

Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.
SECTOR 4 — CHART INFORMATION

SECTOR 4

THE COAST OF NORWAY FROM KORSFJORDEN TO FEDJEØSEN

Plan.—This sector describes the SW coast of Norway from Korsfjorden to the island of Fedje, which is in the vicinity of Fensfjorden and Fedjefjorden. The description is of the outer islands and islets starting from Korsfjorden and working N; the approaches to, and the port of Bergen; and the inner fjords NE of Bergen.

General Remarks

4.1 Winds—Weather.—Winds, in general, blow from S and SE in winter and from the N and NE in summer, but there are local variations. Fog occurs during summer.

Weather conditions are changeable, varying between the outer islands and the region near Bergen and the head of the main fjord system of the sector. The climate at Bergen is mild, humid, and rainy. Bergen harbor freezes only in very severe winters. At the head of the fjord system there is slightly less rain, and the temperatures are lower in winter.

The climate along the SW coast of Norway is milder than that of other regions so remote from the Equator. The steady run of warm water of the North Atlantic Drift by way of the passage between the Shetland and Faeroe Islands and the English Channel into the North Sea and Norwegian Seas results in the water of these seas being, in January, at least 20° warmer than in others at the same latitude. This condition is naturally reflected in the meteorology of the region. Migratory low pressure centers frequent this area in all seasons, accompanied by repeated intrusions of maritime polar air which produce overcast to broken cloud decks, unsettled weather and warm temperatures.

This maritime influence which is responsible for the warm winters is present during the summer months as well, exerting moderating influence on the temperatures, particularly on the coast.

Large variations in temperature occur throughout this region in winter as it is located on the borderline between the cold of the continent and the mild climate of the Atlantic. Sharp temperature contrasts are observed at a short distance inland, according to the direction of motion of the air. With W, SW, and NW winds from the ocean, temperatures are comparatively high. The E, SE, and NE winds, particularly the latter, usher in continental air with the lowest temperatures observed here.

Generally, along the W coast of Norway, the influence of winds on the tide levels is small. This is probably due to the scattering effect of offshore islands and the relatively deep water close inshore.

Ice.—Ice in this area offers no hindrance to navigation and is present only in the upper reaches of the fjords along the coast. Floating ice is met in spring, when small masses, which are soon dispersed, may drift out of Oslofjorden and Kattegat, and occasionally from some of the larger fjords to the W and N or Lindesnes.

Over the entire area the highest frequency of waves is from the W quadrant. Along the exposed coast of Norway 65 percent of the seas during winter are less than 5 feet in height.

It is significant to note that 9 percent were observed to be greater than 3.6m high. During the summer, decreased wind velocities associated with the weakening of the Icelandic "Low" results in lower sea heights. Observations along the exposed portions of the coast show 83 percent of the waves to be less than 1.5m and 4 percent greater than 3.6m in height.

Swell conditions along the Norwegian coast are generally rough. During the winter, 20 percent of the swell recorded, for exposed portions of the coast, exceeds 3.6m in height. This swell is generated over the North Atlantic. During the summer, conditions are moderated, with only about 6 percent of the swells in excess of 3.6m. With 68 percent of the swells observed to be less than 1.8m in height.

Fog.—Bergen experiences both sea and land fog, the maximum (16 percent) occurring in July, where a exposed coastal station like Llista and Skudenes have lower frequency, with the maximum occurring in early summer.

Tides—Currents.—Tides in the North Sea are always semidiurnal, with very little diurnal inequality between the two HWs or the two LWs of each tidal day.

The tide progresses into the North Sea from the Atlantic Ocean, between the Shetland Islands and Norway. Within the North Sea, HW progresses counterclockwise about a nodal point off the S coast of Norway, moving S in the North Sea and W along the S coast of Norway between Kristiansand and the 6th meridian. Along the W coast of Norway the progression is N to about 60°N; N of this, the progression is E.

Along the W coast of Norway, tide ranges gradually increase toward the N, from 0.2m at Mandal to about 0.9m at Bergen.

Currents, in general set at right angles to the coast. In the S half of the sector the set is seaward during the falling tide and toward the land during the rising tide.

In the N half of the sector, the set is NW with the greatest velocity during the falling tide. These currents are not strong, however, except in the narrow passage and are affected by the winds.

Caution.—The N current off the S part of the W coast of Norway tends to set toward this coast. A considerable set toward the coast may be experienced between the entrance of Bomlafjorden and Breisunddybet while the tide is rising at Bergen. This set occurs especially during SW, W, and NW gales.

4.2 The coast between Store Marstein, an islet on the S side of the entrance to Korsfjorden, and the island of Fedje, about 38 miles NNW, is irregular. It consists of numerous inlets and small fjords, and is scattered with many small islands and peninsulas.

The general direction of the fjords is NW; the principal exceptions being Osterfjorden and its continuation, which trends to the NE, and Sorfjorden and Veafjorden, on the E side

of Osteroy, which trends to the N. The fjords are deep and vary in width.

Off-lying islands fronting this coastal sector and the peninsulas are lower than 305m in height and are generally rocky with stunted trees. The coast of the mainland, the island of Osteroy, and the Bergen peninsula rise to an elevation of about 610m and have extensive patches of wooded, fertile land in the lowlands.

Passages among the off-lying islands are intricate, narrow, and deep.

There are several anchorages for small vessels and some for large vessels in this sector. Coastal vessels call at the many small landings in the fjords.

The Oseberg Oil Field, the Brage Oil Field, and the Veslefrikk Oil Field are situated in an area centered about 50 miles W of Hellisoy. Numerous submarine pipelines and installations exist in this area. A pipeline extends E to the coast from the Oseberg Field at the S end of the area.

Troll Gas Field (60°44'N., 3°33'E.) and **Huldra Gas Field** (60°50'N., 2°40'E.) lie about 16 miles E and 9 miles NNW of the Veslefrikk Field.

Caution.—Troll A Platform Radar Surveillance Service and the VHF Base Station, located on the Troll A Platform, is controlled by Statoil Trafikkontroll at Sandsli (Statoil VTS). The surveillance service is an advisory service for the coordination of vessel movements by means of gathering, verification, and dissemination of information as to avert hazards and accidents between vessels and the platforms, and between other vessels.

Vessels with intent to navigate across the Entry Zone are requested to inform Statoil Trafikkontroll when passing the limit of the Approach Zone stating their intentions. Vessels in the Approach Zone heading for the Entry Zone will be contacted in due course. If necessary, Statoil Trafikkontroll will request a vessel to increase its passing distance. If this is not possible or the vessel fails to respond, the "Troll A" standby vessel will intercept the unknown vessel and the platform notified. The surveillance service will communicate in Norwegian or English. Three zones have been established around the platform, as follows:

1. Troll A Safety Zone—The Safety Zone is 500m from the outer points of the platform. In certain hazard and accident situations the Safety Zone can be extended.
2. Troll A Entry Zone—The Entry Zone comprises the area within a 3 mile radius centered on the platform (60°38.7'N, 3°43.6'E.).
3. Troll A Approach Zone—The Approach Zone comprises the area within a 15 mile radius centered on the platform.

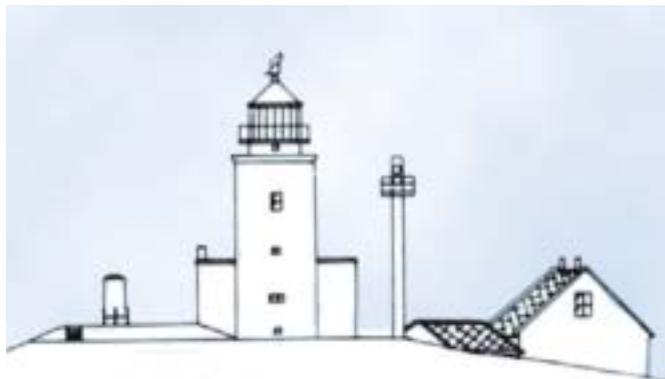
Vessels passing with a closest point of approach (CPA) of 3 miles or less from the installations must inform Statoil Traffic Control when 1 hour before the time of closest possible approach (TCPA).

Statoil Traffic Control may be contacted 24 hours on VHF channel 16 or 68.

For oil and gas fields located SSW of the above, see Sector 3. For oil and gas fields NW of the above, see Sector 5.

The Outer Islands and Islets

4.3 Store Marstein (60°08'N., 5°01'E.) lies about 1 mile W of the NE end of Store Kalsoy on the S side of Korsfjorden entrance. A light tower, 17m high and prominent, stands on the summit next to a dwelling.



Store Marstein Light

Marsteinboen lies about 1 mile WSW of Store Marstein Light and is usually awash and marked by breakers.

Hillagrunnane, a shoal with a least depth of 21m, lies 1.5 miles WSW of Store Marstein Light; the sea only breaks in very heavy weather.

4.4 Tekslo (60°09'N., 5°01'E.) is on the N side of the Korsfjorden entrance, about 1 mile N of Store Marstein. Foul ground extends about 0.2 mile WNW from Tekslo. Tekslefluene, with a least depth of 13m and Hysteinen, a 27m depth, lie about 0.3 mile and nearly 1 mile, respectively, W of Tekslo.

Under good conditions, the Korsfjorden entrance should be identified at a great distance as an opening in the land, the mountains in the background being high and distinctive.

The current flow in Korsfjorden is usually outgoing. The current may be incoming during rising W winds. The outgoing flow in the entrance to Korsfjorden may be very strong during floods.

Pilotage.—The pilot vessel may cruise in the entrance to Korsfjorden, about 1 mile N of Store Marstein, but is usually stationed between the S side of **Viksoy** (60°10'N., 5°03'E.) and Flesa.

4.5 Lyroddane (60°10'N., 4°59'E.), consisting of a group of islets and above and below-water rocks about 1 mile in diameter, are centered about 1 mile NW of Tekslo. Nordre Oddane, on the NW side of the group, is 21m high.

Fugloyhamn lies between **Store Fugloy** (60°10'N., 5°01'E.) and Store Vardoy, about 0.3 mile N. Vessels up to moderate size can take good anchorage, in depths up to 20m, sand, in Fugloyhamn. There may be a considerable swell during N or W winds. Entrance can be made from SE, passing E of Tekslo and Seiskjaer, W of foul ground fringing the W side of Naroy

for a distance of about 91m, then E of a 2.7m depth marked by a buoy, and W of a rock, marked by an iron perch.

4.6 Store Sotra (60°20'N., 5°05'E.), extending about 18 miles N from Korsfjorden, is the largest of the islands in the chain fronting the approaches to Bergen. This chain extends N from Korsfjorden to Fedjeosen, a distance of about 35 miles, and includes a number of other smaller islands and hundreds of close-lying islets and rocks.

From offshore, Store Sotra appears to be a part of the mainland, and, in contrast to the coastal aspect farther N, no off-lying islets can be distinguished. Fordesveten, the highest peak in the S part of Store Sotra, has a steep fall on its N side. The N end of Store Sotra is considerably lower.

A radio mast, painted red and white in bands and with a height of about 165m, stands on the N part of Store Sotra. A white flashing obstruction light is shown from the top.

On nearing the land, Store Lonoy will be easily identified from its height and isolated position. The high land in the S part of Algroy has a jagged outline and from the N has a saw-tooth appearance; other hills in the vicinity are round.

Turoy, about 2 miles W of the N end of Store Sotra, is higher than the N part of the larger island. A beacon stands on the 81m summit of Turoy in the N part of that island. Toftvik, on the W side of Toftoy between Turoy and Naroy, about 2 miles N, is easily made out.

Pollen is the name given the continuation of Austefjorden N of its junction with Toftoyosen.

Between Tek slo and the coast of Store Sotra, about 3 miles N, there are a number of islets and rocks which are nearly joined together by foul ground. There are several anchorages for small vessels among the islets; some of the channels leading to them are marked by perches.

Ternneset (60°14'N., 4°59'E.) is a projection on Store Sotra close NE of Lutatangen. From Ternneset, the W coast of Store Sotra trends in a general N direction for about 5 miles to Roksneset, then irregularly ESE for 2.75 miles, and then in a general N direction for about 10 miles to **Vindneskarven** (60°27'N., 5°00'E.), the N extremity of the island.

This side of the island is much indented by inlets and coves and is fronted by several islands; numerous islets and patches of foul ground extending up to 3.5 miles offshore.

Stallen (60°17'N., 4°57'E.) is a point on Store Sotra about midway between Grimsoy and Roksneset. South and SW of Stallen, the outermost dangers lie from 0.5 mile to 1.2 miles off Store Sotra. Malmen, marked by a beacon, is the largest of a group of islets and rocks lying up to 1.25 miles W of Knappen, a point 1 mile S of Stallen. Teigen, a 7m depth, lies about 1 mile W of Stallen.

4.7 Goltasteinen (60°13'N., 4°58'E.), a small islet, but lofty and easily identified by an iron perch on its summit, lies about 1 mile WSW of Lutatangen, the NW extremity of Golta, an island which lies in a bight on the SW side of Store Sotra.

Telavag (60°15'N., 4°59'E.), a narrow inlet about 1 mile N of Ternneset, trends NNE for about 2 miles from its entrance. Grimsoy is a 55m islet on the NW side of the entrance.

Nordre Stuholme and Sore Stuholme are two smaller islets close off the NE side of Grimsoy.

Valoyane lie on the W side of Telavag approach. A beacon stands on the E end of the largest islet of the group.

Within Telavag, Stekkholme lies in mid-channel, about 1 mile from the entrance. A 3m shoal lies about 183m N of Stekkholme. Other known dangers near the fairway are marked by iron perches. Several overhead obstructions, with a least vertical clearance of 13m, span Telavag. Some quays in Telavag have alongside depths of up to 6m.

Anchorage.—Vessels of moderate draft can anchor in several places within Telavag. Care must be taken to avoid the 3m shoal N of Stekkholme and the submarine cables that cross the inlet. Anchorage can be taken between Nordre Stuholme and Sore Stuholme, E and N of Stekkholme, in sand and clay.

Small vessels can anchor, in up to 22m, in the W end of Rynjelsosen, the channel between the N side of Grimsoy and Store Sotra.

4.8 Hissoyna (60°18'N., 4°56'E.) lies with its SE point about 0.2 mile W of Roksneset. Between Stallen and Roksneset the outermost shoals and rocks lie within 1 mile W of Store Sotra.

Rabbarosen (60°18'N., 4°57'E.) a small bay which is entered about 0.2 mile S of Roksneset, is available for small craft with local knowledge. The approach from W is deep, but there are dangers near the fairway. The best approach is from SW, passing between Mokalasset and Augnarholme. Myrbaerholme is on the S side of the bay entrance. Augnarholme is a smaller islet close W of Myrbaerholme.

Anchorage.—Small vessels can take good anchorage in the S part of Rabbarosen E of Myrbaerholme, but care must be taken to avoid foul ground extending about 91m from the E shore.

Mokalasset (60°18'N., 4°56'E.) lies above water, about 0.3 mile W of Augnarholme. Sore Mokalassflu and Nordre Mokalassflu, with depths of 9.5m and 5m, lie about 0.3 mile SSW and 0.25 mile WNW, respectively, of Modalasset. Grytebaen, a rock awash, is located about 0.2 mile NW of Mokalasset.

Salen, an above-water rock, is on the N side of the fairway about 0.2 mile N of Augnarholme. A reef extends about 91m SW from Salen; there are depths of less than 9.1m within 183m E of the rock.

Between Hissoyna and **Haveroyna** (60°24'N., 4°56'E.), about 5 miles N, are Lokoyna, Langoyna, Algroya, and many islets and rocky areas. Overhead cables, with vertical clearance of at least 10m, span the fairways between Hissoyna, Naroyna, Syltoyna, Lokoyna, Langoyna, and Algroya. An overhead cable, with a vertical clearance of 24m, and a bridge, with a vertical clearance of 15m, span the channel between Langoyna and Store Sotra, about 0.4 mile S of the N extremity of Langoyna. On the E side of the islands above are narrow channels leading into an inner basin, which is formed in a bight on the W side of Store Sotra.

This basin forms the approach to **Fjellspollen** (60°18'N., 5°03'E.). From its narrow and shallow entrance, Fjellspollen trends N for about 2 miles and S for 1.25 miles through the middle part of Store Sotra. Only small vessels should attempt to use the channels leading to these inner basins. Some of the dangers near the fairways are marked by perches.

4.9 Kalsoyane (60°19'N., 4°56'E.), several close-lying islets from 13 to 20m high, lie within 0.5 mile NNW of Hissoy.

Kalsoyflu, with a least depth of 3m, lies about 0.2 mile W of the farthest SW islet.

Store Lonoy, a conspicuous island, is located about 1 mile NW of Hissoy. Several islets lie close off the W and SW sides of Store Lonoy; within 0.75 mile S and NW and 0.5 mile W of the island there are other small islets and foul areas.

Nordre Tjornoy (60°22'N., 4°55'E.), marked by a light, lies about 0.3 mile off the NW side of Algroyna.

A beacon with a cross topmark stands on Ljosoy, about 2 miles N of Norde Tjornoy.

Breidflu, a 9.1m depth, is located about 1 mile WNW of the beacon on Sore Tjornoy. Other detached shoals, with depths of less than 1.8m to 11.9m, lie within 0.6 mile NNE of Breidflu.

Polleflu, an 11m depth, and Landrobaen, a 5.9m depth, lie about 1 mile WSW and 1.5 miles W, respectively, of the beacon on Ljosoy. Numerous other dangers are located between the described dangers and the islands fronting the coast of Store Sotra.

Kartveit (60°23'N., 5°00'E.), a village, lies on the E shore of an inlet extending from Eideosen into the W side of Store Sotra. There are two quays, with alongside depths of 4 to 7m, located at Kartveit. Fuel oil is available.

Approximately 5.4 miles NNE of Norde Tjornoy, the small islet of Ertenskaer lies about 0.6 mile W of **Sandoyni** (60°27'N., 4°53'E.) and is the westernmost danger of the group of islands and islets in this area. The islets of **Odden** (60°26'N., 4°56'E.) and the shoal Oddefluene lie about 0.6 mile S of Ertenskaer and Ertensskjerflu.

4.10 Turoyna (60°27'N., 4°55'E.) has a beacon on its 81m summit, about 0.25 mile from the N end of the island. Lille Turoyna is close off the SW side of Turoyna. Other smaller islets and many rocks, both above and below-water, lie nearby; a chain of islets and dangers extends nearly 1 mile SE from near Giljeneset, the S extremity of Turoy.

Magoyna, Kvaloyna, and Sandoyni are the principal islets of a group that includes many smaller islets and rocks and lies between 0.7 mile and 1.7 miles W of Turoy.

Vestre Odden, an above-water rock, is near the SW edge of this area. Shoal water extends about 0.2 mile SSW from Vestre Odden.

Svartskjaeri, a small area of above and below-water rocks, is centered about 0.5 mile S of Magoyna.

Svartskjersosen is the basin that lies S and SSW of Turoy. The entrance from seaward is S of Svartskjersosen. Hattholme lies on the SE side of the Svartskjersosen entrance, about 1 mile SSE of Maioy.

Hattholmbaen, a 3.2m depth, and Svartskjergrunnane, with a least depth of 12.8m, lie about 0.2 mile NW and 0.5 mile W, respectively, of the N end of Hattholme.

Vindoyesen, the basin E of Turoy, is bound on the N by Store Skarvoy, some nearby smaller islets, and the S end of Toftoy; on the E by the island of Misje, and on the S by Store Vindoy, Lille Vindoy, and Vearoy.

A light is shown from a position close off the NW extremity of Lille Vindoy.

Solsviksund is the narrow channel between the N end of Store Sotra and Misje. Svelgen is the channel between Misje and the SE side of Toftoy. Both channels lead into Hjeltefjorden. Charted depths in these narrow channels are 16 to 21m.

A light is shown from the SW extremity of Misje, close W of the entrance of Solsviksund. A light is shown from a hut on the N extremity of Misje in Svelgen channel. The E end of the channel is also marked by lights. Iron perches mark some of the dangers near the channel fairways.

Solsviksund may be approached from S, but the principal approach is from W through Svartskjersosen and **Hjelmeholmen** (60°25'N., 4°56'E.), passing well S of Lille Hjelmene, the islet at the SE extremity of the islet chain extending from Turoy, and then E of Geitaroy and Bollholme, two islets which are near Store Sotra.

Care must be taken to avoid a 5m depth lying near the fairway in a position about 137m E of the N end of Bollholme.

A bridge, with a vertical clearance of 18m, spans Solsviksund close within its S entrance. Fixed red lights mark the centerline.

A quay, located on the W side of Solsviksund, has an alongside depth of 6m.

A submarine cable runs from Utfall, located on the coast of Store Sotra W of Bollholme, NW past Lille Vindoy, and then W to Turoy. A submarine cable exists in the N portion of Svelgen, passing around the N extremity of Misje.

At Utfall, there is a quay, with depths of up to 9m alongside.

Tides—Currents.—Tidal currents in Solsviksund and Svelgen set N into Hjeltefjorden during the rising tide (beginning about 6 hours 10 minutes after HW at Bergen) and seaward from Hjeltefjorden during the falling tides (beginning about HW at Bergen). The currents set strongly at times.

Anchorage.—Anchorage can be taken in Tjuvvika, a cove on the N side of Svelgen, N of the N extremity of Misje, in 18m, sand. Caution must be used to avoid the submarine cable off the N side of Misje.

Several narrow channels are formed by Store Skarvoy and the islets near it which lie between Turoy and Toftoy. They lead NW from Vindoyosen into the SE side of Tofteviki and are spanned by cables, with vertical clearances of 18m to 32m. Shoals, marked by iron perches, lie in the channel between Turoy and the islets close E, and in **Skarvoysund** (60°27'N., 4°56'E.) fairway, the channel between Store Skarvoy and Toftoy.

4.11 The bay of Toftevika is bound on the S by Sandoy, Knappane, Turoyna, and Store Skarvoy and on the N by Kvannholmen, Froa, Nuroyi, and **Rongoyni** (60°30'N., 4°55'E.). Depths in Toftevika are irregular and, except for a few detached patches, exceed 36m. Navreskjaer, a detached reef which is above-water near its S end, lies in the middle of Tofteviki.

Bjornoy lies near the NW side of Toftoy, about 2 miles N of Store Skarvoy. Kjempa, a rock marked by an iron perch, is on the outer edge of foul ground extending nearly 0.25 mile SW from Bjornoy. A light is shown from an iron perch located off the NE extremity of Bjornoy, between Bjornoy and Toftoy.

Rongsund is the channel between Toftoy and **Bjornoy** (60°29'N., 4°56'E.), on the E, and Rongoy and islets extending S from that island, on the W. It joins Tofteviki with Hjeltefjorden.

Rongsund is narrow; the S approach is intricate. Depths in the fairway are about 18.7 to 48m, but there are nearby dangers.

4.12 Toftevag (60°29'N., 4°56'E.) indents the W side of Toftoy extending S from Bjornoy. Two quays, with alongside depths of 3 to 7m, are located at Toft close to the head of Toftevag.

Tides—Currents.—Tidal currents in Rongsund have the same characteristics as those in Solsviksund and Svelgen.

Anchorage.—Small vessels can anchor in Torsteinsvik, on the SE side of Rongsund, NE of Bjornoy. The anchorage has depths of 12.8 to 22m and is free from dangers; mooring rings are available. Quays, with depths of up to 4m, are located in the cove.

Kjeldosen, between the N side of Nuroy and two islets named Borsholme and Sjurdholme, affords protected anchorage to small vessels, in 9.1m, in its W part.

The best approach is E of Svelslingen, which lies above water near the SE edge of a shoal that extends 0.25 mile E from a position near the E side of Nuroy.

Ulvundet, which is entered about 1 mile ENE of **Skarvoy** (60°30'N., 4°50'E.), is the narrow sound between the islands of Ono and Rongoy, on the S, and Ulvoy and Blomoy, on the N.

It leads ENE into Hjeltefjorden and is approached from seaward between Skarvoy and Nessaengen, about 0.2 mile N, and the islets and rocks just E of these two outer islets.

The channel fairway is very narrow, and although some of the dangers are marked by lights or iron perches, its use is limited to small vessels. Power-driven vessels must not exceed a speed of 7 knots in Ulvsundet.

The E part of Ulvsundet is spanned by a bridge, with a vertical clearance of 20m, and a cable, with a vertical clearance of 32m.

Anchorage.—Anchorage can be taken in Ulvsundet close W of an islet at its E end. The depths here are 11 to 16.5m; mooring rings are available.

4.13 Rorsund, between the NW side of **Ulvoy** (60°31'N., 4°53'E.) and the SW part of Blomoy, leads into Blomvåg N of Ulvoy. Small vessels can anchor, in 22 to 26m. Iron perches and lights mark some of the dangers in the approach.

An overhead cable, with a vertical clearance of 26m, spans Rorsund about 1 mile SSE of Blomvåg. Several quays, with alongside depths of 3 to 12m, lie in Blomvåg. Fuel oil and fresh water are available.

Anchorage.—Good anchorage can be taken in the narrow sound between the W side of Blomoy and the islets Nautoy and Husholme, in about 14.6m, sand. A quay located in the sound has alongside depths of 3 to 10m.

Osunder (60°33'N., 4°51'E.), the narrow sound leading NE into Hjeltefjorden between Blomoy and One, is free from dangers, but is only navigable by small vessels because of its narrow width.

Tides—Currents.—Tidal currents in Osundet set N into Hjeltefjorden during the rising tide (beginning about 6 hours 10 minutes after HW at Bergen) and seaward from Hjeltefjorden during the falling tide (beginning about HW at Bergen). The currents set strongly at times.

Kollsoy lies on the SE side of Osundet entrance. Two smaller islets lie in Osundet approach about 0.1 mile W and 0.2 mile S, respectively, of the W extremity of Kollsoy. Flatskjaer, above water, and Saskjaeri, partly above water, lie within 0.2 mile SW and 0.3 mile SSW, respectively, of the S of the two above islets.

Forskjaer lies above water on the NW side of Osundet approach in a position about 0.2 mile SW of the N islet.

Husmannsflu, a 12m depth, lies in the fairway between Flatskjaer and Forskjaer.

Kvalosen (60°34'N., 4°50'E.) is the S and broadest part of the sound between One and Skogsoy, to the W.

Anchorage.—Anchorage can be taken, in 40m, about 1 mile N of Forskjaer. Small vessels can anchor farther N in depths decreasing from 18.3 to 9.1m S of an above-water rock in the vicinity of Breidvik, close inside the N entrance to the sound.

A mole and a bridge cross the passage between One and Skogsoy close S of Breidvik. The mole and bridge prevent further progress N to all but small craft.

Breidvik has quays, with alongside depths of 4 to 5m. Fuel oil is available.

4.14 Storodden (60°33'N., 4°48'E.) is the largest of several islets and rocks lying within 0.25 mile of the SW side of Skogsoy. Tenen, a detached above-water rock, is located about 0.2 mile S of the W extremity of Storodden.

Herdlevaer is an island close NW of Skogsoy. Rossoy and some smaller islets and rocks lie on foul ground extending about 0.3 mile S and SW from Herdlevaer.

Nordre Seiskallane, a detached 7.5m depth, lies about 0.3 mile SW of the W extremity of Rossoy. Sore Seiskallane, with a least depth of 1.5m, and Borsklakken, a 14m depth, are located about 1 mile SSW and 0.7 mile W, respectively, of the same point.

Straumsundi (60°35'N., 4°51'E.) are the channels between One and Alvoy, to the N, which lead from seaward into Hjeltefjorden and Indreleia. Islets, rocks, and bridges somewhat obstruct the passage.

Entrance from the W can be made N of Geitingen. Straumsoy, with the islet of Galten close SW of it, lies in the E end of the passage and divides it into two narrow channels, named Nordre Straumsund and Sore Straumsund.

Flatskjaer, marked by an iron perch, is on the N side of the fairway, about 0.2 mile N of the N extremity of Herdlevaer. Senholme lies on the S side of the fairway within 0.25 mile NE of the same extremity. Foul ground, marked by an iron perch, extends about 0.2 mile SE from Rotevaagoy, which lies on the N side of the fairway about 0.3 mile NE of Senholme.

A 4m rocky patch lies on the N side of the fairway, about 183m SSW of the SW extremity of Rotevaagoy. There are other dangers near the fairway of Nordre and Sore Straumsund, some of which are marked by iron perches.

Tides—Currents.—Tidal currents in Straumsundi set N into Hjeltefjorden during the rising tide (beginning about 6

hours 10 minutes after HW at Bergen) and seaward from Hjeltefjorden during the falling tide (beginning about HW at Bergen). The currents set strongly at times.

4.15 Alvoyni (60°38'N., 4°50'E.) trends about 3 miles N between its S extremity, the NW entrance point of Nordre Straumsund, and **Aadneset** (60°36'N., 4°48'E.), the N extremity of the island.

The W coast of Alvoyni is about 2 miles long and is fronted by numerous islets and above-water rocks, all of which lie within 1.3 miles of the larger island. The channel among the islands and islets can be used only by small vessels.

Hjartoyri (60°38'N., 4°50'E.) is reported as the largest island off the W coast of Alvoy. Alvheimsund, a very narrow channel, especially in its S part, is marked by Iron perches and lights.

A quay, with depths of 3 to 6m, is located at the village of Alvheim on the NE shore of the sound. Fuel oil is available.

Small vessels can take good anchorage, in up to 18m, off Alvheim.

Langoyisund (60°37'N., 4°48'E.), between Alvoyni and Langoyni, provides good anchorage for small vessels, in 13 to 20m; mooring rings are used. The S entrance is the broader one and more clear of dangers than the N entrance. Care must be taken to avoid a 3m shoal near the middle of the sound.

The channel that passes the W side of the island of **Forhjelmo** (60°40'N., 4°48'E.) and the S side of Store Lyngoy, and leads into Hjeltefjorden, is entered from W between Myklebaen, on the S, and the dangers extending S from Store Lyngoy. From Myklebaen, a 2.5m depth, the channel leads SE of Lamholmflu, a 3.5m depth.

Care must be taken to avoid both Lamholmflu and Siefluene, where the channel turns NE and leads between Tikje and the SE islet of Skreiskjaerene. Care must be taken to avoid the foul ground extending from both of these islets.

After passing these dangers, vessels may enter Hjeltefjorden, passing or rounding **Robbeganstangen** (60°41'N., 4°48'E.), the N extremity of Forhjelmo, at a prudent distance.

Nordoy (60°43'N., 4°44'E.) lies on the S side of Fedjeosen, the principal approach from seaward leading into the channels of Indreleia, which continue S to Bergen.

Approach to Bergen from South

4.16 Lysefjorden (60°12'N., 5°19'E.) is a continuation of Korsfjorden from its junction with Langenuen and Fanafjord. The fjord is entered between Korsen, the SW point of Krossnes and Fluaneset, the W point of Skorpo, 2.25 miles SE.

The outer 2 miles of the fjord is deep and clear, except for islets and rocks which lie within 0.6 mile offshore on both sides. Lysoya is the largest number of islets at the head of the fjord. A conspicuous tower stands on Lysoya.

Good anchorage for small vessels is available in several places along the shores of Lysefjorden, but local knowledge is required for entering these anchorages. Two anchorages are available at the head of the fjord and are best seen on the chart.

Fanafjorden is entered between Korsen and Leroy-Buaroy, 1.5 miles NW. The fjord trends NE for about 5 miles to the town of Fana, at its head. With the exception of some islets and

dangers lying close to the shores and those at the head of the fjord, it is clear and deep.

Iron perches and a buoy mark a narrow channel between Leroy and Bjelkaroy. Perches also mark some of the dangers along the shores of Fanafjorden.

Small vessels can anchor in most of the bights on the SE side of Fanafjorden and also near the head of the fjord. There are quays with depths of from 4 to 5m at the head of the fjord near Stendaholmen.

4.17 Leroyosen (60°14'N., 5°10'E.) is entered from the S between Bornestangen and the islet of Leroy-Buaroy, about 10 miles NNE. Leroyosen is the principal channel used by large vessels approaching Bergen from the S. Both sides of the channel are comparatively steep-to.

A light is shown on Bornestangen and Tangafllu. A light is also shown from an islet close off the SW side of Leroy.

On the W side of the channel good anchorage with mooring rings can be obtained by small vessels close W of Svinstangen.

Klokkarvik (60°13'N., 5°10'E.) (World Port Index No. 23190) lies about 1 mile NNW of Svinestangen and offers anchorage to small vessels, in 7.3m. A small quay is located in the port.

On the E side of Leroyosen there are several anchorages which are suitable for vessels with local knowledge.

Temporary anchorage can be taken, in 14.6 to 16.4m, off the W end of Leroy-Buaroy. Anchoring and fishing are prohibited in the area of Leroyosen that is best seen on the chart.

Raunefjorden (60°16'N., 5°10'E.) lies just N of Leroy and Bjelkaroy. The fairway through Raunefjorden leads W of a group of islands and islets and has ample depths for large vessels. Rauneskjaerene Light is shown on the SW end of a reef which lies in the middle of Raunefjorden.

A beacon lies about 0.1 mile E of the light. A light is shown on the NW side of Flatoy, which lies 0.5 mile E of the above light. Large vessels can anchor in the vicinity of Flatoy. Care must be taken to avoid a shoal E of the islet.

4.18 Vattlestraumen (60°19'N., 5°12'E.) trends N and NNW on the E side of Bjoroy for about 4 miles and is the preferred passage from the N end of Raunefjorden to the channel N of Bjoroy which continues farther N into Byfjorden.

The fairway through Vattlestraumen is deep and free from dangers. A light marks a rock on the E side of the fairway near its S entrance point. A light is shown on a small point about 2 miles N of the above light. A number of other navigational aids can best be seen on the chart.

Small vessels with local knowledge can anchor in the bight off Flesland, in depths of 7.3 to 26m. Larger vessels can anchor in depths up to 46m in a bay N of Tangen, avoiding a 4m patch close off this small point. A quay, with depths of from 4 to 6m alongside, is located in this bay.

Grimstadjorden (60°19'N., 5°14'E.) lies on the E side of Vattlestraumen. The fjord extends 1.5 miles E and then divides into two arms; one trends 1.25 miles NNW to Mathopen while the other trends SSE to Dolvik. The fairway through most of Grimstadjorden has depths exceeding 37m.

A light is shown on shore at the E extremity of the fjord and also on the NW shore of Store Bogoy. The N part of Grimstadjorden contains a restricted area and that can best be

seen on the chart. Starneset lies on the S side of Grimstadfjorden. A quay at an oil tank installation on the E side of Starneset has a depth of 14m alongside.

A mooring buoy lies close E of the quay. Nordasstraumen leads E from the S arm of Grimstadfjorden and connects the fjord with the inner basin of Nordasvatn. The channel is very narrow and can only be used by small vessels. The least depth in the fairway is 3.4m. A cable with an overhead clearance of 25m spans Nordasstraumen at its narrowest part.

Anchorage.—A bight on the E side of Store Bogoy provides good anchorage for small vessels, in 12.8m. Such vessels can also anchor in, 14.6 to 20.1m, in the N arm of Grimstadfjorden, about 1 mile NNE of the S end of Store Bogoy. Depths of 4 and 4.9m lie in mid-channel about 0.2 mile S of the anchorage.

Anchorage is found in the S arm off Dolvik; anchorage is also available in a small cove on the S side of Grimstadfjorden about 0.3 mile W of Starneset. A 6.1m patch lies just N of the cove entrance.

4.19 Kobbaleida (60°19'N., 5°09'E.) is an alternate passage leading N from Raunefjorden. The passage is bounded on the W by the island of Store Sotra and on the E by the islands of Tosoy and Bjoroy. Depths in the fairway through Kobbaleida are ample for large vessels, but caution is necessary because of nearby dangers.

There is a submarine cable across Kobbaleida about 2 miles N of its S entrance. Liholmane, a group of islets, lie on the E side of the fairway about 0.5 mile NW of the N extremity of Tosoy. A light is shown from the W side of the S islet of the group. The dangers on the E side of the fairway are well marked by navigational aids and can best be seen on the local chart. There are no recommended anchorages in Kobbaleida.

From the junction of Vattlestraumen and Kobbaleida, a deep, clear channel trends N for about 2 miles to Stangsnes, a mainland projection at the SW end of Byfjord. Depths in the fairway are from 64 to 97m. A depth of 1.8m lies on the W side of the fairway, about 0.1 mile N of the beacon marking Fuglaskjaer.

Alvoyvag (60°21'N., 5°11'E.) lies on the E side of the above channel, about 1 mile NNE of Fuglaskjaer. A 3.6m patch lies in the middle of the narrow entrance to Alvoyvag.

A small quay, with a depth of 4m alongside, is located at Alvoen, a small town on the NE side of Alvoyvag. Stongi Light marks a rock on the E side of the channel close W of Stangsnes. A bridge, with a vertical clearance of 50m, crosses the channel close N of Stongi Light.

4.20 Brattholmen (60°21'N., 5°10'E.) ([World Port Index No. 23180](#)), a small settlement on the W side of the channel on Litlasotra, lies about 1 mile N of Fuglaskjaer. A pier close to the settlement has a depth of 4m alongside. Anchorage is available for small vessels, in a depth of 11.8m, off the settlement.

The W entrance to Byfjorden lies between Stongi Light and Hjelteskjaer Light, nearly 1 mile to the NNE. This SW reach separates the S side of Askoy from the mainland and trends NE for 2.25 miles to Kvarven, which shows a light, and then continues E for about 1 mile to the W limits of the port area of Bergen at Olderneset. Both sides of this reach are steep-to, with a few existing dangers within 183m of the shores. Depths

in the fairway are ample and in most places exceed 183m. Submarine cables cross the fjord at Storebuneset and about 0.5 mile farther NE.

Skardholmen (60°24'N., 5°13'E.) is located about 0.2 mile NE of Storebuneset. A tanker wharf, with depths of from 10 to 24m alongside, is located at Skardholmen. A cove close NE of Skardholmen affords good anchorage, with mooring rings for small vessels at its N end.

A large oil tank installation in Klampevik has a quay, 76m long, with depths from 11 to 16m alongside, and a shorter quay, with depths of up to 19m alongside.

Caution.—A suspension bridge extends SSE from Skardholmen to Brysteneset. It had a reported (1992) vertical clearance of 60m.

4.21 Skalevik (60°24'N., 5°14'E.), about 0.2 mile SSW of Kvarven, has two oil quays, the W and E of which are approximately 79 and 46m long and have least depths of 15 and 6.4m alongside, respectively. A rock, marked by an iron perch, lies close off the W entrance point of Skalevik. Storholmen, an islet, lies about 0.5 mile N of Kvarven. A quay on the W side of the islet is 85m long, with depths of 14 to 17m alongside. There is a small quay on the E side of the islet, with an alongside depth of 9m.

Anchorage.—Marikoven has good anchorage in a nearby cove in a depth of 30m, sandy bottom. This is a good temporary anchorage for deep-draft vessels. There are mooring rings in the outer part of the cove.

Skjeljanger Light (60°37'N., 4°57'E.) stands on the NW end of Holsenoy. Kvernane, two above-water rocks, lies about 0.6 mile WNW of Skjeljanger Light; a beacon stands on Kvernane. Mefjordbaen Light, lies about 1 mile WSW of Skjeljanger Light. An iron perch marks the NW end of Mefjordbaen.

Herdla, an island enclosing the NW end of Herdelfjorden, lies on the E side of Hjeltefjorden, with its W extremity about 2 miles S of Skjeljanger. A white church on the W slope of the island is a good landmark. A bank, with depths of less than 5.5m, extends about 0.3 mile N from the island.

Approach to Bergen from North

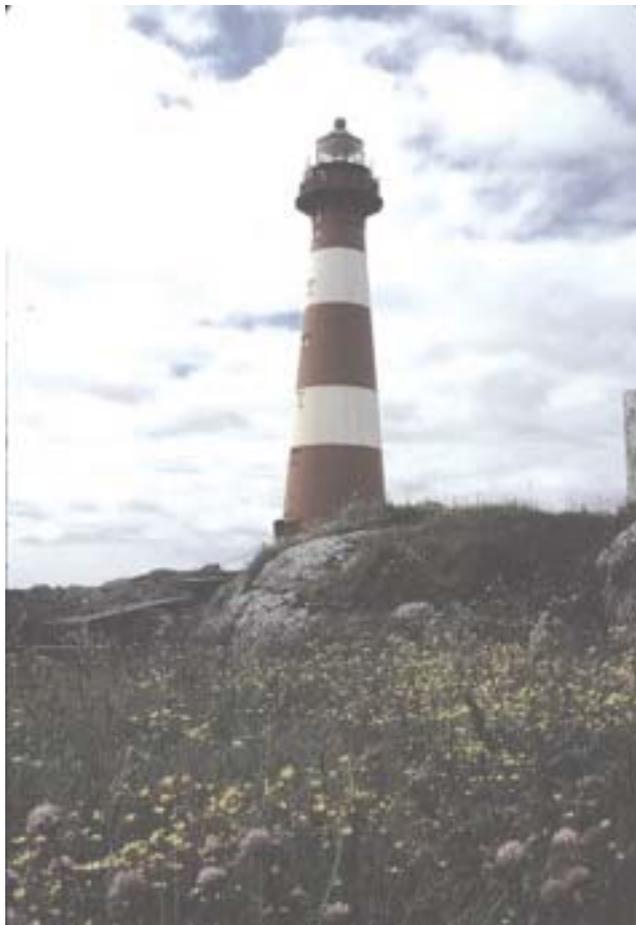
4.22 Fedjeosen (60°44'N., 4°44'E.) is the principal N approach to Bergen. It affords direct access from sea into the channels of Indreleia, which continue S to Bergen for about 30 miles. It is about 1 mile wide between the island of Fedje and the islets to the S.

On the S side of the channel, Bolleflési, a rock lying on foul ground which breaks, is located about 1 mile NW of Nordoyini. A racon is situated at the lighted beacon standing on the rock. A light is shown from the NW end of Nordoy.

On the N side of the channel, Ostre Hellisoy is situated close to the SW side of Fedje. A prominent light tower, 3m high, stands on the island. A racon is situated at the light tower.

In addition to the above, at night, the lights at **Onglesundet** (60°43'N., 4°52'E.) and **Vardholmen** (60°46'N., 4°52'E.) may be of aid to navigation in the channel.

Hakeskallen, a 14m patch, lies about 1 mile NW of Bolleflési and reduces the navigable width of the channel to about 1 mile. Other dangers S and W of Hakeskallen may best be seen on the chart.



Hellisoy Light

Vessels from the N proceeding to Bergen can pass through the length of Hjeltefjorden and then through the SW reach of Byfjorden, the channels of which lead W and S of Askoy. An alternative route leads from the N part of Hjeltefjorden into Herdlefjorden, through that fjord, and then through the N reach of Byfjorden. These two routes are the ones generally used.

Pilotage.—Pilots are transferred by helicopter at the Hordaland-Fedje pilotage station. Pilotage rules and information are, as follows:

1. Pilot boarding places:
 - a. Fedje Vest (60°46.0'N., 4°27.9'E.).
 - b. Holmengra Vest (60°51.0'N., 4°25.9'E.).
2. Pilot services for vessels which exceed 30,000 grt and are classified to carry hazardous or polluting cargo as mentioned in Annex 2 of Regulation 1129/23 December 1994, on the Obligation to Use a Pilot in Norwegian Waters, will be provided exclusively from the pilot boarding places mentioned in paragraph 1 above. The same applies when vessels carry no cargo. Fedje Traffic Control Center may decide that other vessels should also be serviced from the pilot boarding places mentioned in paragraph 1 above.
3. Vessels as mentioned in paragraph 2 above will be offered pilot transfer by helicopter. Such offer will be given

to the vessel or the agent when the initial pilot booking is made. Vessels/agents that do not immediately accept pilot transfer by helicopter will have up to 12 hours prior to commencement of the pilotage assignment in which to make a decision.

4. Vessels that receive a helicopter shall comply with the rules set out in “Guide to Helicopter/Ship Operations,” issued by the International Maritime Pilots Association.

5. Vessels as mentioned in paragraph 2 above, which cannot or do not wish to have a pilot transferred by helicopter, will have a pilot transferred by pilot boat when this can be done safely. The pilot will be transferred to the new pilot boarding places mentioned in paragraph 1 above. It should be noted that to decline use of a helicopter in cases where it is not safe to use a pilot boat will result in waiting time.

6. Fedje Traffic Control Center shall not clear vessels mentioned in paragraph 2 above for entry until the pilot has embarked. Such vessels shall not be cleared for departure with a pilot on board until it is confirmed that the pilot can disembark as intended.

7. If helicopters are available, other vessels than those mentioned in paragraph 2 above may also be offered pilot transfer by helicopter provided the vessels in question satisfies the requirements of paragraph 4 above. The vessels will in the event be provided with a pilot at the new pilot boarding places.

8. The helicopter company will bill the agent for the particular vessel for all costs incurred in pilot transfer by helicopter.

9. The above measures will be implemented immediately and shall apply until further notice.

Vessels not encompassed by these measures will continue to be provided with a pilot by pilot boat at the pilot boarding places in Fedjeosen and off Holmengra. State pilots shall be booked in advance, giving 24 hours notice to Fedje Traffic Control Center.

Fedjefjorden (60°45'N., 4°47'E.) lies E of Fedjeosen and the Holmengra group, and W of many islets and rocks extending 3 miles NW from Fosnoy. On the W side of Fedjefjorden, there are no known dangers more than 183m off Fedje.

Hjeltefjorden (60°35'N., 4°55'E.) is the principal part of the N inner approach to Bergen. The fairway through Hjeltefjorden favors the W side of the fjord and passes within 0.5 mile of the outer islets and dangers on that side. Between Geitanger and the entrance of Byfjorden the fairway width is considerably reduced. Buoys or iron perches mark some of the outer dangers, and there are some beacons and a few lights.

Toska (Toskoy), a narrow island, lies on the E side of Hjeltefjorden abreast of Seloy. A small inlet which is entered from Hjeltefjorden nearly divides Toska into two parts.

The N part of Toska is known as Uttoska. Norde Flesi, marked by a buoy, lies about 0.5 mile NW of the NW extremity of Uttoska. Stureholmen, which shows a light, lies on the W side of Hjeltefjorden.

The direct Hjeltefjorden route is used by large vessels. Small vessels and vessels of moderate size usually prefer the route through Herdlefjorden, which is almost free from dangers in the greater part of its length, but narrows at its N end.

4.23 Store Oil Terminal (60°37'N., 4°52'E.) is a major facility for the export of oil received by pipeline from the Oseberg Oil Field. The terminal is located close N of Stureholmen Light and consists of two jetties, with associated mooring dolphins, extending E from the shore 0.4 mile and 0.8 mile, respectively, NNW of the light tower. A short breakwater projects S from the shore close S of the root of the N jetty to protect the tugs.

Tankers up to 300,000 dwt and 23m draft can be accommodated at the terminal.

Pilotage.—Pilotage is compulsory for all vessels over 4,000 grt carrying cargo to and from the terminal. See Pub 180, Sailing Directions (Planning Guide) Arctic Ocean for details.

Helmferdfllu, a rock with a depth of 3m, lies about 0.5 mile NNW of Stureholmen and close N of the S tanker berth; it is marked by a lighted beacon. Sandvikflu lies about 1 mile NNW of Stureholmen and close SW of the S end of the N tanker berth; it is marked by an iron perch.

A conspicuous water tower, 64m in elevation, and a conspicuous flare tower, 52m in elevation, stand in the vicinity of the oil terminal and may be seen from a considerable distance.

4.24 Mangersfjorden (60°37'N., 5°00'E.) lies on the E side of Hjeltefjorden and is entered about 10 miles SE of the seaward entrance of Fedjeosen. The fjord is deep and clear in the fairway. All dangers lie within 300m of the shores. The fjord trends about 4 miles to the E and shows a light at its head.

Skjeljanger Light (60°37'N., 4°57'E.) stands on the NW end of Holsenoy. Kvernane, two above-water rocks, lies about 0.6 mile WNW of Skjeljanger Light. A beacon stands on Kvernane. Mefjordbaen Light lies about 1 mile WSW of Skjeljanger Light. An iron perch marks the NW end of Mefjordbaen.

Herdla, an island enclosing the NW end of Herdlefjorden, lies on the E side of Hjeltefjorden, with its W extremity about 2 miles S of Skjeljanger. A white church on the W slope of the island is a good landmark. A bank, with depths of less than 5.5m, extends about 0.3 mile N from the island.

4.25 Herdlesund (60°34'N., 4°58'E.), between Herdla and the N end of Askoy, is a narrow channel leading from Hjeltefjorden into the N end of Herdlefjorden. A light is shown on the NW point of Askoy. A bridge, with a vertical clearance of 16.2m, spans Herdlesund. Red fixed lights beneath the bridge indicate the center of the fairway.

Herdlefluene, a group of shoals extending S from Herdla, are marked by an iron perch at their E end, which dries, lying 0.2 mile SW of the bridge.

Between Krabbejoneset and the Byfjorden entrance, about 11 miles SE, the fairway of Hjeltefjorden continues to be deep and clear, and for the most part favors the W side of the fjord. Both shores are irregular, and most of the detached islets and dangers are on the E side, lying up to 1.5 miles off the W side of Askoy.

Store Jona lies on the W side of the fairway of Hjeltefjorden, about 1 mile E of Krabbejoneset. Store Jona consists of two close-lying islets. A light is shown on the S islet.

Rongsund (60°30'N., 4°56'E.), on the W side of Hjeltefjorden, is entered between Rongoy and Toftoy, about 1 mile S of Store Jona. Vikavag, on the E side of Toftoy, has mooring rings. The largest of several quays, situated on the E side of Vikavag, has depths of up to 7m alongside.

Hanoy and Hauglandsøy, on the W side of Hjeltefjorden, are the largest islets in an archipelago which extends about 2 miles from the W side of Askoy and forms the NW side of a basin named Hauglandsosen.

Lights and iron perches mark several intricate channels among the islets. A light is shown from a rock N of Hillesoy.

An overhead cable, with a vertical clearance of 22m, extends NE from **Ramsøyni** (60°26'N., 5°03'E.) to Hanoy. A causeway and bridge have been constructed between Hanoy and Ramsøy.

Nordre Brattholme (60°24'N., 5°06'E.), which shows a light, lies on the W side of the fairway, 2 miles S of Hanoy. Store Brattholme, marked by a beacon, lies close W of Nordre Brattholme. Faeroy, an island, lies about 1 mile E of Nordre Brattholme light. A small boat harbor, protected by a mole, is located at Follese, which lies on the SW side of Askoy.

4.26 Agotnes (60°24'N., 5°01'E.) ([World Port Index No. 23195](#)) is a supply and servicing base for offshore industry. There are nine berths, with lengths of 20 to 180m and depths of 4.7 to 20m alongside. Vessels up to 50,000 dwt can be accommodated.

Anchorage can be obtained 0.25 mile N of Agotnes, in depths of 29 to 74m. Large vessels and semi-submersible drilling platforms must anchor only in positions appointed by the Port Authority.

Pilotage is compulsory. Pilots are available at Korsfjorden or Fedje.

Tranvagen, a small port, lies about 0.5 mile NW of Agotnes.

A quay in the port has depths of 5 to 7m alongside. A lighted buoy marks a 6m patch 183m W of Tranneset. Vessels of considerable size can anchor 0.3 mile N of Tranneset.

Vessels should use care when anchoring to avoid a submarine cable which exists between the shore W of this anchorage and the head of Tranvagen. Near the anchorage, there is a quay, with 3 to 7m alongside.

There are a number of anchorages between Krabbejoneset and the entrance to Byfjord. These anchorages, except as noted, are suitable only for small vessels with local knowledge, and can best be seen on the area chart.

A protected area has been established around the oil terminal. Berthing and unberthing are only permitted during daylight.

4.27 Herdlefjorden (60°32'N., 5°05'E.) is a deep, clear fjord separating Holsnøy and Askoy. From the N entrance, it trends ESE for about 9 miles, where it joins with the N part of Byfjorden at Askeneset. The few islets and dangers in Herdlefjorden all lie within the several inlets on either side or close to the shores.

An area in which anchoring and fishing is prohibited lies within the entrance to Herdlefjorden between Nesodden and Ypso. Small vessels with local knowledge can obtain anchorage in Herdlefjorden.

The N entrance to Byfjorden is entered between Askenset and Galteneset, 1 mile to the NNE. This entrance is at the junction of Byfjorden, Herdlefjorden, and Salhusfjorden. This reach is very deep and all known dangers lie close off its shores. Submarine cables cross the reach in two places and can best be seen on the chart.

4.28 Radoyfjorden (60°35'N., 5°11'E.) lies between Holsnoy and Radoy. The fjord is free from dangers in the fairway, except in the vicinity of Saebolholmane. A quay, with depths of 3 to 6m alongside, is situated about 1 mile NNW of Saebolholmane.

Bongnestraumen, between the NE side of Bongno and Radoy, is a narrows connecting Radoyfjorden with Mangersfjorden. A light is shown on the N side of Bongno. A cable, with a vertical clearance of 37m, spans Bongnestraumen. This channel has a least depth in the fairway of 21.9m and, although narrow, is free from dangers.

From abreast the E extremity of Bongno, Radoyfjorden trends in a general SE direction for about 5 miles and joins Kvernafjorden in the vicinity of Tjuvholme. The fairway through the fjord is deep and clear, but there are some nearby dangers.

Kvernafjorden trends SE for about 2 miles to the N end of Hagelsund. Navigation is prohibited to all but local vessels between Flatoy and Holsnoy. A light marks a shoal on the SW side of Kvernafjorden, about 0.3 mile SSE of Tjuvholme.

Three cables span the channel between Flatoy and Holsnoy and can best be seen on the chart.

Salhusfjorden trends SSW from its junction with Hagelsund for about 3 miles to its junction with Herdlefjorden and the N reach of Byfjorden. Salhusfjorden is very deep and has a fairway clear of dangers. Foul ground extends about 183m SW from a projection on the E side of the S entrance of the fjord. A submarine cable crosses the fjord 0.5 mile within its entrance. Salhus, on the E side of the fjord, has two small quays. At Frekhaug, 1 mile NW of Salhus, there are quays, with depths of from 3 to 6m alongside.

A bridge, with a vertical clearance of 32m, crosses Salhusfjorden from the SW extremity of Flatoy to Klauvneset, about 0.8 mile SE.

4.29 Lurefjorden (60°42'N., 5°07'E.) is approached from Fedjeosen and the S end of Fedjefjorden by passing N of Store Sandholme and the dangers E of this islet and then through Hoplandsosen and Fosnstraumen. The S approach is made from Kvernafjorden by way of Alversund, Radsundet and Lureosen. A light marks the N side of the NW entrance of Hoplandsosen. Taren, awash in places and marked by an iron perch, lies on the S side of the Hoplandsosen entrance.

Kraka is an above-water rock on the SW side of Hoplandsosen. Fosnstraumen is the narrow channel between the N side of Radoy and the S end of Fosnoy and connects Hoplandsosen with the NW end of Lurefjorden. The fairway has a least charted depth of 20m. Two overhead cables, with a minimum vertical clearance of 15m, span the channel.

Lurefjorden trends about 9 miles SE to the narrow Rylandspollen. Seimsfjorden continues about 3 miles SSE from Lurefjorden. Both of these fjords are clear and deep in their fairways. Numerous lights mark the channels leading N and S

from Lurefjorden. The dangers in these channels are also marked by iron perches or beacons.

Alverstraumen (60°34'N., 5°14'E.), which leads 1.5 miles NNW from Kvernafjorden, is spanned near the S end by a bridge, with a vertical clearance of 27m. The fairway N of the bridge is well marked by navigational aids.

There are quays, with least depths of 3m alongside, on the E side of the channel at the village of Alversund, near the bridge.

There is anchorage for small vessels in several places N of a submarine cable which lies across the channel 0.25 mile N of the bridge, care being taken to keep clear of the fairway.

Radsundet has a length of about 5 miles from its S entrance at Alverstraumen to its N entrance at Bruknappen. The W side and both ends of Radsundet is well marked by lights.

There are quays at Skardsvag and Notlevag. Quays at Sandvik, situated 1 mile SSW of Skardsvag, and Askeland have depths of 7m alongside.

Bergen (60°24'N., 5°19'E.)

World Port Index No. 23160

4.30 Bergen is often called the capital of West Norway and has been a city for over 900 years. It has a population of more than 210,000. Known for shipping and fishing in the past, it is now identified as a servicing and supply base for the offshore oil and gas fields of the North Sea in the vicinity of SW Norway as well.



Bergen Harbor Area

Located on the NW side of the Bergen peninsula and on the SE part of Byfjorden, the city's harbor includes bights and inlets which lie E of a line running N for about 3 miles from Olderneset to Hella.

Puddefjorden is the outer roadstead. Vagen is an inlet entered on the NE side of Puddefjorden; it is usually congested with ships moving in the harbor. Sandvik, a harbor basin, is entered about 0.5 mile N of the entrance to Vagen and is used by seaplanes. Nyhaven and Breidvik are small harbor basins close N of Sandvik.



Bergen



Bergen—Vagen Nordnes at Skottegunnskaien from W

A bridge, with a vertical clearance of 26m, spans the entrance into Damsgardssund. Numerous mooring buoys are moored in Damsgardssund. Store Lungegaardsvn is entered from the NE side of Solheimsvik through a narrow passage spanned by a lift bridge.



Dokkeskjskaien

Winds—Weather.—Generally, the wind direction is from S to SE during the winter and from N to NE during the summer.

Weather conditions vary between the outer islands, the region near Bergen, and in the fjords of this sector. The climate at Bergen is mild, humid, and rainy. Bergen harbor freezes only during very severe winters. Fog occurs during the summer.

Tides—Currents.—The mean HW interval at Bergen is 10 hours 17 minutes. Tidal currents in the port are negligible, except in Damsgardssund, where a slight set may be encountered during both the rising and falling tides.

Depths—Limitations.—Puddefjorden, the outer roadstead, has general depths of 9 to 37m. Close offshore the depths are less. On the SE side, at the head of Puddefjorden, Damsgardssund leads into Solheimsvik.

Bergen Port Facilities

Quay	Length	Depth alongside	Remarks
Mohlenpriskaien	306m	2.9-4.5m	Located on N side of Damsgardssund E of the bridge.
Frieleneskaien	251m	5.9-9.2m	Located on N side of Damsgardssund W of the bridge.
Dokkeskjerskaien			
South Quay	439m	7.2-11.0m	Located on N side of Damsgardssund W of the bridge.
West Quay	100m	7.9-9.7m	
North Quay	155m	7.3-8.7m	

There is a total of approximately 9,139m of quayside within the port. The main quays are listed below:

1. Jekteviken Quay, close N of Dokkeskjerskaien, is 253m long with depths of 9 to 11.6m alongside. It handles container and ro-ro cargo.

2. Skoltegrunnskaien, at the N side of the entrance to Vagen, is used by passenger vessels. The quay has a total berthing space of 700m and has depths of 6.5 to 9.7m alongside.

3. At Hegrenese, on the outer W side of Nyhaven, a grain quay is 75m long, with depths of 8.8 to 10m alongside. A conspicuous silo stands in the vicinity of the quay.

4. Rieber Coal Quay, close N of the grain quay, is 147m long with depths of 6.2 to 9.7m alongside.

Passenger, container, ro-ro, tanker, bulk, and general cargo vessels can be handled. In addition, the port has drydocks and shipyard facilities for the offshore oil industry.

Vessels up to 70,200 grt have been accommodated in the harbor. Generally, vessels up to 10.6m draft can be handled. It

was reported that a vessel with a draft of 11m had entered the port.

Pilotage.—Pilotage is compulsory for Bergen. Pilots for Bergen board in the following positions:

1. Vessels approaching from S (see paragraph 4.17) board the pilot at the W end of Korsfjorden, on the north side, in the vicinity of Viksoy and Store Flesa, or at the entrance to Korsfjorden, about 1 mile N of Store Marstein.

2. Vessels approaching from N board the pilot at Fedjeosen (see paragraph 4.23), either off Hellisoy Light or off Homengra Light. When pilots are prevented from boarding due to bad weather at the above locations, they will then do so E of Grisholmen, 0.25 mile N of Fedje.

See Pub. 180, Sailing Directions (Planning Guide) Arctic Region for additional information.

Regulations.—A printed English translation of harbor regulations may be obtained at the harbor office. Regulations concerning explosives and lights are very stringent. Vessels arriving at Bergen without having been assigned an anchorage or mooring shall anchor in Puddefjorden until a berth has been designated by the harbor authorities.

Anchorage.—Vessels of considerable size may anchor in Puddefjorden, except W of a line extending 0.5 mile NW from the W end of Dokkeskjerskaien. The fjord is exposed to NW winds, but the holding ground is good. The prominent spire of a church, situated 0.25 mile NNE of the bridge at the entrance to Damsgardssund, is a useful mark for anchoring.

Skutevik affords anchorage to vessels of moderate size, in depths of from 27 to 36m, but stern mooring is necessary as the bottom shelves steeply. The quarantine anchorage is in Florvag. There is anchorage for small vessels in Nyhavn and Breidvik.

Anchorage is prohibited in Vagen and also W of the lighted buoy in the entrance to Vagen

Inner Fjords Northeast of Bergen

4.31 Osteroy, a large island, lies about 6 miles NE of Bergen. The island is completely shut in by the mainland and is encircled by Sorfjorden and Osterfjorden. Both of these fjords have deep fairways and have comparatively few dangers.

Sorfjorden (60°31'N., 5°22'E.), the southernmost of the inner fjords, is entered between **Hammersnes** (60°33'N., 5°20'E.) and Hordvikneset, about 2 miles to the SW. Depths in the fairway exceed 183m, except for 1.25 miles in the NE part where it narrows, the depth is 12.8 to 33m.

The few shoal areas lie close offshore and the entire fjord is well marked by lights. It has been reported an overhead cable, with a vertical clearance of 60m, spans the fjord about 5 miles within the entrance.

Votloy (60°28'N., 5°28'E.), an islet, lies about 6 miles within the entrance near the middle of the fjord. A light is shown on the islet.

Arnavag, which branches S from Sorfjorden, is entered 0.5 mile SSW of Fotloy. There are a number of quays for small vessels inside the entrance to Arnavag.

A bridge, with a vertical clearance of 53m, crosses Sorfjorden about 3 miles SE of Fotloy.

Vaksdal (60°29'N., 5°44'E.) (World Port Index No. 23140), an industrial center, is located on the E side of Sorfjorden, ENE

of the light on the islet of Ulsnesoy. Large vessels can berth at the largest quay, which is 145m long, with depths of 7 to 21m alongside. There are several small quays in the port.

Vessels bound for the port must first call at Bergen for customs clearance and a pilot. A conspicuous mill and silo stand in the vicinity of the quay.

Anchorage.—Good anchorage can be obtained by small vessels in Veavik, on the W side of Sorfjorden, 4.5 miles N of the entrance to Dalevagen. Stammeshella, on the N side of Vikafjorden close within the entrance, is an anchorage with mooring rings W and E of the main quay, which is 64m long and has depths of up to 5m alongside.

Good anchorage can be obtained by small vessels in Kallandsbukt close NE of Kallandsholmen, in depths of 10 to 18m, sand.

4.32 Eidsfjorden (60°43'N., 5°47'E.) trends NNE for about 3.25 miles from the N end of Sorfjorden. It is narrow and, except for a shoal lying within 1 mile of its head, has fairway depths of 30 to 106m. The depths close offshore are between 12.8 and 20.1m.

Mellesdalsund is the winding channel leading in a general NW direction for about 3 miles on the N side of Osteroy and connecting the N end of Sorfjorden with Romarheimsfjord.

The fairway through Mellesdalsund is deep and clear of dangers. Romarheimsfjord, entered between Langeneset and

the E side of Haukoy, leads 3 miles NE to Mofjorden, which continues NE for another 6.5 miles. Osterfjorden is entered between Hammersnes and a mainland point, about 2 miles to the W. The fjord trends in a general NE direction for about 13 miles and joins the S end of Romereimsfjord. Fairway depths through the fjord are ample and the fjord is clear. The only dangers are found within the side inlets and coves or lie within 183m of the sides of the fjord.

Lonevagen (60°33'N., 5°27'E.), on the SE side of Osterfjorden, is entered 3 miles ENE of Hammersnes and extends about 3 miles SE. The entrance is narrowed to a width of 183m by submerged rocks, marked on the NE side of the entrance by an iron perch.

On the SE side of Osterfjorden, small vessels can anchor in Lonevagen between some islets and the W entrance point. The inlet has several quays, with depths of from 3 to 5m alongside.

At Ostereidet, on the NW side of Osterfjorden, there is anchorage for small vessels W of a quay, which has a depth of 3m alongside.

At Kleppsvag, on the S side of Osterfjorden, good anchorage is available to small vessels at its head, in depths of from 20 to 30m; it has mooring rings. There is a rock, awash, near the middle of the entrance to this inlet.

There are a number of other anchorages for small vessels in Osterfjorden that can best be seen on the area chart