between Mi Saki and Todomarino Hana, a low reef-fringed point almost 1.5 miles W. This port penetrates 4 miles to the N and is divided into three branches; Gokasho Ura in the E, Funakoshi Ura in the NW, and Hazama Ura in the W. These three branches are further divided into small inlets.

Katsura Shima (34˚18'N., 136˚41'E.), an island 83m high, is located close within the head of the bay, 0.9 mile NNW of Mi Saki. A breakwater, with an opening 73m wide, extends from the SE extremity of Katsura Shima to the mainland. A harbor with depths up to 10m is charted within the breakwaters.

Each of the three branches within Gokasho Ko affords good shelter for small vessels with local knowledge.

Caution.—Caution is necessary since the traffic route lies between fixed fishing nets and oyster beds; entry at night is particularly dangerous.

5.40 **Akaishino Hana** (Akaisi Hana) (34˚16'N., 136˚38'E.) lies about 1.5 miles SW of Todomari Saki; a white cliff is located about 0.4 mile WSW of its head. A heavily-wooded mountain, 311m high, rises 0.85 mile WNW of Akaishi Hana.

Several fish havens are situated 0.8 mile S of Todomari Saki.

Eboshi Hana, fronted by rocks to a distance of 0.25 mile, is located about 2 miles SW of Akaishi Hana. A mountain, 189m high, rises near Eboshi Hana.

Nie Wan, entered 1.5 miles W of Eboshi Hana, has a number of bays which are mostly used for oyster beds. A mountain, 228m high, on the E side and a mountain, 497m high with a sharp treeless peak, in the N interior, are good marks.

A shallow reef extends W toward the center of the bay from the E entrance; shoal water with rocks extends 0.5 mile S of the E entrance point.

Mie Shima (34˚15'N., 136˚33'E.), an islet 156m high, lies close S of the peninsula separating Nie Wan and Kamisaki Wan. Numerous rocks and shoals extend up to 0.25 mile S and E of the islet. An islet, 14m high, lies 0.3 mile W of the W extremity of Mie Shima.

Kamisaki Wan is entered between Mie Shima and a peninsula 1.5 miles W; it is encumbered with rocks and only vessels with local knowledge should enter it.

Hoza Ko (Hozaura Wan) (34˚14'N., 136˚31'E.), located 2 miles W of Mie Shima, is divided into two bays which are sheltered from all winds. These bays are used primarily for cultivating pearl oysters.

Kowa Ko (Kowaura Wan) is located 2 miles W of Hoza Ko and is divided into two bays at its head. It affords shelter for small vessels with local knowledge. The best berth is in a depth of 16m, mud, to the NW of an islet, 1m high, lying in the middle of Kowa Ko.

5.41 **Meto Hana** (34˚12'N., 136˚24'E.), the E entrance point of Nishiki Wan, is located 3.75 miles W of the entrance of Kowa Ko. Islets and rocks lie up to 1.3 miles S of Meto Hana and a similar distance S of the W entrance of Nishiki Wan.

Nishiki Wan has depths of 21m in its entrance and provides protection for small vessels with local knowledge. There are fixed fishing nets in the entrance from November through May.

Nagashima Wan (34˚11'N., 136˚21'E.) is open to the S. The small fishing harbor of Nagashima is situated on the W shore of the bay.

From Nagashima Wan to Aikuchi Hana, 4.75 miles SSW, the coast has many small inlets and is fronted by numerous rocks.

Caution.—O Shima (34˚09'N., 136˚22'E.) rises to a height of 90m, 3.25 miles NE of Aikuchi Hana; foul ground fringes the islet. Sabaru Shima, 4.4m high, lies 0.9 mile SSW of O Shima.

Numerous islets and rocks, the highest of which is Suzu Shima, 104m high and prominent, lie close off the coast 3.5 miles NW of O Shima.

A breakwater, with a light at its head, is situated 0.75 mile W of Suzu Shima.

Aikuchi Hana (34˚07'N., 136˚19'E.) has shoal water encumbered with rocks, extending about 0.2 mile E. There are a number of small islets inside the 20m curve, about 0.4 mile E of the E extremity of Aikuchi Hana.

From Aikuchi Hana, the coast trends about 9 miles S to Miki Saki. The mountains are close to the sea, along this coast, and the shoreline is primarily cliffs.

Odaigahara San, about 11 miles WNW of Aikuchi Hana, a tableland whose highest point is 1,695m high, is the most prominent mark along this coast.

Sawa Saki (34˚05'N., 136˚18'E.), approximately 2 miles SSW of Aikuchi Hana, has a steep cliff face, with a peak 180m high.

Two rock islets lie about 0.3 mile SSW of Sawa Saki; the W islet is 52m high.

Table of Contents

5.42 Owase Wan (34˚03'N., 136˚17'E.) is entered between Sawa Saki and Kuki Saki, 4 miles SSW. This large bay is surrounded by tree-covered mountains, which rise to a height of 618m on the S side.

There are many fixed fishing nets and oyster beds within the bay, and fishing boats operate at night between the entrance points. Vessels must proceed with caution when entering the bay.

Togasira Shima, 167m high, is a triangular shaped islet about 2.3 miles SW of Sawa Saki. The island is conspicuous from a distance due to its shape. A light stands near the NE extremity of the islet; a light is shown on the W end of the islet.

A small craft harbor, protected by an angled breakwater on its NE side, is situated 0.5 mile WNW of Moto Hana. A light is shown from the head of the breakwater.

Owase Wan has three bays that branch off the N side and one bay that branches to the W. Hikimoto Ko penetrates about 3.3 miles to the N. Owase Ko extends 2.25 miles W from the entrance to Hikimoto Ko.

Hikimoto Ko (34˚06'N., 136˚15'E.), the harbor limit of is a line drawn between Onaso Hana, a point 1.5 miles W of Sawa Saki, and Sabaru Shima, an island 0.85 mile SW of Onaso Hana. Harbor Law applies in this local port.

Nage Isi lies on the W side of the harbor limit 0.3 mile NNW of Sabaru Shima, and Warigame Shima, a low islet 35m high to the tree tops, lies 0.55 mile farther NW. Hira Se is a sunken rock, with a depth of 1.8m, that lies 350m W of Nage Isi. Most large vessels proceed between Warigame Shima and Nage Isi.

Depths of 23m can be carried to within 0.7 mile of the head of the bay. A breakwater extends E from the W shore of the bay, about 1 mile N of Warigame Shima. Vessels up to 1,000 grt may go alongside a seawall N of the breakwater.

Anchorage for vessels up to 2,000 grt may be taken 0.55 mile S of the head of the breakwater, in a depth of 30m, mud, good holding ground. South of this spot the harbor is affected by S and SE winds and swells.

Owase Ko (34˚04'N., 136˚13'E.)

World Port Index No. 61515

5.43 Owase Ko, the W extremity of Owase Wan, lies W of a line drawn from Moto Hana N to Sabaru Shima, then NW to Nage Isi and then to Ino Hana, a point NW of Warigame Shima. This harbor limit is a common limit with Hikimoto Ko, which lies to the NE. Harbor law applies to this Open, Quarantine, Immigration-Emigration, and designated Important Port.

The harbor is open to the E and surrounded by mountains on three sides. The public wharves are protected by breakwaters totalling 1,013m in length. The majority of vessels calling at the port are fishing and coastal vessels of less than 1,000 grt. There are five wharves, with depths of 4.5m alongsid,e mainly for fishing vessels up to 700 grt. Also, there are two wharves with depths of 5.5m alongside, for coastal vessels up to 2,000 grt. Berthing facilities for large tankers lie outside the breakwaters.

Winds—Weather.—During the summer, E winds prevail and when they are strong, heavy seas run into the port. In other seasons, W winds prevail. The months of December, January, February, and March average two stormy days each; the average daily wind velocity is 4 knots for these months.

Depths—Limitations.—The 20m curve lies 0.5 mile E of the W breakwaters. East of this curve, to the harbor limit, the depths vary from 21 to 41m. The Dolphin Oil berth can accommodate a vessel with a draft of 17m, and 100,000 dwt. The sea berth can accommodate a tanker of 21m draft alongside, and 210,000 dwt. The depths alongside the quays range from 1.5 to 4.5m. Toho Sekiyu Pier is situated at the E end of an oil pipeline. The pier is 150m long, with an alongside depth of 17m; vessels of up to 100,000 dwt can be accommodated on the N side of the pier.

Osone, a small harbor protected by two breakwaters is situated 0.3 mile SSE of Toho Sekiyu Pier. A light stands at the head of the E breakwater.

Aspect.—Tekura Iwa, 519m high, is an eroded peak of bare rock, 1.5 miles W of Ino Hana. A chimney, 125m high, is situated near the power plant, W of the tanker berths. There are several oil tanks, 0.45 mile SSW of the chimney.

Pilotage.—Pilotage is not compulsory. Pilots board at the entrance at Owase Bay and are available from sunrise to 3 hours before sunset, as follows:

1. Vessels less than 20,000 grt—1 mile E of Togashira Shima Light.
2. Vessels over 20,000 grt—2 miles E of Togashira Shima Light.

Anchorage.—The quarantine anchorage is situated in Owase Wan, centered 0.5 mile ENE of the E extremity of Sabaru Shima. The depths at the anchorage range from 60 to 80m, sand and mud.

Caution.—In an agreement with the Fishery Department, the night movement of vessels is prohibited.

An overhead cable, about 30m high, runs from the W side of Toyasira Shima to the coast.

5.44 Kuki Saki (34˚01'N., 136˚17'E.), 2.5 miles SSE of Togasira Shima, is a heavily-wooded point, 229m high; it presents a grey-colored cliff face.

Kuki Ura (34˚00'N., 136˚16'E.), a narrow bay, is entered between Kuki Saki and Nasano Hana, 1 mile SSW. There are no rocks or dangerous reefs in this bay, and it is well-sheltered from winds, affording anchorage for small vessels up to 200 grt, clear of pearl beds, which lie in depths of less than 20m.

Nasano Hana is a cliffy point with a conical top. Haida Ura, entered 0.75 mile S of Nasano Hana, is nearly closed by fixed nets from October through August.

5.45 Kata Wan (33˚57'N., 136˚15'E.) is entered between Miki Saki, 1 mile S of Haida Ura, and Kosuno Hana, 1.5 miles farther SW. Kata Wan, surrounded by a mountain range, has three arms that penetrate about 3 miles NW. The E arm is Miki Ura Ko; the N branch is called Mikisato Ko, and the W branch is called Asuka Wan (Asuka Ura).

There are fixed fishing nets on both sides of the entrance to Kata Wan; fish cultivation beds fringe the shores of the bay.

Anchorage.—Miki Ura Ko, with depths of 20 to 40m, affords good anchorage for small vessels with local knowledge. Mikisato Ko, the N branch, opens to the SE and heavy seas run into the harbor; it does not provide any shelter.

Asuka Ura, the W arm, with a depth of 50m in its entrance, becomes shallow at its head terminates in a mud flat 1.5 miles W. The bottom is sand and mud and provides a sheltered anchorage for large vessels.

A small craft harbor, protected by an angled breakwater on its NE side, is situated 0.5 mile WNW of Moto Hana. A light is shown from the head of the breakwater.

Kono Shima (33˚57'N., 136˚16'E.), 11m high, lies 0.6 mile SSW of Miki Saki and provides a good mark when approaching Kata Wan. Vessels should not pass between this rock and the coast.

Tatega Saki lies about 1.3 miles SSW of Kosuno Hana; it is the S extremity of a small cliffy peninsula, which rises to a prominent hill, 159m high.

Nigishima Wan (33˚56'N., 136˚13'E.) is entered between Tatega Saki and an island, 56m high, located 0.8 mile SW. The bay is relatively deep, and protected by mountains; it provides shelter for small vessels with local knowledge.

Atasika Wan (33˚54'N., 136˚10'E.) is entered between Mikosi Saki, 1.5 miles SW of Nigishima Wan, and Suzuga Shima, an islet 15m high, 1.25 miles SSW of Mikosi Saki. An islet, 2m high, lies 0.7 mile E of Mikosi Saki; swells break on the islet. Small vessels with local knowledge may find shelter in this bay.

Yuki Ko, protected by a breakwater, lies on the E side of Atasika Wan. A light stands at the head of the breakwater.

5.46 Kaitoro Hana to Shiono Misaki.—Kaitoro Hana (33˚54'N., 136˚09'E.), at the S entrance point of Atasika Wan, rises to a height of 146m. From Kaitoro Hana the coast trends SSW 34 miles to Shiono Misaki, the SW extremity of Shionomisaki Hanto. The mountains rise close within this coast, with a few good landmarks. The 20m curve lies from 0.1 to 1.5 miles offshore along this segment of the coast; there are several dangerous shoal areas charted outside the 20m curve.

Ino Hana (33˚53'N., 136˚08'E.), 1 mile SW of Kaitaro Hana, is 104m high. A light is shown from a white octagonal concrete tower, 11m high situated on the point. Mamiruga Shima, a rocky islet 23m high, consists of three peaks; it lies 0.25 mile S of Ino Hana. A rock, that uncovers 2.2m, lies close NE of Mamiruga Shima.

Kinomoto Hakuchi (33˚53'N., 136˚07'E.), the bay W of Ino Hana, is open to the S. Tomari Wan is the cove in the N section of the bay. During S winds, when the bay is untenable, fishing vessels shelter in Nigishima Wan.

Kodomari Gyoko, protected by a breakwater on which stands a light, lies on the E shore of Tomari Wan.

In winter at Kinomoto Ko, the sea is usually calm and the weather is good. Between June and October it is often rough.

Onigajo, a rock cliff with a peak 159m high, the W entrance point of Kinomoto Hakuchi, is located 0.8 mile WNW of Ino Hana.

From Onigajo, the coast trends SSW 10 miles to the mouth of the Kamano Gawa. Black rocks, 2 to 8m high, are scattered along the coast for a distance of 1 mile N of the river. On the S side of the river a sand bar extends NE and shifts with floods, swells, and waves. The river channel is narrow and has a depth of 3m, but the channel is always changing during the flood season.

Udano Ko lies on the N bank of the river near its mouth and can be used by small craft only. A light stands close E of the harbor. A breakwater is under construction (1988) at Udano Ko.

Mezamashi Yama (33˚39.5'N., 135˚59.4'E.), a round-topped wooded islet, 48m high, is connected to the NE extremity of Ukui Hanto; from it a chain of islets and rocks extends 0.45 mile NE.

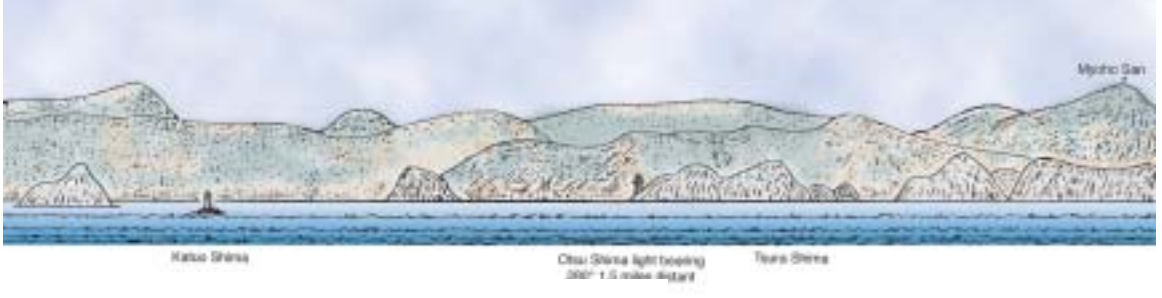
Singu Ko South Breakwater, with lights shown at its head, extends about 183m NNW of Mezamashi Yama. A ferry wharf, with a depth of 9m alongside, lies on the W side of the islet. Two lighted buoys mark the E side of the shoal water in the approach to the wharf.

Miwasaki Wan (33˚40'N., 135˚59'E.) is located 3.5 miles SSW of the mouth of Kamano Gawa. It is protected by a detached breakwater on the N side and a breakwater extending N from the S entrance point; the bay opens E. There are general depths within the bay of from 6 to 11m, but it is filled with dangerous reefs along both sides.

Tenma Wan (Temman Wan) is a large bay close S of Miwasaki Wan opening to the E and affording shelter during W to N winds in a depth of 18m, 0.4 mile SSW of Nakiwa Hana. Obera Shima, 5.6m high, lies in the entrance of Tenma Wan, 0.8 mile S of the N entrance point; low rocks and islets lie between these two points. A rocky patch, with a least depth of 7.7m, lies 0.25 mile S of Obera Shima.

A light stands on Koma Saki (33˚39'N., 135˚59'E.), the S extremity of Ukui Hanto, 1 mile E of Nakiwa Hana.

A fish haven lies about 1 mile SSW of Koma Saki Light.



Katsuura Wan

Table of Contents

5.47 **Katsuura Wan** (Katuura Wan) (33˚36'N., 135˚57'E.), located 2 miles SSW of Tenma Wan, is divided into three coves, Katsurra Ko (Katuura Ko) at the N, Moriura Wan in the W and Taiji Wan (Taizi Wan) in the S. Takakura Yama, 54m high at its extremity, projects NE from the S side of Katsuura Wan and separates Moriura Wan and Taiji Wan.

Katsuura Wan is entered between Oshihara Hana and Tomyo Saki, 1.5 miles SSE. Tsuru Shima (Turu Shima), a low island, lies 0.13 mile S of Oshihara Hana and Otsu Shima (Otu Shima), 40m high, lies close W of the S extremity of Tsuru Shima. A group of low rocks and islets lie 0.7 mile E of Oshihara Hana.

Katuo Shima, an islet 5.3m high, lies 0.7 mile N of Tomyo Saki. There is a light structure on this islet. Foul ground extends 0.25 mile ENE of Tomyo Saki.

Foul ground, terminating in a dangerous rock, extends 0.35 mile NE of Takakura Yama.

The entire area of Kutsuura Wan is fouled with rocks and islets; all vessels should use caution when approaching this bay.

Katsuura Ko (33˚37'N., 135˚57'E.), the N cove, is protected on three sides by land, with Naka Shima, 51m high, in the S part of the harbor; the port is sheltered from winds and swells. This is a harbor of refuge and the anchorage may be heavily congested during periods of bad weather.

The channel E of Naka Shima is the preferred entrance, but is only 91m wide between the 10m curves. Inner harbor depths range from 2.6 to 13m. A drying rock lies in the E part of the harbor and vessels should not attempt to pass between it and the shore.

Anchorage.—Anchorage can be taken W of Tsura Shima, in depths of 3 to 13m, mud. The quarantine anchorage is about 0.3 mile W of Otsu Shima.

At the time of a typhoon, a large number of vessels seek shelter and the harbor becomes congested.

Kantori Saki (33˚35'N., 135˚58'E.), a low cliffy point, lies 0.8 mile S of Tomyo Saki; the coast between these two points is foul for about 0.2 mile offshore.

5.48 **Urakami Ko** (Uragami Ko) (33˚34'N., 135˚55'E.) is a local port ; it is a narrow bay that penetrates the coast 1.5 miles in a SW direction. The depth at the harbor entrance is 5m and the depth inside is from 4 to 10m. Dangers around the entrance and the fish culture areas on both sides of the port must be watched.

An ore-loading conveyor at the head of the inlet has a reported depth of 5m alongside. Vessels of 500 grt call regularly.

Safe anchorage is available for small vessels in 8m, thick mud, good holding ground.

Morito Saki (33˚32'N., 135˚53'E.), a prominent point 3 miles SSW of Urakami Ko, rises to a pine-covered summit, 78m high. A rocky depth of 3m lies at the S extremity of a drying reef, extending 0.5 mile S from the point; breakers mark this area in almost any sea.

Koza-nishimukai Ko (33˚31'N., 135˚50'E.), about 3 miles SW of Morito Saki, at the mouth of the Koza Gawa, is used by vessels loading timber. A shifting bar blocks the river entrance and cargo is loaded offshore from sampans.

Hako Shima, 8.7m high, lies 1 mile S of the Koza Gawa. A larger island lies 0.5 mile N of Hako Shima.

Aspect.—A radio tower, standing on the summit of a hill 0.3 mile NE of the mouth of Koza Gawa, and a railway bridge spanning the river 0.5 mile about its mouth are good marks for identifying the entrance. A road bridge spans the river at its mouth.

5.49 **Kami Se** (33˚29'N., 135˚54'E.) is a detached 4.1m rocky patch lying 3 miles E of Hako Shima.

O Shima (33˚28'N., 135˚50'E.), a hilly island about 3.5 by 2 miles in extent, lies 2.5 miles S of Koza-nishimukai Ko, just E of Shionomisaki Hanto (Uwano Hanto). The N side is fairly regular and steep-to while the S side is cliffy with numerous coves. Islets and rocks fringe the coast up to 0.2 mile offshore. Kasino Saki, the E end of the island, is reported to be a good radar mark from 15 miles. A light, shown from a white circular stone tower 15m high, is situated on the point. A rock, 7.5m high, lies 0.3 mile NE of the point. The highest point of the island, 169m high, rises in the N central part of O Shima. The summit appears as two light green domes which look white from a distance. A peak, 117m high, stands 0.2 mile SW of the N point of the island and is a useful mark when approaching from the NE.

Shionomisaki Hanto (33˚27'N., 135˚47'E.) is the S extremity of Honshu. The peninsula, almost 2.5 miles wide from E to W, is connected to the mainland by a low isthmus, 0.26 mile wide. Izumo Saki is the SE extremity of Shiono-misaki Hanto. Shiono Misaki, a flat-topped headland, forms the SW end of the peninsula. This flat-topped headland is sur-mounted by a light. There is a signal station, open in the daytime only, at the light.

An observation tower, 34m high, stands 0.4 mile E of the light and is prominent.

An aero radiobeacon transmits from about 1.5 miles ENE of the light. Rocks and foul ground fringe the coastline between these two points, up to 0.2 mile offshore. Shiono Misaki is reported to be a good radar target up to 25 miles.

Caution.—A voluntary traffic separation scheme has been established off Shiono Misaki. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation.

Kushimoto Ko (33˚28'N., 135˚47'E.)

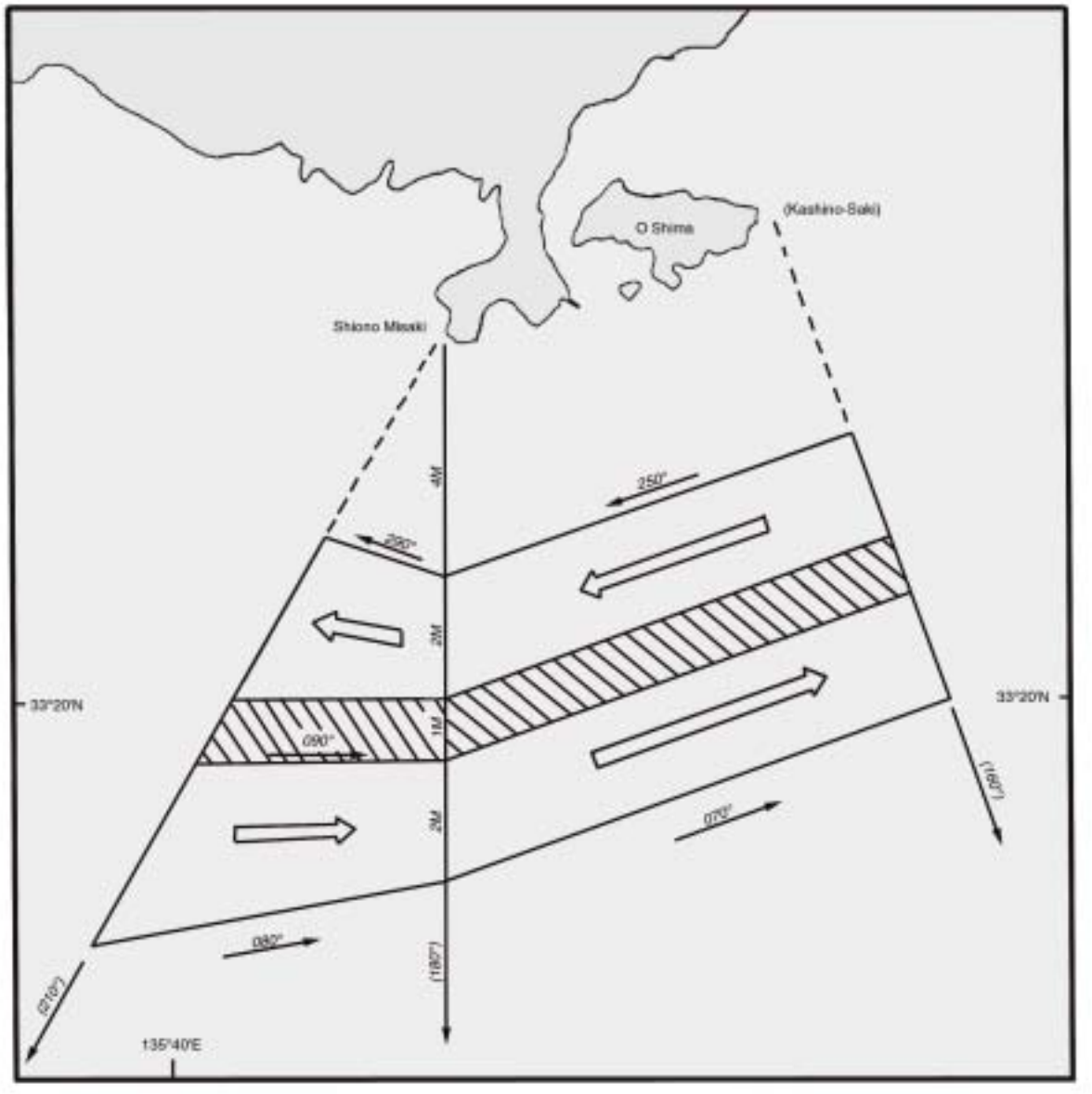
World Port Index No. 61530

5.50 Kushimoto Ko, the S town in Honshu, is a shipping point for lumber and a base for the deep sea fishery; it is becoming popular as a tourist center.

The port is situated between Shionomisaki Hanto and the NW side of O Shima; it is comprised of three fishing harbors. Kushimoto Ko affords refuge to shipping from severe weather, especially during typhoons.

Winds—Weather.—The prevailing wind in winter is out of the W. With strong NE to ENE winds, sea and swell set into the harbor.

Tides—Currents.—Tidal currents in the S entrance are weak and irregular. With a rising tide there is a N current of 0.5 knot; with a falling tide there is a S current of 0.25 knot. Generally, there is a constant S current of less than 1 knot in the passage.



Voluntary Traffic Separation Scheme off Shiono Misaki

Off the S entrance, the ocean current sets E at rates of 2 to 4 knots.

Depths—Limitations.—Kushimoto Ko can be entered N of O Shima, but the fairway is encumbered by rocky patches; the fairway is only 119m wide between the 10m curves. .

There are various dangers in the NE approach. Kami Se a reef with a least depth of 3.9m lies in the middle of the approach, in a position about 1.8 miles NE of Kashimo Saki. A rocky depth of 12.8m lies about 0.1 mile NW of Kami Se. A wreck lies sunk about 8.5 miles NE of Kashimo Saki. Hako Shimo, an islet 8.7m high, lies about 2.5 miles NW of Kashimo Saki, and foul ground extends about 0.2 mile S and 0.1 mile W.

Hashigui Iwa is a chain of rocks which extends about 0.5 mile S from Inari Shima, a point on the NW side of the entrance. Bentten Shima is near the middle of this chain. Vessels should navigate with extreme caution as this chain of rocks extends about halfway acros as the NE entrance of Kushimoto Ko.

The fishing harbors within Kushimoto Ko have depths of 2 to 4m.

The N basin has a quay, with depths of 4.5 to 4.8m on its N side and fish landing quays on its W and S sides.

The S basin, which can also be entered by a gap in the S breakwater, has several quays, with depths of 2 to 4m.

Table of Contents

Aspect.—Myoga Shima (33˚27'N., 135˚48'E.) is located near the middle of the S entrance. It is 29m high, covered with bushes, and lies about 0.1 mile SW of the W extremity of O Shima.

O Shima Light stands on the rock 0.25 mile NE of Izumo Saki, the E extremity of Shionomisaki Hanto. The coast is foul in this area.

Anchorages.—Anchorage is available off the N part of Kushimoto, during strong NE winds greater protection is afforded in the E part in the lee of O Shima. Large vessels anchor in the bay N of Tsuya Shima sheltered from all but S winds.

Directions.—When entering Kushimoto Ko, vessels using the N entrance steer for Kane Yama on a bearing of 244˚, passing N of Kami Se and S of the foul ground in the vicinity of Hako Shima.

When Benton Shima bears 270˚, steer for it on that heading until Kane Yama is abeam, then steer for the temporary light staff on the new N breakwater, heading 225˚. After clearing the shallows to the SE of Hashigui Iwa, proceed to the appropriate anchorage. Deep-draft vessels must avoid a shallow area SSE of Hashigui Iwa.

Vessels entering S of Kami Se steer for Hako Shima bearing 289˚ until Kashimo Saki Light is abeam, then steer for Benten Shima on a heading of 279˚ and proceed to anchorage.

Vessels coming from the S should sight Tomi Yama at 000˚, then proceed between Toradashi Sho and Kaba Dashi. When O Shima Light is abeam to port, change course to 336˚ and head toward the S entrance of the channel between Myoga Shima and O Shima. After reaching the S entrance, change course and steer down the center of the channel.

Caution.—Submarine cables are laid across the N part of Kushimoto Ko, close S of Hashiqui Iwa.

Kushimoto Gyoko lies on the SW side of Kushimoto Ko, and is protected by N and S breakwaters. A light stands on each breakwater head.

Shiono Misaki to Hino Misaki

5.51 From Shiono Misaki, the coast trends in a general NW direction about 44 miles to Hino Misaki, the E entrance point of Kii Suido. Tanabe Ko is the only large bay along this coast, there are only a few harbors since the berths would be open to the sea.

Tides—Currents.—The tidal current off the coast of Susami and Hino Misaki flows to the NW and the SE. South of Susami both flows become strongest 1 hour 30 minutes to 3 hours after HW and LW, while they become strongest 1 to 2 hours earlier near Hino Misaki. The average current velocity at the time of major tide is 0.5 knot. When the declination of the moon is greatest, a S flow occurring twice a day is regular, while the N flow, found twice a day, is irregular. A N flow following the low tide is stronger than others. This stronger N flow occurs during the night in spring, in the afternoon in summer, during daytime in autumn, and in the morning in winter.

Although there are many small indentations along this 25-mile coast, there are only a few harbors which can be used by large vessels. The bays on the NW side of Shionomisaki Hanto and facing the mouth of the Tonda Kawa at the NW end of this peninsula are available for temporary stays, depending on the wind direction.

5.52 **Kominato Wan** (33˚28'N., 135˚46'E.) lies on the NW side of Shionomisaki Hanto, between Shiono Misaki and Inamura Saki, 1.75, miles NNW. Foul ground extends up to 0.5 mile from the shore of the bay. Anchorage, sheltered from NE winds is available, but S by E winds send heavy rollers into the bay. Vessels anchor 1 mile offshore, in 18.3m, fine sand. Fukuro Ko is located in the NE corner of Kominato Wan.

Anchorage.—Anchorage is available in the center part of Fukuro Ko, in depthsof 6 to 9m, mud and sand.

Ase Se, a rocky patch with a depth of 6.4m lies outside the 20m curve, 4 miles W of Inamura Saki.

Esu Saki (33˚30'N., 135˚36'E.), a heavily-wooded islet 52m high, is located 3.5 miles WNW of Asa Se. Shoal water extends 0.4 mile S of the islet. A light stands on the islet.

Susami Ko (33˚33'N., 135˚30'E.), located in a small bay 6 miles WNW of Esu Saki, is open to the SW; numerous dangers encumber the entrance. There is an anchorage in this bay called Susami Byochi. Vessels of 1,000 grt shelter, in 4 to 20m, protected from all but S to SW winds.

There is a basin protected by breakwaters on the N side of the harbor. A light stands at the head of the W breakwater. A breakwater extends N from near the NE extremity of Inazumi Shima. A small boat basin lies on the W side of the river upstream of the bridge.

Inazumi Shima is dark, wooded, and 78m high; it lies 0.13 mile NW of Shimoyama Hana.

Reclamation work has been carried out on the NE side of Susami harbor; there is a quay and breakwater extending SW.

5.53 **Atagi Saki** (Ataki Saki) (33˚33'N., 135˚27'E.), the extremity of a cape that is 48m high, is the seaward end of a spur that descends from a peak 374m high, 2.5 miles NNE.

Ichie Saki, 3.25 miles NW of Atagi Saki, is a cliffy headland backed by low hills. A light shown from a white octagonal concrete tower, 11m high stands, on a hill about 0.2 mile NNW of the head.

From Ichie Saki to Seto Saki, 6 miles NW, the coast recedes and forms an open bay.

Caution.—A voluntary traffic separation scheme has been established off Ichie Saki. The traffic scheme should be adhered to as far as practicable in the interest of safe navigation.

Seto Saki (33˚40'N., 135˚20'E.) is 16.2m high, but about 0.4 mile E of its extremity there is a hill, 84m high.

From Seto Saki, the coast trends NW 18 miles to Hino Misaki. The coast is indented with numerous bays from Seto Saki to Kireme Saki, 8.5 miles NW; then between Kireme Saki to Hino Misaki it is relatively straight with many stone beaches.

There are a number of fishing reefs charted outside the 20m curve along this coast.

Tanabe Ko (33˚43'N., 135˚22'E.)

World Port Index No. 61540

5.54 Tanabe Ko is located at the head of Tanabe Wan at the mouth of the Aizu Kawa. Tanabe, the largest city in the S part

of Kii Hanto, is a shipping point for lumber and a fishing center. The port is protected from all but W winds. Lighted ranges mark the fairways in the bay, which is encumbered by numerous dangers. The light structures may be difficult to distinguish during daylight. Ships load from lighters at anchorage or the mooring buoy.

Tanabe Ko is a Special, Open, and Immigration-Emigration Port. It is divided into three districts. Tanabeko is located 1.5 miles ESE of Egawa Hakuchi in the Second District.

Egawa Hakuchi, a small basin protected by breakwaters, is located close W of the mouth of the Aizu Kawa. A light stands at the head of each breakwater. The light on the W breakwater is particularly prominent. Mori Hakuchi, a small land-locked harbor, lies at the end of Tanabe Wan, in the NE corner of the First District.

Winds—Weather.—At Tanabe Wan, the prevailing winds are NW in winter, SW in summer and SE during spring and autumn. Strong winds are most frequent in February and during August and September. Spring and summer are the rainy seasons and fog is sometimes observed in February.

Tides—Currents.—In the vicinity of Tanabe Wan, the weak tidal currents, about 0.5 knot, set NW with the rising tide and SE with the falling tide. The direction changes 1 hour after HW and LW. Off the entrance to the bay the ocean current sets NW at rates of 1.5 to 2 knots, but when cold water areas invade the region, SE sets of up to 1 knot have been observed.

Depths—Limitations.—The draft limitation in the channel is 10.3m at HW. Mooring Buoy A, for log carriers only, is situated near the mouth of the Aizu Kawa and will accommodate a vessel up to 35,000 dwt, with a draft of 10.3m at HW.

Mori Hakuchi has general depths of 2 to 7m within the basin, 5.1m in the entrance, and alongside depths up to 6m.

Egawa Hakuchi is a boat basin 2 to 5m deep that is surrounded by E and W breakwaters.

Tanabe Ko is well-sheltered, except during W winds.

Pilotage.—Pilotage is not compulsory, but if needed it is requested that vessels send the required ETA through the ship's agent. Pilots are not available after sunset to sunrise. Pilots embark at the anchorage. There are no restrictions on entering or leaving port.

Anchorage.—Anchorage is available in position 33˚42'N, 135˚19'E, in a depth of 40m, sand, close S of the entrance range line.

Small vessels can obtain good anchorage in the first district W of Kemi Shima. Vessels carrying dangerous cargo are restricted to the Third District, the outer area.

Caution is necessary when entering and leaving the harbor, there are many dangers and it is not widely used.

5.55 Simohaya Wan (33˚44'N., 135˚21'E.) is a bay that opens SW, situated close N of Tanabe Wan; it is entered between Saida Saki (Saita Saki) and Mori Saki, 1.5 miles NW. The SE part of the bay has been reclaimed and is faced with a wall. An island, 25m high, lies 0.1 mile W of the reclaimed land, and is joined to it by a shoal, which has a number of above-water rocks on it. Vessels entering the bay should be careful of the 4.8m patch located in the center of the entrance. Care should also be given to other charted dangers that lie in the approach.

Kirime Saki (33˚47'N., 135˚14'E.) is a cape of rocky cliffs topped with pine trees that lies 5.25 miles NW of Mori Saki. A flat, round mountain, 156m high, is close inland; a mountain range extends farther NE of it.

Hatano Saki, 38m high, is the W entrance point of a river and lies 2.25 miles NW of Kirime Saki.

Katsuo Shima (33˚51'N., 135˚09'E.), 4m high, lies 4 miles NW of Hatano Saki. Katsuo Shima (Katuo Shima) is connected with Ono Saki, 0.6 mile ENE by a spit that uncovers in places. Shoal water extends 0.18 mile W of Katsuo Shima. A light, shown from a white, round concrete tower, 13m high, is located on Katsuo Shima.

A small harbor, protected by breakwaters, is situated on the shore opposite Katsuo Shima.

An industrial site, situated on reclaimed land, lies between the harbor and Katsuo Shima. Numerous tanks and a chimney, 204m high, stand on this site. A light is shown from the head of a breakwater which extends from the NW corner of the industrial site.

5.56 Gobo Ko (Hidaka) (33˚52'N., 135˚09'E.) is an open roadstead off the mouth of Hidaka Gawa, which enters the bay 1.25 miles N of Katsuo Shima. Gobo Ko is exposed to winds from between the S to W.

Anchorage.—Anchorage is available N of Katsuo Shima, in 9.1m, sand.

Hino Misaki (33˚53'N., 135˚04'E.), a cape with a steep cliff, lies 4.5 miles W of Gobo Ko. A mountain 0.35 mile NE of the cape, attains a height of 202m and is a prominent mark. A light, from which a ramark transmits, stands on the cape. A signal station, at which weather signals are displayed, is situated 0.13 mile WSW of the light. There are several fishing reefs charted in the vicinity of Hino Misaki, and fixed fishing nets are placed along the coast up to 2.5 miles E of the cape.

Kii Suido is described in Pub. 159, Sailing Directions (Enroute) Japan, Volume II.