



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.
SECTOR 1 — CHART INFORMATION

SECTOR 1

PAKISTAN AND THE WEST COAST COAST OF INDIA—RAS MUARI TO DIU HEAD (INCLUDING THE GULF OF KUTCH)

Plan.—This sector describes the coasts of Pakistan and India between Ras Muari and Diu Head (20°41'N., 70°50'E.), including the Gulf of Kutch. The sector includes the port of Karachi. The arrangement of the sector is from NW to SE.

Ras Muari to Karachi

1.1 Ras Muari (Cape Monze) (24°50'N., 66°39'E.) is the W extremity of a sloping headland which rises to a pointed summit about 148m high, about 0.8 mile E of the headland. The Jhil Range, a ridge with a nearly level crest with several remarkable hummocks on it, extends about 10 miles NE of Ras Muari; the highest hummock, 234m high, lies about 3.5 miles E of Ras Muari. Ras Muari lies about 17 miles W of the entrance to Karachi and is the most likely landfall for vessels approaching Karachi from W.

Ras Muari Light, shown from a concrete tower, 51m high and painted in horizontal white and black bands, is situated on the coast about 1 mile SE of Ras Muari.

There are ten major lights in the area covered by this sector. In addition to the light on Ras Muari, they are Manora Point Light, Khuddi Light, Jakhau Light, Chachhi Light, Navinal Point Light, Mandvi Light, Pirothan Island Light, Kalubhar Tapu Light, and Humani Point Light.

Churma Island (24°54'N., 66°36'E.), 179m high, lies about 4 miles NW of Ras Muari.

Beauchamp Reef, a narrow ridge of sand, gravel, and shell, with a least depth of 8m, extends about 3 miles NW from a position about 4 miles W of Ras Muari.

A spit, with depths of less than 18.3m, extends about 3.5 miles SW of Ras Muari Light. Nancowry Shoal, consisting of a series of sand, gravel, and coral ridges, with depths of less than 11m, lies on the inshore part of this spit. Two 10.5m patches lie on the spit, about 1.5 and 2.3 miles, respectively, SW of Ras Muari Light.

Caution.—A dangerous wreck is charted 27 miles S of Karachi.

A submarine exercise area extends up to 40 miles WNW, 50 miles SW, and 25 miles SSE of Ras Muari. Naval exercises take place S and W of Ras Muari.

The coast from Ras Muari to Buleji Point (Goth Jafar), about 9 miles E, is rocky and backed by the Jhil Range. It is low and sandy to Manora Point, about 8.5 miles farther ESE.

Caution.—Foul ground and shoal water, with depths of less than 9.1m, extend nearly 2 miles SSE of Buleji Point. Shoals, with depths of 9.1 to 10.3m, lie up to 2.8 miles S of the point.

A prohibited anchorage area, best seen on the chart, lies SW of Buleji Point.

1.2 Hawkes Bay, E of Buleji Point, has general depths of less than 5.5m. A rock, with depths of less than 1.8m, lies in the middle of the entrance to the bay.

A submarine cable is laid from Hawkes Bay, leading S, then WSW and W, passing about 4.5 miles S of Ras Muari.

Manora Point (24°47'N., 66°59'E.), forming the W side of the entrance to Karachi, is a perpendicular cliff at the SE end of a narrow hill, about 29m high. Manora Point Light is shown from a red circular tower with white bands, 38m high, about 0.3 mile NNW of Manora Point. The signal station for communicating with vessels outside the harbor is a conspicuous lattice tower, 42.5m high, about 91m WSW of the light structure. Manora Breakwater extends about 0.2 mile SSE from Manora Point. Manora Breakwater Light, a 15m high lattice tower, is situated at the end of the breakwater.

A lighted buoy, moored off the edge of the coastal bank about 3 miles SSE of Manora Point, marks the N edge of a spoil ground and is on station from September to May. Its position is approximate and is liable to be washed away or withdrawn frequently.

Karachi (24°47'N., 66°59'E.)

World Port Index No. 48600

1.3 Karachi, the principal sea and rail terminal of Pakistan, is the gateway to the fertile regions of the interior. Karachi is the largest and leading industrial city of Pakistan. The harbor is divided into the Lower Harbor and the Upper Harbor, with the principal commercial facilities situated on both sides of the Upper Harbor.

Winds—Weather.—The Southwest Monsoon, which generally runs from July to September, is characterized by high humidity, high temperature, and strong winds. In addition to the rain, which generally reaches Karachi in the latter part of July, the Southwest Monsoon wind brings with it fine alluvial sand, which continuously blankets the city. Some squalls reaching force 6-7 will occur during the Southwest Monsoon.

The Northeast Monsoon (December through March) is characterized by a relatively cool, dry, land breeze from the NE. Fog or mist is common at dawn and dusk during the winter months.

Tides—Currents.—The tidal rise at Karachi is 2.7m at MHHW and 2.4m at MLHW.

Tides at Karachi are semidiurnal and show a pronounced diurnal inequality at times, particularly at LW, occasionally falling below the level of the chart datum.

In the outer anchorage, the flood current sets E and the ebb current, which is scarcely perceptible, sets W.

The flood current sets E across the SE end of Manora Breakwater at a velocity of 2 knots, then into the channel and harbor toward the S end of W wharf, where it branches into both the Upper Harbor and Baba Channel. In the Upper Harbor, it is strongest on the W side; its greatest velocity in the entrance is about 2 knots.

The ebb current sets down the channel until abreast the oil facilities on the E side of Lower Harbor, where it sets strongly toward the E side of the channel. Its greatest velocity is about 3 knots at springs.

On the incoming tidal currents, during the Southwest Monsoon, a considerable swell rolls into the Lower Harbor, making boat work at the Manora piers, which are situated on the W side of the Lower Harbor NW of Manora Point, hazardous.

Depths—Limitations.—The depths in the port of Karachi are reduced to the chart datum measured from the lowest astronomical tide. Due to the varying depths at berths and silting in the channels, vessels with a draft exceeding 9.7m are not permitted to enter the port. The silting usually occurs during the Southwest Monsoon; therefore, dredging in the harbor is continuously in progress to maintain the charted depth as far as possible. Although the authorized maximum draft for vessels entering or leaving the port has been 9.8m, during the Southwest Monsoon this may increase or decrease at the discretion of the port officer, according to the prevailing state and conditions.

The channel, from Fairway Lighted Buoy K to ENE of Manora Point, is dredged to a depth of 12.2m; N of this, the Lower Harbor channel, with a dredged depth of 11.3m, stretches to a position 1.5 miles NE of Manora Point. North of this position, the rest of the Lower Harbor is dredged to a depth of 9.1m on its E side and 8.2m on its W side.

The channel along the Upper Harbor is dredged to a depth of 9.1m; on the W bank are the naval dockyard and West Wharf, while on the E bank lies East Wharf. New Channel leads W of

the naval dockyard and the West Wharf. It has a width of 106.7m and it is dredged to a depth of 7.6m.

When berthing, vessels are advised to let go an anchor in midstream to enable them to haul-off when leaving; however, attention should be paid to unreliable holding ground, for the anchor may drag when casting off.

Along E side of the Lower Harbor channel are four oil piers. Berthing information is given in the accompanying table. There is a turning basin abreast Berth OP-IV which has a dredged depth of 10.4m.

On the W side of the channel, between Bunker Island and Baba Pool, there are head and stern mooring berths to accommodate vessels up to 183m in length. LASH vessels up to 259m in length, with a maximum draft of 8.2m, berth abreast Bunker Island. Caution is necessary as many stranded and dangerous wrecks, best seen on the chart, lie in the vicinity of the mooring buoys between the LASH moorings and Baba Pool.

Berthing information for East Wharf, Juna Bundar Wharf, West Wharf, and the Lower Harbor oil facilities are given in the accompanying table.

The entire frontage of West Wharf S of Berth No. 24 is occupied by a shipyard for a distance of about 0.5 mile. From the S tip, the frontage then leads about 1.25 miles NNE along the E bank of the New Channel, where numerous drydocks and slipways are situated.

The largest drydock in Karachi is situated in this area. It is 189m long and 27.4m wide, with a sill depth of 5.5m; vessels up to 26,000 dwt can be accommodated. The berths along the E and W banks of the shipyard and the drydocks are dredged to a depth of 6.7m.

| Karachi Berthing Facilities | | | |
|-----------------------------|--------|-------|----------------|
| Berth | Length | Depth | Remarks |
| EAST WHARF | | | |
| Merewether Wharf | | | |
| Berth No. 1 | 153m | 9.1m | Containers. |
| Berth No. 2 | 152m | 9.1m | Containers. |
| Berth No. 3 | 167m | 9.1m | Containers. |
| Berth No. 4 | 152m | 9.1m | Containers. |
| Erskine Wharf | | | |
| Berth No. 5 | 149m | 8.5m | Multi-purpose. |
| Berth No. 6 | 167m | 8.5m | Multi-purpose. |
| Berth No. 7 | 147m | 8.5m | Multi-purpose. |
| Berth No. 8 | 167m | 9.5m | Multi-purpose. |
| James Wharf | | | |
| Berth No. 9 | 147m | 10.4m | Bulk cargo. |
| Berth No. 10 | 147m | 10.4m | Bulk cargo. |
| Berth No. 11 | 167m | 10.4m | Bulk cargo. |
| Giles Wharf | | | |
| Berth No. 12 | 147m | 10.4m | Bulk cargo. |

| Karachi Berthing Facilities | | | |
|--------------------------------|--------|-------|---|
| Berth | Length | Depth | Remarks |
| Berth No. 13 | 167m | 10.4m | Bulk cargo. |
| Berth No. 14 | 147m | 10.4m | |
| Younghusband Wharf | | | |
| Berth No. 15 | 147m | 10.4m | Containers and ro-ro. |
| Berth No. 16 | 167m | 10.4m | Containers and ro-ro. Vessels with a length of 275m and over. |
| Berth No. 17 | 147m | 10.4m | Containers, ro-ro, and grain discharge. Vessels with a length of 275m and over. |
| Berth No. 17A | 36m | 3.0m | Lighterage. |
| Napier Mole Ship Repair Berths | | | |
| Berth No. 1 | 79m | 7.3m | |
| Berth No. 2 | 79m | 7.3m | |
| JUNA BUNDAR WHARF | | | |
| Berth No. 25 | 149m | 9.1m | |
| Berth No. 26 | 164m | 9.1m | |
| Berth No. 27 | 164m | 9.1m | |
| Berth No. 28 | 168m | 9.1m | |
| WEST WHARF | | | |
| Berth No. 18A | 374m | 7.3m | Lighterage. |
| Berth No. 18 | 167m | 9.7m | |
| Berth No. 19 | 167m | 9.7m | |
| Berth No. 20 | 182m | 9.7m | |
| Berth No. 21 | 190m | 9.7m | |
| Berth No. 22 | 182m | 11.6m | Containers. |
| Berth No. 23 | 213m | 11.6m | Containers. |
| Berth No. 24 | 152m | 11.0m | Containers and ro-ro. |
| Berth No. 24A | 37m | 5.5m | Lighterage. |
| LOWER HARBOR OIL FACILITIES | | | |
| Berth OP-I | 196m | 11.3m | Vessels up to 35,000 dwt and: 1. A maximum length of 229m. 2. A maximum beam of 30.5m. 3. A maximum draft of 10.7m. |
| Berth OP-IV | 305m | 13.4m | Vessels up to 75,000 dwt and: 1. A maximum length of 259m. 2. A maximum beam of 39.6m. 3. A maximum draft of 11.89m. |
| Berth OP-V | 322m | — | Vessels up to 75,000 dwt and: 1. A maximum length of 259m. 2. A maximum beam of 39.6m. 3. A maximum draft of 11.89m. Note. —This facility is situated in the charted position of Berth OP-II and Berth OP-III. |

Aspect.—The Lower Harbor is that portion of the harbor between the entrance and the S end of East Wharf. Kiamari Groin forms the NE side of the Lower Harbor. The oiling pier lies in the NE part of the outer harbor. Extensive oil storage installations in the vicinity of the oiling pier are visible from a considerable distance.

The Upper Harbor is formed between East Wharf on its E side and West Wharf on its W side. Kiamari, a small town built on a sand ridge, lies E of the S part of East Wharf.

The new part of Karachi, at the head of the Upper Harbor, contains many fine buildings, while that part closest to the harbor is closely-built and crowded.

When approaching Karachi from S and passing the Indus Delta, the landmarks are not good. Land is not generally seen before sighting Manora Point. During the Southwest Monsoon, this approach is particularly hazardous. There is a continuous haze and overcast during this season, making visual determination of the ship's position difficult. From the W, Ras Muari makes a good landmark.

Several groups of large square buildings are distinguishable at Clifton, situated on some low sandhills, about 3 miles E of Manora Point.

At night, the lights on East Wharf can be seen from some distance seaward and care is necessary not to mistake them for navigational lights when approaching the port. Three conspicuous chimneys, one of which emits a flare, stand about 8 miles E of Manora Point.

Bara Andai, 28m high and marked by a light, lies about 1 mile ENE of Manora Point and is the S islet of Oyster Rocks.

Pilotage.—Pilotage is compulsory for merchant vessels of over 200 nrt. Pilots board incoming vessels by day or night in the vicinity of Fairway Lighted Buoy K. Pilots are requested by VHF. The Manora Point Light signal station will advise the vessel if rough weather prohibits the pilot from boarding.

The Karachi Pilot hailing and working frequencies are VHF channels 16, 12, 8, 9, and 11.

A vessel, while awaiting the pilot, should heave-to with its head to wind and sea and, on the approach of the pilot boat, bring the wind and sea on the port quarter and lower an accommodation ladder on the lee side.

Regulations.—Ships should contact Manora Pilot Control when within range.

Vessels should send their ETA and arrival draft to the port, via their agent, 48 hours in advance.

Inbound vessels should maintain a listening watch on VHF channel 12 when the pilot boards. Outbound vessels should maintain a listening watch on VHF channel 12 from 30 minutes prior to departure until when outside the port limits.

When arriving at the anchorage, the following information should be reported:

1. Time of arrival.
2. Vessel's name and flag.
3. Cargo.
4. Position.

Vessels with their bridge structure aft and having a length greater than 170m must arrive, sail, and shift berth during daylight hours only.

The following vessels may navigate in the harbor only between LW and 1 hour before HW:

1. Cargo vessels greater than 288m long.

2. Tankers greater than 259m long berthing at OP-I and OP-IV.

It has been reported (1995) that vessels are not allowed to depart the harbor on the ebb current.

Signals.—The signal station for communicating with vessels outside the harbor is the tower WSW of Manora Point Light. This tower, which is manned continuously, will flash the Morse Code Letter "U" if a vessel appears to be lying into danger.

Storm signals, using the [General System](#), are displayed from the Manora Point Light signal station and from the N entrance of Boat Basin, about 1.5 miles N of the Manora Point Light signal station. Further information on these storm signals may be found in Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean under "India—Signals."

Anchorage.—Anchoring is prohibited within the area, best seen on the charts, which extends 5 miles SW from Manora Breakwater. Anchorage is also prohibited within an area, best seen on the chart, extending about 2 miles SSW from a position about 1.5 miles NW of Manora Point.

From September to May, ships can anchor off Karachi outside the charted prohibited anchorage areas, as convenient according to draft; ships are recommended not to anchor in depths less than 9m and during April and May, they should anchor farther offshore in depths not less than 12m.

Vessels should not anchor off Karachi during the Southwest Monsoon, as several vessels have lost anchors and cables while attempting to do so.

Vessels having had more than two cases of dangerous infectious diseases aboard, or in which more than two deaths have occurred during the 12 days prior to their arrival at Karachi, must anchor in the quarantine anchorage, best seen on the chart, at the entrance to the harbor. Vessels in quarantine may enter the harbor during daylight hours only.

Directions.—The best approach is with Manora Point Light bearing about 040° until Fairway Lighted Buoy K is sighted and closed; then bring the leading lights in line as mentioned below. It is dangerous to proceed within 2 miles of the harbor entrance, and under no circumstance should a vessel attempt to enter the harbor without a pilot. The lighthouse should not be brought to bear less than 030° due to the heavy rollers and swell on the edge of the flats.

The approach channel to the harbor entrance is marked by a lighted range, shown from metal framed beacons situated S of Bara Andai Island. The channel is marked on either side by lighted buoys.

The best time to enter Karachi is on the first or last of the flood tidal current. A vessel should swing to an anchor and berth with its head S. When berthing during the Southwest Monsoon, it is advisable to drop an anchor in midstream to assist in hauling off.

When leaving the harbor, the pilot disembarks at the harbor entrance. Vessels should then steer through the buoyed channel on course 220° until Fairway Lighted Buoy K is passed clear. However, as stated previously, Manora Point Light should not be brought to bear less than 030°.

Caution.—No vessel should proceed within 2 miles of the harbor entrance without local knowledge. Vessels should not attempt to enter the harbor without a pilot.

Several vessels approaching Karachi from S have grounded on the banks off the Indus Delta through failure to sound and for not making due allowance for the SE set.

Dangey Patches, rocky heads with a least depth of 10.4m, lie about 1.5 miles WSW of Manora Point. Three dangerous wrecks lie within the red sector of Bari Andai Light, about 3 miles S, 5.8 miles S, and 4.3 miles SSE, respectively, of Bara Andai Island.

There are dangerous or stranded wrecks which lie within 1, 6, and 9 miles SW of Manora Point Light. Other dangerous wrecks lie 2.5 and 4.8 miles WSW, and 5 miles W of Manora Point Light. These dangerous wrecks may not be marked by buoys.

Approach to Port Muhammad Bin Qasim

1.4 Phitti Creek (24°40'N., 67°09'E.) is entered 11 miles SE of Manora Point, between Buddo Island, which is low and sandy, and Zulfiquar Bank, which dries 0.6m. A tower, with an elevation of 24m, lies close NE of the SE extremity of Buddo Island.

Surveyor's Sand is a drying patch with its SW extremity lying 1.5 miles SW of Buddo Island. Range lights lead through the outer part of Ahsan Channel. The rear range light stands off the SE end of Surveyor's Sand.

Phitti Creek is approached by Ahsan Channel, which leads through the shallow flat fronting the entrance. This entrance is marked by Fairway Lighted Buoy, moored 7.5 miles SSW of the rear range light on Surveyor's Sand. The outer anchorage area is centered about 2 miles W of Fairway Lighted Buoy. The least depth in the anchorage is 17m, with good holding ground, mud and sand. There are waiting areas on the E side of the channel SW and N of Zulfiquar Bank.

Bundal Island (Bondal Island), composed of sand dunes, lies N of Buddo Island. There are several mooring buoys in the channel E of Bundal Island. There is a prominent building on the E side of Bundal Island, 0.8 miles N of its S extremity; a beacon stands on the NE point of the island.

Anchorage.—Anchorage, in 16 to 20m, good holding ground, sand and mud, can be obtained in the Outer Anchorage Area, close W of Fairway Lighted Buoy. The limits of the anchorage area can best be seen on the chart. During the heavy swells of the Southwest Monsoon, vessels should anchor near the W end of the anchorage area and pay out extra cable.

Caution.—During the Southwest Monsoon, a heavy swell is also encountered in Ahsan Channel. During this period, suspended dust in the air also results in reduced visibility. Fog or mist may also be encountered during the winter months at dusk and at dawn.

Port Muhammad Bin Qasim (24°46'N., 67°20'E.)

World Port Index No. 48605

1.5 Port Muhammad Bin Qasim is situated in Phitti Creek, 27 miles SE from the center of Karachi. A newly-constructed port, it is capable of handling vessels of up to 50,000 dwt and 200m in length, with a draft of 12.6m.

Tides—Currents.—The spring tidal current of 3 knots on the flood and 5 knots on the ebb are normal in Phitti Creek and

vessels should proceed with caution, especially in passing the dredges. Except in the entrance channel, the current mostly follows the direction of the creek.

Depths—Limitations.—Access to the port is through a 24-mile long channel, beginning with Ahsan Channel. Ahsan Channel is approximately 9 miles long, has been dredged to 12.4m, and is well-marked. From the vicinity of Buddo Island and Zulfiquar Bank, the channel continues through Phitti Creek and Kadiro Creek, both maintained at 11.3m, to a turning basin off the Iron Ore and Coal Jetty, a distance of 13 miles. From this jetty, the channel traverses Gharo Creek, maintained at a depth of 10m, to the Marginal Wharf, 2 miles farther up the creek.

The turning basin off the Iron Ore and Coal Jetty is maintained to a depth of 12.8m. The turning basin off the Marginal Wharf is maintained to a depth of 10.0m.

The width of the channel ranges from 185 to 280m in the approach and from 145 to 250m in the reach channel. The turning basins are 370m and 450m in diameter.

Dredging of the channel is continuous, but silting is liable to occur, particularly during the Southwest Monsoon. Buoys are liable to drag and are moved frequently to mark the best channel.

The Fauji Oil Terminal has a 46m long main platform. Dolphins extend the berthing length to 250m. There is a maintained depth of 11.3m alongside. Vessels between 25,000 dwt and 75,000 dwt can be accommodated, but in 1995 vessels were limited to a maximum length of 225m, a maximum beam of 32.2m, and a maximum draft of 10m (10.5m with special permission).

The Iron Ore and Coal Jetty, 1 mile ESE of the Fauji Oil Terminal, handles bulk carriers serving a steel mill; it is 270m long. The jetty is connected to the steel mill by a trestle and a conveyor. Vessels of 50,000 dwt can be accommodated, although it is planned to increase the capacity to 100,000 dwt. Berthing limitations are given in the accompanying table.

| Maximum Vessel Dimensions Iron Ore and Coal Jetty | | |
|---|--------------------------------------|--|
| | Monsoon season (May to September) | Non-monsoon season (September to May) |
| Length | 201m | 225m |
| Draft | 10.5m | 9.5-10.5m |
| Beam | 25.3m | 25.3m |
| Note. —All berthing limitations are subject to change. Updated information can be obtained from the Pakistan Notice to Mariners or the local port authorities. | | |

There are seven berths at the Marginal Wharf. Each berth is 200m long, with limiting dimensions, as follows:

| Berthing Limitations—Marginal Wharf | | | | |
|-------------------------------------|---------------------------|--------|-------|------|
| Berth | Maximum Vessel Dimensions | | | |
| | Size | Length | Draft | Beam |
| 1 | — | 183m | 9.5m | 25m |

| Berthing Limitations—Marginal Wharf | | | | |
|-------------------------------------|---------------------------|--------|-------|------|
| Berth | Maximum Vessel Dimensions | | | |
| | Size | Length | Draft | Beam |
| 2 | 25,000 dwt | 183m | 10.0m | 25m |
| 3 | 25,000 dwt | 183m | 10.0m | 25m |
| 4 | 25,000 dwt | 183m | 10.0m | 25m |
| 5 | 25,000 dwt | 183m | 10.0m | 25m |
| 6 | 35,000 dwt | 183m | 10.5m | 25m |
| 7 | 35,000 dwt | 183m | 11.0m | 25m |

Note.—All berthing limitations are subject to change. Updated information can be obtained from the Pakistan Notice to Mariners or the local port authorities.

Pilotage.—Pilotage is compulsory and is available during daylight hours only. Pilots board in the vicinity of Fairway Lighted Buoy. In bad weather, the pilot may board in the waiting area or in the channel abreast the SE end of Bundal Island. The pilot boat is gray-hulled with a white superstructure.

Deep-draft vessels are normally boarded by the pilot about 2.5 hours prior to HW, in order to assure that vessels berth at HW.

Regulations.—The vessel's ETA is required 48 hours and 24 hours in advance; messages are to be sent through Karachi. The vessel's arrival draft should be forwarded at this time, as the maximum allowable draft varies. Contact with Port Muhammad Bin Qasim Control via VHF channel 16 is required 12 hours prior to arrival.

The ETA message should contain the following information:

1. Vessel name and flag.
2. Net registered tonnage.
3. Gross registered tonnage.
4. Length overall.
5. Draft.
6. Loading/discharging information.

Caution.—Night navigation is restricted due to vandalism of the lighted aids to navigation.

The Indus Delta—Phitti Creek to Khori Creek

1.6 Winds—Weather.—The climate of the Indus Delta is hot in the summer, cool in the winter, and unhealthy during the floods, which normally occur from June to September.

Tides—Currents.—The currents in the Indus Delta tend to be variable, but the sets of the currents do tend to parallel the coast.

Farther off the delta, the currents have a seasonal variation that is related to the monsoons, as follows:

1. February to September—The set is usually SE, with the strongest consistency occurring from June to August.
2. October—The currents are variable.
3. November to January—The set is usually NW.

The rate of the current is usually less than 1 knot, but a rate of as much as 2 knots can occur, usually from June through August and in December.

Tidal currents at the mouths of the Indus Delta are strong, and can attain the following rates at ebb:

1. Phitti Creek (24°40'N., 67°09'E.)—3 knots.
2. Dabba Creek (24°19'N., 67°16'E.)—3 knots.
3. Turshian Creek (24°03'N., 67°23'E.)—5 knots.
4. Sir Creek (23°38'N., 68°02'E.)—4 knots.

Aspect.—The Indus Delta extends about 115 miles SE from Karachi to Khori Creek. The delta is low and flat throughout, and is partially flooded at HW to a considerable distance inland. It is destitute of trees and shrubs, with the exception of a little jungle, and nothing is seen for many miles but swamp. The land is scarcely discernible at more than 2 miles offshore, except where bushes exist, which can be seen at LW at a distance of 5 or 6 miles.

A narrow strip of sandhills generally fronts this coast, which is backed by mangrove swamps and fronted by drying sandbanks. During the heat of the day, and especially during the dry season when the wind blows off the land, a heavy dust-haze hangs low over the coast, making the coastal features unrecognizable, even from a short distance to seaward.

Khuddi Creek (24°36'N., 67°12'E.) is fronted by a bar with a depth of 2.4m; within the bar a 1-mile wide channel, with depths from 4 to 11m, leads between low sandy islands on either side of the entrance. A light shown from a round tower, with black and white bands, on the S side of the creek.



Khuddi Island Light

Caution.—It is difficult to identify the different mouths of the Indus River on a coast so devoid of landmarks and, at times, partially submerged. Beacons marking the mouths have long since collapsed or disappeared, owing to the constantly changing coastline; a few beacons remain.

Vessels navigating along this coast should remain in depths over 18m, as the depths shoal abruptly in places, especially in the vicinity of The Swatch. It is dangerous for a deep-draft vessel to approach the Indus Delta, as the breakers on the shelving coastal banks, which extend many miles offshore, are often seen before the coast is sighted; this is especially so during the

Southwest Monsoon, when visibility is poor and the sea breaks in depths of 5.5m or more. The discoloration of the water is very marked, especially off the main fresh water mouths on the ebb tidal current, when during spring tides it extends more than 10 miles offshore.

Heavy tide rips are common off the mouths of the Indus Delta, especially during springs.

1.7 Off-lying features.—Sir Creek (Sir River) (23°38'N., 68°02'E.) enters the sea about 100 miles SE of Karachi and is the approximate boundary between India and Pakistan.

The Swatch is a remarkable submarine valley, from about 3 to 8 miles wide, extending about 52 miles SSW from approximately 23°40'N., 67°27'E. The Swatch has depths of less than 183m on either side of it, with depths exceeding 1,097m at its SW end. It is almost regular in shape and has steep sides and a flat sloping bottom. The bottom and sides of The Swatch consist of soft, gray mud, with some sand and gravel on its NW edge.

The Swatch can be of great assistance to vessels approaching Karachi from S. An echo sounder trace of maximum depths can help provide a clear indication of the vessel's position, especially during the poor visibility and the strong sets of the Southwest Monsoon.

Khori Great Bank is an extension of the coastal bank SW from the coast between The Swatch and Khori Creek. This bank has depths of 20.1 to 33m and extends as much as 60 miles offshore.

Khori Creek to the Gulf of Kutch

1.8 Khori Creek (23°30'N., 68°20'E.), one of the outlets of the Rann of Kutch, has a shallow bar, but is navigable by local craft as far as Lakhpat, about 28 miles inland, on the SE side of the river. The entrance of the creek is obstructed by several sand banks, except on the E side, where a deep-water channel leads into the creek. The banks of the creek, 0.6 to 1.5m high, are broken by numerous waterways.

When a vessel is in depths of over 5.5m off the mouth of Khori Creek, the low land cannot be seen, except in the clearest weather, when the low hills NE will be visible.

Maniara (23°28'N., 68°37'E.), 67m high, is surmounted by a fort. The bar, with depths of 3 to 3.7m, is about 4 miles across and lies with its outer edge about 10 miles seaward of the E entrance point of Khori Creek. A dangerous wreck lies about 15 miles WSW of the entrance to Kori Creek. Inside the bar, the channel, with depths of 5.5 to 22m, leads through the creek for a distance of 10 to 12 miles. As the channel and banks are subject to constant changes, local knowledge is necessary.

Tides—Currents.—Tidal currents are strong in the estuary of Khori Creek, attaining a velocity of 5 knots at springs and about 3 knots at neaps. The flood sets up the channel until three-quarters flood, when it sweeps over the sand banks in the entrance.

1.9 Godia Creek (Goria Creek) (23°14'N., 68°35'E.), known locally as Jakhau Harbor, can be identified by some sandhills, about 9.1m high, on the N side of its entrance. The S side of the entrance is low and fronted by ridges of sand, 6.1 to

13.7m high. The coast between Godia Creek and Khori Creek, about 19 miles NW, is very low and indented by creeks.

The entrance to Godia Creek is marked N and S by beacons; a light is shown about 2 miles E of the entrance, on the S side of the creek. Local knowledge is necessary for entering the creek, as the coastline and creek is constantly changing.

The creek has depths of 5.5 to 8.8m within the entrance; the bar had a least depth of 1.2m in the fairway in 1961. Salt is loaded into barges from a jetty near the above-mentioned light.

Signals.—Storm signals are shown at Jakhau Harbor using the [Brief System](#). Further information on these storm signals may be found in Pub. 160, Sailing Directions (Planning Guide) South Atlantic Ocean and Indian Ocean under "India—Signals."

Anchorage.—Good anchorage can be obtained, in about 8m, mud, about 5 miles SW of the creek entrance. Vessels should approach the entrance cautiously, as few distinguishable landmarks are visible until in the vicinity of the 10m curve, about 7 miles offshore.

The coast between Godia Creek and Asar Mata, about 43 miles ESE, is uniformly low and fronted by a narrow, sandy ridge, which is about 9.1m high, except near Asar Mata where it is slightly higher. Villages are numerous and the land is well-cultivated.

Chachhi Light is shown on the W side of the entrance of the **Chok River** (22°57'N., 69°00'E.), from a white masonry tower with black bands, 31m high.

Dholo Pir Temple, 10m high, is conspicuous about 3.5 miles ESE of the Chok River.

Asar Mata (22°50'N., 69°13'E.), a conspicuous Hindu temple, 25.3m high, lies on the coast, on the crest of the sandhills, at an elevation of 34m.

The Gulf of Kutch

1.10 The Gulf of Kutch, entered between Asar Mata and **Humani Point** (Vomani Point) (22°29'N., 69°04'E.), about 23 miles SSW, contains some sheltered anchorages and harbors. The shores of the gulf are uniformly low. The N shore, consisting of sand and mud, is fronted by numerous shoals. The S shore is fronted with islets and islands covered with brushwood and surrounded by coral reefs.

The N shore is backed by a range of hills, about 15 to 20 miles inland, extending in an E-W direction and nearly parallel with the coast for a distance of about 35 miles. Krikubbah, 253m high, with a sharp peak, lies about 18 miles N of Asar Mata. Nanu Hill (Nunomar Hill), 434m high and circular, lies about 6.5 miles ENE of Krikubbah. Katurra, also circular and 378m high, is the highest of the E peaks of this range, which lies about 24 miles E of Nanu Hill and may sometimes be seen from the S side of the gulf.

Tides—Currents.—Tidal currents are strong in the estuary. Across the mouth of the Gulf of Kutch, the strong tidal currents over the uneven bottom cause a confused breaking sea. It has been reported that the tidal currents in the gulf are very irregular in direction and that a vessel proceeding into or out of the gulf may be set considerably N or S in a short time.

Along the coast on the N side of the gulf, the tidal currents set E with the flood and W with the ebb, attaining a velocity of 2 to 3 knots.

The tidal currents in the vicinity of Lushington Shoal set ESE with the flood, attaining a velocity of 1.8 knots at neaps.

At the W edge of Gurur Shoal, the tidal current sets E with the flood and W with the ebb, at a velocity of 1.5 knots at neaps.

Between Gurur Shoal and the coast S and SE, there are heavy tide rips on both sides of the fairway, particularly on the ebb tide. The sea sometimes breaks in this fairway even in calm weather.

Tidal currents over Ranwara Shoals attain a velocity of 5 knots at springs and 3 knots at neaps. They cause heavy tide rips and overfalls over the uneven ground in the vicinity of the shoals and W toward Asar Mata.

Aspect.—**Lushington Shoal** (Unniamor) (22°38'N., 68°47'E.) lies in the fairway of the W approach to the Gulf of Kutch, about 18 miles WNW of Humani Point. This danger, with a least depth of 4.3m, can usually be identified by the discoloration of the water over it. The bottom consists of sand and rock. Depths of less than 10m extend about 2 miles WSW of the shoal.

Gurur Shoal, about 5 miles NW of Humani Point, is composed of sand and rock, and has a least depth of 3m. Depths of less than 10m extend about 2.8 miles SW, and 1.5 miles NE of the shoal. A 9.4m patch lies about 6.5 miles W of Humani Point. Between Gurur Shoal and the mainland S and SE, the depths are irregular; heavy tide rips are experienced, particularly on the ebb tide, on either side of the intervening deep-water channel. The sea sometimes breaks in this channel, even in calm weather.

A shoal, with a least depth of 7.9m, lies about 5.5 miles S of Asar Mata. Detached shoals, with depths of 9.1m, lie about 2.5 miles WNW, and 1.5 miles NNW of the W end of this shoal. Ranwara Shoals, about 6 miles S of the breakwater at **Mandvi** (22°49'N., 69°21'E.), consists of two rocky shoals, oriented E-W, with depths of less than 10m, separated from each other by a narrow passage. The NW shoal, about 5.3 miles long, has an area at its E end with a depth of 3.7m. The SE shoal, about 3.5 miles long, has an area at its NW end with depths of 0.9 to 4m and depths of 5.5m and less near its SE end.

A lighted buoy is moored off the SW side of the SE shoal.

Pilotage.—Pilots for the Gulf of Kutch are obtained at Mandvi (22°50'N., 69°21'E.), on the N side of the gulf.

Caution.—In the entrance to the Gulf of Kutch, large quantities of mud and sand are sometimes held in suspension, either on the surface causing discoloration, or beneath the surface, which will be churned up by a ship's propellers, giving the impression of being in shoal water. This may occur between the meridians of 69°00'E and 69°30'E.

Strong cross currents, setting in any direction for short periods, have been reported.

The depths in the gulf are very irregular for about 30 miles inside the entrance. They then decrease gradually, with the bottom changing from rock and sand to mud.

The Gulf of Kutch—North Coast

1.11 The coast between **Asar Mata** (22°50'N., 69°13'E.) and Mandvi, about 7 miles E, is fronted with white sandhills, between 6.1m and 15.2m high, which are very visible at night.

Vijayvillas Palace, Tamachi Pir Tomb, and a house are conspicuous about 3.5 miles E of Asar Mata. The tomb is situated on a sandhill, 26m high; the E end of the sandhill is a steep bluff, with a small creek at its foot.

Between Asar Mata and Mandvi, the coastal bank and some detached shoals, with depths of less than 5m, extend between 1.5 and 2 miles offshore.

Mandvi (22°50'N., 69°21'E.)

World Port Index No. 48620

1.12 Mandvi, situated on the W bank of the Rukmawati River, is the most important commercial town in the Gulf of Kutch. The port authority at Mandvi is exercised by the Port Officer, however, radio messages to Mandvi are relayed through Kandla Radio.



Mandvi Light

Depths—Limitations.—Albert Edward Breakwater, 564m long and lighted at the head, protects the harbor from W winds. Vessels with a maximum draft of 3.7m can berth alongside the breakwater at high tides.

The small harbor, sheltered from W winds by the breakwater, has a pier and pitched slope, where sailing vessels and lighters with a draft between 2.7 to 3m can secure alongside to work cargo on a HW only; the entire harbor dries out at a half tide. The height of HW at Mandvi ranges between 3 and 4.2m.

Aspect.—The town is surrounded by a wall flanked by bastions, within which a large flat roofed building forms a prominent landmark.

A conspicuous radio mast, 75m high, stands 4.5 miles NE of the entrance to the harbor. A light, with a racon, is shown from Mandvi Light, a tall white masonry tower with red bands, on the SW bastion of the wall mentioned above.

Raval Pir Tomb (Rawal Pir Tomb) is conspicuous lighted and lies about 2.5 miles E of the harbor. There are some sand hills with clumps of trees in the vicinity of the Tomb.

Signals.—Storm signals are displayed, in daylight only, from a flagstaff at the Customs House; the **General System** is used.

Anchorage.—Good anchorage may be obtained, in depths of 9 to 11m, sand and shingle bed, 2.3 miles offshore, with Mandvi Light and the breakwater lights in line bearing 358°. The tidal currents at the anchorage attain a rate of 3 knots at

springs and less than 2 knots at neaps; however, farther offshore the strength increases.

Cargo is handled by means of lighters at these anchorages.

1.13 The coast between Mandvi and **Mudwah Point** (22°46'N., 69°30'E.) is fringed by a sandbank which extends about 0.5 mile offshore in places. Mudwah Point is a sandy bluff, 12.5m high. North of this point an extensive backwater runs to within 2 miles of Raval Pir Tomb; the backwater is entirely flooded at very high spring tides and at ordinary HW during the Southwest Monsoon.

Long narrow ridges of sand, from 1.5 to 3m high, front the coast between Mudwah Point and Navinal Point, about 12 miles E; a drying bank extends about 1 mile seaward of the coast. Between these sand ridges and the mainland there is an extensive swamp which is covered with mangroves and intersected by numerous small creeks.

Sonar Durree, a sand bank, lies from 4 to 7 miles ESE of Mudwah Point and consists of detached drying ridges of sand; it is steep-to on its S side. During the first half-flood, and after half-ebb, the bank can be identified by the rippling of the water. A sonar lighted buoy is moored 1.5 miles S of Sonar Durree. From the masthead, the bank can be identified by the discolored water. There is no navigable passage N of this bank.

1.14 Navinal Point (22°44'N., 69°43'E.) consists of a few ridges of sand, the greatest elevation being not more than 3m. A light is shown from a yellow round tower, 28m high, with black spiral bands. A large swamp, partly covered with mangrove bushes and through which several small creeks flow, extends NW, N, and NE of the point.

Mundra New Port (22°54'N., 69°42'E) lies about 1.5 miles NNW of Navinal Point. The port consists of a roadstead anchorage, a lighterage jetty and a privately owned salt loading jetty. In 2002, it was reported that port authorities were constructing a larger jetty, allowing four vessels, with a maximum draft of 15m, to berth alongside.

Anchorage.—Vessels loading salt from Mundra New Port should anchor, in 14.6 to 18.3m, fine sand and mud, about 1 mile ESE of Navinal Point.

Between Navinal Point and Nakti Creek, about 27 miles ENE, the coast is fronted by a mud flat which dries up to 3 miles offshore. A 6.7m shoal lies about 3 miles E of Navinal Point, and a chain of shoals, with depths of 0.3 to 6.4m, extends about 8.5 miles ENE of the same point.

Bhadreswar Temple, standing about 14.5 miles NE of Navinal Point, is conspicuous, with a white dome 25m high; a fort lies close W from it. Another temple, 24m high, with a dome, is about 1.3 miles S from the above temple.

A clump of banyan trees is conspicuous about 3.5 miles ENE of Bhadreswar Temple.

The Gulf of Kutch—South Coast

1.15 Humani Point (Vomani Point) (22°29'N., 69°04'E.), at the N extremity of Okhamandal Peninsula, forms the S entrance point of the Gulf of Kutch. A tower, 21m high, lies on the point. There are two beacons standing 0.2 and 0.4 mile SSE and SSW, respectively, of the point. Humani Point Light, shown from a tall white masonry tower with red bands, is fitted

with a radar reflector and lies about 0.4 mile SSE from the point. A fog signal is sounded from the tower. Two radio masts; situated close SSW of the light, are marked by fixed red obstruction lights.

Okha Point, low and sandy, lies about 1 mile ESE of Humani Point and is marked by a 28m high flagstaff; the town of Okha lies on this point.

Samiani Island (Samayani Island) lies about 1 mile N of Okha Point, with its SW extremity over 30m high.

A Deep Water Route has been established leading from SW of the entrance point of the Gulf of Kutch for the use of VLCC's to approach the offshore oil terminal near Sikka Creek. The route is entered 7 miles WNW of Kachchigadh Light, leads between Lushington and Gurur Shoals, then E into the gulf, passing N of Investigator Reef. The route varies in width from 0.8 to 1.7 miles, with its first 4.5 miles having controlling depths of 25m; the 8.5 mile stretch of the route NNE of Okha, having depths of 23m.

Vessels with drafts less than 15m, navigating in the Gulf of Kutch, should keep N of the Deep Water Route and S of **Ranwara Shoals** (22°41'N., 69°22'E.).

In 1982, it was reported that the shallowest depth of 23m lies between the meridians of 69°08'E and 69°10'E.

Okha (22°28'N., 69°05'E.)

[World Port Index No. 48670](#)

1.16 The Port of Okha lies between the N end of the **Okhamandel Peninsula** (22°29'N., 69°05'E.) and Beyt Shankhodhar. The port is protected and open year round, with facilities to accommodate deep-draft vessels.

The port limits extend approximately 2.8 miles NE, 2 miles NW, and 1.75 miles SW from the town. Its main exports are cement, bauxite, and sodium carbonate.

Tides—Currents.—The tidal rise at Okha is 3.5m at MHWS and 2.8m at MHWN.

In the W approach channel to Okha Harbor, the tidal currents set ESE with the flood and WNW with the ebb, attaining a velocity of 3.5 knots at neaps.

North of Samiyani Island, and between it and Chandri Reef, the tidal currents set SE with the flood and WNW with the ebb. The flood current attains a velocity of 3 knots at springs; the ebb current attains a velocity of 2 knots at neaps.

West of Samiyani Island, the tidal currents set NE with the flood and SW with the ebb, with a velocity of 1.8 knots at neaps. Southeast of the island, the reverse is the case.

The flood current sets strongly around the S end of Samiyani Island in a S and E direction; from there it sets S through Okha Harbor, curving E around the S end of Beyt Shankhodhar. It has a velocity of 1.3 to 1.5 knots at neaps and 2 knots at springs.

The ebb current, coming from the E around the S end of Beyt Shankhodhar, sets N through the harbor until it reaches the shoal water NW of Padmatirth Point. Here it divides into two branches, one setting along the W side of the harbor and W of Samiyani Island, and the other setting N and NE between Samiyani Island and Beyt Shankhodhar, and then WNW in the area N of Samiyani Island. The ebb current has a velocity of 1.3 to 2 knots at neaps.

Strong eddies form in the harbor at springs with both tidal currents, and a confused sea occurs over the shallow ground NW of Padmatirth Point. There is a strong undertow at the anchorage off Okha Point.

Depths—Limitations.—Aramda Reefs, with a least depth of 0.6m, extend about 1.5 miles from the coast, about 4 miles WSW of Humani Point.

Marian Shoal, with a least depth of 2.4m, lies about 2.5 miles W of Humani Point, and Bobby Shoal, with a least depth of 6.7m, lies about the same distance WNW of Humani Point.

Samiyani Shoal, an extensive area with depths of less than 3.3m, extends about 1.8 miles WNW from its E extremity, which lies about 0.3 mile N of the N extremity of Samiyani Island. There is a drying patch in the SE part of this shoal. Buoy No. 1 is moored about 0.2 mile W of the NW extremity of the shoal; a 5m patch lies about 0.3 mile W of the same extremity. Buoy No. 2 marks the SE end of the shoal.

Samiyani Island is fringed by a reef, which dries in places and extends about 0.2 mile NE from the NE extremity of the island. Depths of 6.1m extend about 0.3 mile farther NNW.

Chandri Reef (Chinri Reef), which dries, lies with its SW extremity about 2 miles NE of Samiyani Island. The reef lies on the SW corner of an extensive shoal with depths of less than 1.8m.

A large shoal, with depths of 2 to 5m, lies W of Chandri Reef, with its W edge about 1.5 miles NNE of Samiyani Island. Lighted Buoy No. 1 is moored about 0.5 mile W of the shoal; detached patches, with depths of 4 to 5.5m, lie between the buoy and the shoal. Less water than charted has been reported (1993) about 0.5 mile ESE of the buoy.

Chandri Rock, a shoal with a least depth of 2.4m, lies about 1.5 miles ENE of Samiyani Island and is marked close SW by a lighted buoy. Several other shoal patches lie in this vicinity.

A large shoal, the NW end of which lies about 0.3 mile E of the NE extremity of Samiyani Island, extends SSE and dries over its central portion for about 0.5 mile. Buoy No. 2 marks the NW extremity of this shoal.

A wreck, with a depth of 5m, lies 1.7 miles NNW of Samiyani Island.

The entrance channel, passing close SE of Samiyani Island, has a least depth of 4.9m in the fairway.

There are general depths of 6.1 to 9.4m in Okha Harbor.

Sayaji Pier, a concrete pile structure 122m in length, lies close S of Okha Point. The pier can accommodate vessels up to 164.6m in length, in a least depth of 7.9m on its E side, and vessels up to 93m in length, in a least depth of 5.8m on its W side.

Second Pier (Dry Cargo Berth), 145m long, lies close SW of Sayaji Pier and is similar to it in construction; it can accommodate vessels up to 119m long, with a draft of 7m. The E side of this pier provides a deep-water berth, is connected with the railway system, and has a depth of 9.1m alongside; berthings are port side-to. Passenger Jetty and a small slipway lie close SW from Second Pier.

Daily permissible drafts for vessels entering or leaving the port are published for each month by the port officer.

During the Northeast Monsoon, the maximum permitted length is 160m; during the Southwest Monsoon, the maximum permitted length is 164m. The maximum draft varies between 6.7 and 8.2m, depending on the height of tide. Because of the

narrow entrance, it was reported (1994) that the maximum beam is restricted to 28.4m.

Aspect.—In addition to the landmarks and navigational aids mentioned for the S approaches to the Gulf of Kutch, a conspicuous chimney, 101m high, lies about 5.5 miles SW of Humani Point. A light is shown from the top of a building, 50m high, lying close NE of the chimney.

Samiyani Island North Light is shown from a white concrete tower with black bands standing at the NE edge of the drying reef. The Center Light is shown from a white, circular, stone tower near the center of Samiyani Island; a tomb, with a spire 27.1m high, lies close N.

Okha Point and Samiyani Island have been reported to be good radar targets at 12 to 15 miles.

Mariners are advised to keep well clear of Gurur Shoal.

Pilotage.—Pilotage is compulsory and is available during daylight only. Vessels should signal their ETA 24 hours before arrival, amending the time as necessary. Pilots board vessels about 1.5 miles NNW of Island Center Light, although caution is necessary as a dangerous wreck lies close N of the pilot boarding position. Vessels should not proceed farther until the arrival of the pilot. During the Northeast Monsoon, a vessel should be in the above position 1.5 hours before HW or at LW, and during the Southwest Monsoon 0.5 hour before HW or 1.5 hours before LW.

Signals.—There is a Coast Radio Station and a Port Radio Station. An airstrip is situated at Mithapur, 3 miles SW of Okha.

Storm signals are displayed at Okha; the [General System](#) is used.

Anchorage.—Vessels can obtain anchorage in the outer roadstead, in depths of about 12m, sand and broken shell, with Samiyani Island Light bearing 171°, about 1.3 miles.

Vessels with a draft of not more than 4.9m and a length of less than 160m can anchor SE of Okha Point.

Directions.—Three channels lead to Okha, two from the N and one from the S of Samiyani Island. The E channel of the two from the N is buoyed, considered safe, and generally used. Strong tidal currents flow across this channel and it should not be attempted without local knowledge.

The best time to enter and leave the port is about the time of slack water, when the tidal currents on each side of the island are comparatively slack and a vessel may take a sheer while entering or leaving. At other times there is a strong race N and S of Samiyani Island. There is a heavy tide rip on all the shoals, especially on the ebb.

The E channel is approached to pass between Samiyani North Light and Lighted Buoy No. 2; then bringing the NE corner of Sayaji Pier in line with the 10.4m high beacon, black disc top marked, lying on Adatra Point, bearing about 207°; this leads through the fairway with a least depth of 4.9m in the channel.

The W of the two channels from the N leads close NW of Samiyani Island. It is seldom used and should not be attempted without local knowledge. The leading marks for this channel are two black beacons on Humani Point. These beacons, in line bearing 231°, lead through the fairway of this channel in a least depth of 3.5m.

The W channel, locally known as the Southern Channel, leads between Okha and Samiyani Island. The leading marks

for this channel are two beacons which lie 0.3 mile apart, 1.3 miles ENE of Padmatirth Point. In line bearing 116° , they lead through the W channel in a least depth of 3.7m. Strong tidal currents flow across and the channel is extremely narrow and difficult. It is only used by coasters and small craft with local knowledge.

The continuation of all three channels S lead to anchorage and moorings SE of Okha Point.

Okha to Bet Shankhodhar Island and Pindara Bay

1.17 Bet Shankhodhar Island (Beyt Shankhodhar) lies with its NW extremity, Padmatirth Point, about 1 mile SE of Okha Point. The island is mainly composed of sandhills on its N part, and formation of a rocky tableland on its SW part. There are some clumps of coconut and a few other trees; the rest of the island consists of open jungle with thorny scrub.

Padmatirth Point, a small bluff tableland about 9m high, becomes an islet at highest spring tides. A small, white domed tomb lies on the point, with another tomb 0.8 mile E of it.

Bet (Beyt), a town with a pilgrim resort, lies 0.5 mile S of Padmatirth Point and is surrounded by many temples and shrines. Dwarkadish Temple, a large square building near the center of the town, is most prominent. There is a small jetty at the town.

Hanuman Point ($22^\circ 28'N.$, $69^\circ 09'E.$), the E extremity of the island, is composed mainly of sandhills on its NE part. Hanuman Temple, about 0.8 mile W of the point, is the only building on this part of the island.

Hanumandauda Reef lies on the foul ground extending about 1 mile N from the NE shore of Bet Shankhodhar Island.

Paga Reef, extending between 2.5 to 5.5 miles E of Hanuman Point, has a sand ridge on its SW side which covers only at HWS. The red sector of Samiyani Center Light covers Paga Reef between the bearings of 260° and 290° .

Positra Point ($22^\circ 25'N.$, $69^\circ 12'E.$) lies about 3.8 miles SE of Hanuman Point; the village of Positra lies 2 miles SW of the point.

Anchorage.—During W gales, sheltered anchorage may be obtained about 0.5 mile E of Bet Shankhodhar Island, with Hanuman Point bearing 334° ; E of this position the bottom is rocky. Detached 5.5m patches lie about 1.8 miles ENE and 2 miles E of Hanuman Point.

The tidal currents at the anchorage flow S with the flood and N with the ebb, attaining a rate of 1.3 knots at neaps and 1.5 knots at springs.

Directions.—Vessels proceeding to the anchorage can pass either E or W of Chandri Reef. Vessels passing E of the reef should, when the village of Positra, lying on 20m high ground bears 180° , steer for it until Samiyani Center Light bears 275° , when course may be altered towards the anchorage.

Vessels passing W of Chandri Reef should, from a position about 0.8 mile N of Samiyani Center Light, steer E to pass clear N of Chandri Rock and a shoal patch about 0.3 mile N of it. The tidal current in this vicinity flows E and W at rates between 2.5 to 3 knots. Following this course, when Positra village bears 180° , steer for it and proceed, as described above, for the anchorage.

Positra Bay ($22^\circ 26'N.$, $69^\circ 09'E.$) is entered W between the SE point of Bet Shankhodhar Island and Positra Point; the bay is very shallow and dries in places. Local knowledge is necessary when navigating in the vicinity.

Pindara Bay and Approaches

1.18 The summit of Ajad Island is 8 miles SE of Positra Point and in line with Great Peak, the highest summit of Barda Hills, 35 miles SE, bearing 140° , which leads close NE of Paga Reef.

The SE bluff of Okhamandal Peninsula, 37m high and 9.5 miles SSW of Positra Point, seen between two islets of Merodi Bet, bearing about 205° , leads close SE of Paga Reef.

Boria Reef, which dries, lies at the E edge of foul ground extending E from Positra Point; a small reef lies about 0.8 mile N, with a 3.7m shoal patch about 0.5 mile W. There is a deep channel between Paga Reef and Boria Reef; however, local knowledge is necessary when navigating in the vicinity.

Bural Reef (Chank Reef) ($22^\circ 30'N.$, $69^\circ 19'E.$), an extensive drying coral reef, is steep-to on its N side. The reef extends about 10 miles from E to W and 9 miles from N to S.

A stranded wreck, which has been reported to give a good radar response, lies S of the NW point; another wreck lies about 1 mile S. A light is shown and a racon transmits from a round tower, 12m high, on the NW side of Bural Reef.

Mitha Chusna (Chusra Bet) is a small rocky islet, with another islet close to it, lying at the S point of Bural Reef.

Chank Island (Chank Tapu), lying 3 miles E of Nora Island, is small and wooded. Chank Tapu Light is shown from a white, square, concrete tower with black bands at the edge of Bural Reef, 1 mile NNE of Chank Island.

Bhaidar Island (Baidar Tapu) lies 3 miles NE of Mitha Chusna, is sandy on its W part, and is covered with mangroves. Nora Island (Nora Tapu) lies 3 miles NE of Bhaidar Island and is low and covered with mangroves. The highest group of trees lie on its E side; the N side is sandy.

Pindara Bay is large and shallow. Its head forms a salt marsh, which dries out to a distance of 1.5 miles, but covers at HWS tides. The head is almost impassable and extends S forming the E side of the Okhamandal Peninsula. The W limit of the Saushttra coast extends ENE to the head of the Gulf of Kutch. Shiyardi Bet marks the E entrance to the bay; Merodi Bet the W entrance to the bay.

Anchorage.—Anchorage for a small vessel with local knowledge can be obtained 0.5 mile E of Merodi Bet and also on its W side, in depths of 11 to 16.5m, mud bottom, sheltered from all winds. This anchorage can be approached by the deep channel E of Paga Reef.

Ajad (Ajar), a bluff island 21m high at its S extremity, lies 3 miles N of Shiyardi Bet. The ruins of an old tower lie high on the summit of a round hill at the S point of the island. Although the island is surrounded by a rocky reef and dangers, there are deep channels N and W of the reef; several dangers exist in the fairway of the W channel. Local knowledge is essential in navigating in the vicinity.

Small vessels may anchor, in a depth of 7m, mud bottom, close W of the NW edge of Bural Reef. Vessels are cautioned to avoid shoals extending NW and SW from the NW edge of

the reef. On the E and SE sides of Bural Reef, there is good shelter from W winds; however, vessels anchoring E of the reef should avoid Bubasir Rock off its E end.

A vessel may anchor, in a depth of about 15m, mud, near the edge of the shoal with the trees on Chank Island bearing 271° distant about 2 miles, or farther SE, in a depth of 12m, with the trees bearing 293°, distant about 3 miles, where the tidal flow is NW on the ebb and SE on flood. Another anchorage lies in a depth of about 9m, mud bottom, 2 miles SE of Chank Island.

During the Southwest Monsoon, large local vessels seek shelter on the lee side of Chank Island.

Directions.—Vessels proceeding to anchor on the E side of Bural Reef and passing N of the reef should keep a good lookout for the trees on Nora Island and Chank Island and maintain a distance of about 3 miles from these islands.

Caution.—Along the N face of Bural Reef, the rate of tidal flow varies between 4 to 6 knots, causing heavy tide rips off the NE end.

Between Bural Reef, Chandri Reef, and Paga Reef, the uneven bottom causes overfalls and tide rips which at springs are alarming to a stranger. Kudda Reefs consist of three detached drying reefs centered about 4 miles NE of Ajad, with a channel between Bural Reef having a least depth of 7.3m in the fairway. A steep-to submerged rock extends SE from Bural Reef.

Investigator Reef (22°36'N., 69°33'E.), with a least depth of 8m, lies near the center of the Gulf of Kutch, about 8 miles ENE of Chank Island Light.

Salaya Harbor

1.19 Salaya Harbor (22°26'N., 69°33'E.) is entered between the drying reefs extending NE from **Dhani Island** (22°24'N., 69°33'E.) and SW from Karumbhar Island. The harbor extends about 6 miles SE, with an average width of 0.7 to 0.8 mile. The continuation of the harbor S is Salaya Creek. Blunt Channel, an easterly continuation of the channel for small craft, leads S of Karumbhar Island and into Pathfinder Inlet. Blunt Channel is narrow, tortuous, and difficult to recognize when the reefs and mud flats are covered.

Storm signals are shown at Salaya; the [Brief System](#) is used.

The harbor entrance is not easily identified when the reefs that extend from the islands are covered.

Dhani Island is a sand and mud flat, fringed with mangrove scrub. The island, with the exception of some sand ridges at its N end, is submerged at HWS. The coral reef surrounding the island extends from 1 mile to 1.5 miles NE from its NE side and dries 3m.

Kalubhar Tapu (Karumbhar Island) is similar in composition to Dhani Island. A low ridge of sand, covered with low scrub, extends along the N side of the island. Kalubhar Reef (Karumbhar Reef), extending about 1.3 miles from its N and SW sides, covers at half tide, and consists of hard dead coral, with flats of very soft mud in places.

Sykes Point lies at the junction of Salaya Creek and Blunt Channel. A pier extends N from the point; boats and lighters can go alongside for 2 hours on either side of HW, after which the reef at the head of the pier dries.

Tides—Currents.—The tidal rise at Salaya Harbor is 5.3m at MHWS and 4.9m at MHWN.

The tidal currents in Salaya Harbor set SE with the flood and NW with the ebb, attaining a maximum velocity of 2 knots at the entrance to the harbor.

At a distance of 2 to 3 miles outside the entrance, the tidal currents set E with the flood and W with the ebb, attaining a velocity of 1 knot at neaps.

Depths—Limitations.—The harbor has depths of 10 to 25m in the entrance, gradually shoaling to 9.1m about 5 miles up the harbor.

A bar of soft mud extends across the approach. The fairway in the approach has a least depth of 8.8m. Taylor Shoal, with a depth of 6.9m, lies on the bar, about 3.3 miles WNW of the W extremity of Karumbhar Island. Hand Shoals consist of two 8.2m patches lying about 0.5 mile SSW and 0.8 mile SSE, respectively, of Taylor Shoal.

Nora Rock, with a least depth of 2.1m, coral, lies on the E side of the harbor, about 1.5 miles SW of the W extremity of Karumbhar Island. A tongue, with a least depth of 6.7m, extends about 0.5 mile W from Nora Rock, and constricts the channel to a width of less than 0.2 mile.

Aspect.—Kalubhar Tapu Light is shown from a circular stone tower, 14m high, at the W extremity of Kalubhar Tapu.

Wooden pole beacons, 0.6m high, mark the edges of the reefs on both sides of the channel. They are intended for the guidance of local craft, and cannot be relied upon as they are not always standing. Similar beacons mark the entrance and head of Salaya Creek.

A pair of white stone beacons, 2.4m high, and in line bearing 302°, are situated about 2.5 and 3 miles, respectively, W of Kalubhar Tapu Light.

A similar pair of beacons, in line bearing 164° and about 0.35 mile apart, are situated on the W side of the harbor, about 2 miles SE of the above pair.

The town of **Salaya** (22°19'N., 69°36'E.), at the head of Salaya Creek, is closely built with small stone houses and surrounded by a wall about 12m high.

Anchorage.—Large vessels can obtain anchorage in Salaya Harbor, in a depth of about 14.6m, in the outer or inner anchorage. The outer anchorage is situated about 0.8 mile NNW of Nora Rock. The inner anchorage is situated about 2 miles S of Kalubhar Tapu Light.

Directions.—Deep-draft vessels approaching from NW, after passing Chank Island Light, steer for Kalubhar Tapu Light bearing 128°, keeping on this course until the SE beacon of the 302° range bears 114°; then steer for the beacon on that bearing until Kalubhar Tapu Light bears 114°. Steer for the light on that bearing, passing between Taylor and Hand Shoals, until the beacons in the S part of the harbor are in range 158°; then steer on this range to the anchorage.

Deep-draft vessels without local knowledge should not proceed S of Nora Rock.

Light-draft vessels continue on the 158° range until the beacon in the NW part of the harbor are in range 302° astern; the latter range leads to the inner anchorage.

Pathfinder Inlet

1.20 Pathfinder Inlet (22°28'N., 69°40'E.), between Kalubhar Reef and Narara Reef, is about 0.2 to 0.3 mile wide, with depths of 24m in the entrance, decreasing to 10m about

1.5 miles within the entrance. The entrance is marked by lighted beacons on each side. Ambla Hill, 28m high, is conspicuous about 5 miles S of the entrance.

Tilburn Shoal, with a depth of 7m, lies about 1.5 miles NE of the N extremity of Kalubhar Tapu (Kalubhar Island). A detached reef, which dries 1.2m, lies on the E side of the entrance to the inlet.

Anchorage.—During the Southwest Monsoon, sheltered anchorage can be found, in a depth of 18m, mud, about 0.8 mile N of the inlet entrance, under the lee of Kalubhar Tapu. A small vessel, with local knowledge, can anchor, in a depth of 20m, about 1 mile within the entrance. Tidal currents at the latter anchorage attain a maximum velocity of 3 knots.

1.21 Vadinar Offshore Oil Terminal (Vaadinaar Terminal), a Single Buoy Mooring (SBM) terminal with discharging facilities, is situated at about 8 miles NE of Kalubhar Tapu Light. The SBM is equipped with radar reflector, a horn, and a red flashing light; it can accommodate tankers up to 300,000 dwt, with a maximum draft of 22m.

A submarine oil pipeline is laid between Narara Bet and the buoy. Crude oil discharged from the tankers is stored in a tank farm at Vadinar, S of Narara Bet, which is then pumped to a refinery 260 miles inland. A conspicuous water tower lies at Vadinar, about 4 miles S of the root of the pipeline.

In 1982, it was proposed to develop a deep-water cargo berth in Pathfinder Inlet to form part of the projected enlarged Port Vadinar. A causeway extending nearly 1.8 miles W from the W side of Narara Bet has already been completed, with a small L-shaped pier at its head, situated 1.5 miles within the E side entrance to Pathfinder Creek.

The terminal functions under the jurisdiction of Kandla Port Trust. Pilots are available and board vessels 4.5 miles NW of the SBM.

Regulations.—Masters should send ETA to the Superintending Engineer, Vadinar Offshore Oil Terminal or the Deputy Conservator Kandla Port Trust, giving 36 hours prior arrival notice at the SBM pilot station. Vessels at the berth may contact one of the above on VHF channels 12 or 16.

Anchorage.—VLCC's awaiting pilot or berth at the SBM should anchor in position 22°33'N, 69°38'E, in a depth of 33m, mud with broken shells. It is prohibited to anchor within 2 miles of the SBM, as charted.

Vessels should berth at the SBM at slack water or during an ebb tide, approaching the buoy from W. Due to the insufficient sea room, berthing attempts should not be made from E.

Sikka Creek Entrance

1.22 Sikka Creek (Sikka Kari)(22°29'N., 69°47'E.) is entered between Goos Reef and Narara Reef, about 1.5 miles W. Sikka (22°26'N., 69°50'E.), about 5 miles SE of the entrance, consists of one of the largest cement factories in India, the power house close S and the houses of the employees. The only ships calling at Sikka are coastal vessels bringing coal or loading cement. From the cement factory, an overhead ropeway runs to the deep-water jetty, about 2 miles WNW of the cement factory. Access to the jetty is provided by Sikka Channel, a deep and buoyed channel.

Storm signals are shown at Sikka; the [Brief System](#) is used.

Goos Reef, a large drying coral reef, has a conspicuous long sandbank on it which dries before the reef itself. A white concrete beacon lies on the SW edge of Goos Reef. Narara Reef, a coral reef which covers at 0.8m, fringes Narara Bet, and extends about 2 miles N and NE of the island. The seaward edges of all reefs are generally steep-to; during the Southwest Monsoon, there are heavy breakers over the off-lying reefs.

Tides—Currents.—Outside the entrance to Sikka Creek, the flood current sets E and ebb current sets W, attaining a maximum velocity of about 3.5 knots. Within Sikka Creek and Sikka Channel, the tidal currents generally set in a direction parallel to the axis of the creek and channel, respectively, attaining a maximum velocity of about 2 knots.

The tidal rise at Sikka Creek is 6.2m at MHHWS, and 4.1m at MHWN.

Siri Reef, a drying coral reef, lies about 0.7 mile SW of Goos Reef and is marked on its E side by a white beacon. In 1987, it was reported that a beacon lies on the W side of Siri Reef, with another beacon on the reef 0.35 mile SW. A small detached drying reef lies about 0.2 mile NW of Siri Reef. A 3.7m patch lies about 0.2 mile ENE of the SE extremity of Siri Reef, in the deep channel between Goos Reef and Siri Reef.

Sikka Channel, entered about 1.5 miles NNW of the deep-water jetty, has a least depth of 8.2m and a general width of about 183m.

The deep-water jetty is 79.3m long and can accommodate medium-sized vessels of up to 9.1m draft.

Aspect.—The entrance range, leading between the reefs into the anchorage, is marked by range beacons. A group of four chimneys, 72m high, standing at the cement factory, are conspicuous. Close S of the cement factory, the two chimneys of the powerhouse are also conspicuous.

The channel is marked by [IALA Maritime Buoyage System \(Region A\)](#), and leads from the fairway (red can) buoy moored 1.3 miles NNW of Siri Reef. The channel becomes narrow inward, with a least depth of 8.2m. It is reported that buoys may liable to drag in strong winds.

Pilotage.—Pilots come from Okha in a tug, usually boarding ships 2 hours before HW during daylight only. There are no pilots available for the stretch between Pirothan Island and the anchorages off Kalyan Light; however, local guides are provided upon request.

The pilot should be requested 48 hours in advance. The pilot boards in the vicinity of Fairway Lighted Buoy.

Regulations.—All vessels are to maintain a listening watch on VHF channels 11 and 13 during oil lightening operations from May to October.

Anchorage.—Sikka Creek provides sheltered anchorage, in a depth of 11m, about 0.5 mile within the entrance, between the W end of Goos Reef and Siri Reef.

An outer anchorage, in depths from 17 to 20m, is established about 2.5 miles N of Siri Reef for vessels waiting to berth alongside and for berthing at Vadinar Terminal. Vessels up to 165m long, with a maximum draft of 7.9m, can use this anchorage. The anchorage is exposed to the Southwest Monsoon; in 1987, it was reported to be congested.

Ammonia Discharge Berth consists of a concrete island jetty joined to the shore ESE by a breakwater. The berth has a length of 220m, with a pair of mooring dolphins at the ends, and has

an alongside depth of 11m. A road to the shore runs over the breakwater.

Directions.—Vessels proceeding to Sikka Creek should not proceed into depths of less than 27m until the lighted entrance buoy is sighted. This buoy should be approached in a direction from the W through N to NE until on the entrance range; then steer on the entrance range, between Siri Reef and Goos Reef, to the anchorage, taking care to avoid the 3.6m shoal, marked by a buoy, about 0.2 mile E of Siri Reef. Caution should be taken when entering Sikka Creek during a strong ebb or flood tide.

Caution.—Berthing is permitted only from 2 hours before until 2 hours after HW. The use of this berth is dangerous during the Southwest Monsoon.

In 1987, it was reported that vessels berth port side-to and leave stern first because of insufficient turning room off the berth. Another berth for discharging ammonia was in operation the same year.

Sikka Creek to Bedi

1.23 Dera Island, a mangrove islet with a range of low sandhills, lies about 2.5 miles NE of the N extremity of Goos Reef. The NW end of this islet is a bluff about 4.6m high. A drying reef extends about 1.5 miles W, 0.8 mile N, and 4.5 miles NE from the NW extremity of Dera Island.

Pirotan Island (22°36'N., 69°57'E.), about 6.5 miles NE of the NW extremity of Dera Island, is a good landmark as the trees on it are not allowed to be cut down. The island lies about 1 mile from the mainland, to which it is connected by a drying coral reef.

Pirotan Island Light is shown from a pyramidal concrete tower, with red bands, on the NW extremity of the island. Another light is shown from an iron framework beacon, on a stone base, on the edge of the reef about 1.5 miles NE of Pirotan Island Light.

Jindra Bet (Pirotan Swamp), with its NW extremity about 4 miles W of Pirotan Island, consists of sand and mud flats, is fringed by mangroves, and is liable to flood. The N side of the island consists of sand dunes, 1 to 3m high.

Rozi Island, rocky and 11.3m high, lies about 5 miles SE of Pirotan Island. A group of four conspicuous radio towers, having an elevation of 44m, lies on the E side of Rozi Island, and a conspicuous water tower with an elevation of 38m is situated on the SE side of the island.

A radio mast, with an elevation of 76m and marked by an obstruction light, lies 6.3 miles SE of Rozi Mata Temple.

Bedi (22°31'N., 70°02'E.)

[World Port Index No. 48650](#)

1.24 Bedi Docks, about 1 mile NW of the village of Bedi, form the port for Jamnagar, about 3.5 miles SE, with which they are connected by a railway. The port is an all-weather lighterage port open throughout the year. The basin at Bedi Docks dries at half-tide. Cargo is worked at the anchorage.

A stone pier, the seaward end of which covers at half tide, extends about 0.8 mile NNW from the N end of Rozi Island.

Bedi Creek, providing access to Bedi Docks, is entered W of the stone pier. Tidal currents in the creek have a maximum velocity of 2.5 knots in spring tides.

Aspect.—**Rozi Mata Temple** (22°33'N., 70°03'E.) lies at the N end of Rozi Island. Rozi Mata Light is shown from a white circular tower, 15m high, on the NW corner of the temple courtyard. A light is shown from the head of the stone pier, about 1 mile NNW of the temple. Bedi Bandar Light is shown from a white metal framework tower lying about 1 mile SSW of Rozi Jetty.

A light is shown from Kalyan Beacon, on the NE edge of the drying reef, about 1.8 miles N of the stone pier.

Two radio masts, 36.5m high, about 3.5 miles S of Rozi Mata, and Pratap Clock Tower, about 1.25 miles farther SE, are conspicuous.

Pilotage.—No pilots are available, but local guides are available; they are embarked N of Pirotan Island Light.

Anchorage.—Large vessels may anchor, in 15m, mud, about 1.75 miles N of Kalyan Beacon. A better berth is about 2 miles NE of Kalyan Beacon.

Small craft with local knowledge can anchor, in 5.5m, mud, about 0.5 mile NE of Kalyan Beacon. This anchorage is sheltered from W winds, which prevail from February through October. There is a white mooring buoy about 0.8 mile SE of Kalyan Beacon.

Directions.—Vessels approaching from the W should not alter course S until Kalyan Beacon bears 185°. This will avoid the reefs and shoals extending offshore between Pirotan and Rozi Islands. Vessels entering or leaving the anchorage should keep N of Ranson Shoal.

Caution.—A submerged rock lies about 1.8 miles E of Kalyan Light, a dangerous wreck about 2 miles NNE, and another wreck 3 miles NE from the same light. A wreck with a 10m depth lies about 2 miles ENE of Kalyan Light; another dangerous wreck lies about 1 mile NE of the light.

Ranson Shoal has a least depth of 1.5m, located about 3.3 miles N of the stone pier. Depths of less than 5.5m extend about 0.7 mile ESE of the least depth.

Bedi to Mungra Reef

1.25 The coast between **Rozi Mata Temple** (22°33'N., 70°03'E.) and the village of Sachana (Sachara), about 7.5 miles E, consists of sand and mud flats, fringed with mangroves, and intersected by creeks.

A small range of rocky mounds, 12.2 to 15.2m high, fronts the coast about 3 miles NNE of Sachana. These mounds are isolated at HWS.

At Balachadi (Balachiri), about 2.8 miles NNE of Sachana, a range of hills about 30m high extends SE and terminates rather abruptly about 1.5 miles from the village. A small conical hill, detached from the mainland and isolated at HW, lies about 0.8 mile NNE of Balachadi; Aku Pir (Akria Pir), a Mohammedan building, lies on the summit of the hill.

Balachadi Rocks (Balachiri Rocks) (22°41'N., 70°10'E.), which dry, have been reported to give good radar returns at 9 miles.

The NW bastion, 24m high, of the fort at **Jodiya** (22°42'N., 70°18'E.), and a house close SE, are conspicuous about 7.5 miles NE of Aku Pir and 2.8 miles inland. These objects are

unmistakably identifiable and can be seen 10 to 12 miles in clear weather.

About 2 miles NW of the fort a light is shown. A light is shown from the N extremity of the quay wall at Jodiya Bandar (Bandar).

Mungra Reef, at the W edge of the drying coastal reef, lies with its W edge about 6 miles WNW of Jodiya Bandar. About 0.8 mile within the W extremity of Mungra Reef lies a heap of sand and shells. This is the first part of the reef that dries, and the position of the remainder of the reef may be determined from it.

A light stands on a small detached drying reef close S of the W extremity of Mungra Reef.

Anchorage.—Balachiri Roads, NW of Aku Pir, may be approached with Aku Pir bearing 120°, on which bearing anchorage can be taken, in 5.5 to 9.1m, soft mud, according to a vessel's draft. The anchorage is protected from NE gales by the reefs N, but local knowledge is necessary for navigating this part of the gulf.

Anchorage may be taken, in 5.5m, mud, sheltered from strong NE winds, with the fort at Jodiya bearing 109°, and the beacon off the W end of Mungra Reef bearing 003°, distant 1.5 miles.

Head of the Gulf of Kutch

1.26 Little Rann, which flows into the head of the Gulf of Kutch, is dry during the Northeast Monsoon from November to February. It is a great inland sea and quite impassable during the Southwest Monsoon, when the sea is driven many miles E by the wind.

This vast sheet of water is drained by Nakti Creek, Kandla Creek, and Hanstal Creek. These creeks are subject to the regular tides. The ebb current in Hanstal Creek, because of the large shallow area which it covers and uncovers, attains a velocity of 6 to 7 knots at its mouth; the ebb current flows longer than the flood, their durations being about 8 hours and 4 hours, respectively.

Between the mouth of Hanstal Creek and the coast on the S side of the head of the gulf, there is another rann resembling Little Rann. Its W edge is fringed with mangrove bushes; the ordinary HW mark extends from the mouth of Hanstal Creek toward Jodiya. At HW this area is like a large inland sea of only about 1m depth; in the Southwest Monsoon it is navigated by boats drawing from 0.9 to 1m.

About 4.5 miles NNE is Jodiya, a rocky islet, covered with bushes, lying about 1 mile E of the ordinary HW mark.

Tides—Currents.—In the W approach to Kandla Creek and Hanstal Creek, the tidal currents are very irregular and appear to be greatly influenced by a strong wind from any quarter. They are strong and gradually increase in velocity to within the entrance of Hanstal Creek. At Outer Tuna Fairway Buoy, the velocity is 2.5 knots at springs and 1.5 knots at neaps; at the entrance of Hanstal Creek the velocity is 7 knots at springs and 4 knots at neaps.

Caution.—The head of the Gulf of Kutch between Jodiya and the entrances of Kandla Creek and Hanstal Creek is

encumbered with numerous changing shoals. Local knowledge is necessary while navigating in this part of the gulf.

1.27 Nakti Creek (22°56'N., 70°09'E.) has almost entirely silted up and can now be used only by small local craft at HW proceeding to Tuna Bandar, about 3 miles up the creek on its W side.

The W entrance point of the creek is very low and is covered with mangrove bushes which are nearly submerged at HW. Narrow ridges of coarse sand and broken shell, from 0.3 to 1.2m high, front the rann on the W side of the creek.

Tekra Islet, about 1.3 miles WNW of the W entrance point of the creek, consists of mud covered with mangroves. A similar islet lies about 0.5 mile SE of Tekra Islet.

Tekra Light (22°56'N., 70°07'E.) lies about 1.3 miles SW of the W entrance point of Nakti Creek. The light is shown from an iron column on a black masonry tower, 14m high, with white bands, situated on a sandy ridge on the S edge of a mangrove swamp.

Beacon G, painted black, surmounted by a rectangular topmark and 13.7m high, lies about 6 miles W of Tekra Light.

Beacon I, painted black and surmounted by a ball, lies about 3 miles E of Beacon G.

Beacon H, painted red, with a diamond topmark and 15m high, lies about 2.8 miles NE of Tekra Light.

The channel leading to Tuna Bandar is marked by range beacons.

Kandla (23°00'N., 70°13'E.)

World Port Index No. 48630

1.28 The port of Kandla, on the W bank of Kandla Creek, about 2.5 miles within its entrance, is a naturally-sheltered harbor in all seasons. The approach to Kandla leads W of Khara Dhada and Mid Shoals, through Sogal Channel, then northward through a buoyed channel passing over Kandla Bar to the creek.

The Kandla port jurisdiction extends to Kalubhar Tapu marking its W limits, which include Pathfinder Inlet, Vadinar Offshore Oil Terminal, Rozi Anchorage, and Hantal Creek.

Port Authority of Kandla

<http://www.kandlaport.com>

Tides—Currents.—The tidal rise at Kandla is 6.6m at MHWS, and 5.7m at MHWN.

On Kandla Bar the flood current sets NE with a velocity of 2 to 3 knots at springs tides. The flood tidal currents in Kandla Creek attain maximum velocities of 3 to 4 knots at spring tides.

Depths—Limitations.—Kandla is a tidal port; entrance and departure depend on the tide. Vessels up to 225m in length, with a maximum draft of 9.2m at HW neaps and 10.1m at HW springs, can use the port. Maximum permissible drafts are issued quarterly by the Deputy Conservator.

The main cargo jetty has six berths, with a total quayside of 1,440m. Vessels up to 225.5m in length, with a maximum draft of 9.1m, can be accommodated. A seventh berth, 340m long, is under construction at the S end of the quay.

An oil jetty, with two berths, is situated on the W side of Kandla Creek about 1.5 miles N of the cargo jetty; tankers up to 40,000 dwt, with a maximum length of 213m and a maximum draft of 10.3m, can be accommodated. A tank farm stands close to the root of this jetty; a second oil jetty lies 0.2 mile S.

A deep-draft mooring in the harbor can accommodate vessels up to 225.6m in length and 11.3m draft.

Mooring berths close NE of the quay can accommodate vessels up to 152.4 and 183m in length and 7 to 8.8m draft.

The salt mooring in the N part of the harbor can accommodate vessels up to 183m in length and 8.8m draft.

Kala Dara Shoal (Kara Dhada Shoal), in the entrance to Kandla Creek, dries 2.7m and consists of hard dry sand.

Sogal Channel leads towards Kandala Creek between Khengarji Bet and Kala Dara Shoal. The channel is dredged and marked by lighted buoys conforming to the [IALA Maritime Buoyage System \(Region A\)](#); the buoys are moved frequently to meet changes in the channel.

Sathsaida Leading Lights lead through Sogal Channel; a second pair, lying close NNW, leads across the inner bar to Kandala Creek.

Kapoor Shoal, about 0.8 mile SE of and parallel to Kala Dara Shoal, has depths of less than 5.5m and a least depth of 1.2m; it consists of ridges and pinnacles of coarse sand, small stones, and broken shells.

Mid Shoal, which dries 0.7m, lies 0.3 mile N of the NE extremity of Kala Dara Shoal.

Kandla Bar, at the entrance to Kandla Creek, had a least depth of 4.3m in 1994. The depth over the bar is subject to constant change.

Flamingo Flat, a drying mud bank, extends about 2 miles S from the SW extremity of Sathsaida Bet.

The depths over the bar and in Kandla Creek are subject to constant change and the latest information should be obtained from the Deputy Conservator, Kandla.

The nature of the bottom throughout the creek is coarse sand, small stones, and broken shell, except in depths of less than 5.5m near the banks, where the bottom is mud.

Barry Shoal, on the W side of the harbor and about 0.5 mile N of the cargo quay, is a ridge with depths of 2.7 to 5.5m.

Aspect.—Kandla Creek is entered among mangrove bushes, between Khengarji Bet and Sathsaida Bet, both of which are typical rann ground of hard mud flats; it then extends N for about 7 miles, where the creek forks. Both sides of the creek are protected by steep mangrove-lined banks, which just cover at HWS.

Navinal Point and Bhadreswar Temple have been previously described in [paragraph 1.14](#). Tekra Light, along with Beacon G, Beacon H, and Beacon I, have been previously described in [paragraph 1.27](#).

Outer Tuna Lighted Buoy (22°51'N., 70°07'E.), painted red, marks the entrance of the channel to Kandla.

In 1980, less water was reported in the entrance to the channel between Kala Dara and Kapoor Shoals. It is cautioned that the buoys and channels are liable to be moved due to frequent changes in depths.

Beacon A, painted black, with a cone topmark and 18m high, lies about 0.8 mile WNW of the W entrance point of Kandla Creek.

Beacon B, painted black, with a ball topmark and 12m high, is situated on Sathsaida Bet, about 1.8 miles ENE of Beacon A. Beacon C and Beacon E, situated about 1.8 and 3.3 miles, respectively, SE of Beacon B, are similar to Beacon B, except they are surmounted by an inverted cone and a rectangle, respectively, and Beacon E is 9m high.

A black masonry radar tower, 29m high, lies close N of the cargo quay. A water tower, 24m high, lies about 0.5 mile S of the radar tower.

Two framework water towers, each 26m high, are situated about 0.6 mile WNW and 1.4 miles N, respectively, of the radar tower.

Pilotage.—Pilotage is compulsory; it is available during daylight hours only for tankers and 24 hours for all other vessels. The pilot boards at Tuna Buoy at the mouth of Kandla Creek. Requests for pilots should be sent to the ship's agent 12 hours in advance. Vessels should contact Kandla Tower via VHF channel 16.

Regulations.—Vessels berth at HW only. Tankers or vessels with an overall length exceeding 183m, with a draft of more than 8.2m, or with a speed capability of less than 9 knots, may not enter or leave the port during darkness nor may ships at moorings be berthed or unberthed except in daylight.

It was reported (1993) that berthing is restricted to daylight hours only due to the small number of pilots available and the poor condition of the lighting on the jetty. The movement of tankers is also restricted to daylight transit of Sogal Channel.

Kandla lies in a controlled area where special security regulations are in force; photography of shore installations is forbidden.

Signals.—The port signal station is situated near the radar tower. Communication may be made with the signal station by semaphore and the International Code of Signals by day, and by flashing light at night. The port is also equipped with VHF.

Storm signals are displayed; the [General System](#) is used.

Signals used in the port are given in the Kandla Port Rules issued by the port administration.

A black ball displayed at the masthead of the signal station indicates a vessel is about to enter or leave the harbor.

In the event of an outbreak of fire in the port area or on a ship alongside a berth, a blue square flag by day and two green lights shown vertically by night will be displayed from the yardarm of the signal mast. In addition, eight short blasts followed by one long blast will be sounded on the port siren and repeated at short intervals.

Anchorage.—Good anchorage can be taken, in 8.2m, coarse sand, small stones, and broken shell, about 0.4 mile NE of the oil pier in the N part of the harbor.

Vessels liable to quarantine regulations will remain in the quarantine anchorage, about 1 mile S of Outer Tuna Lighted Buoy until pratique is granted. Vessels suspected of having minor infectious diseases on board may be brought into the harbor and anchored or berthed in a suitable quarantine area.

Hanstal Creek (22°56'N., 70°24'E.)

World Port Index No. 48640

1.29 Hanstal Creek (Hansthal Creek) is entered about 8 miles ESE of the entrance to Kandla Creek. The width of the entrance has doubled by erosion in the last 50 years, and is now about 1.5 miles wide between Sathsaida Bet and the coast S. The S side of the approach is formed by a coast fringed with ridges of coarse sand and broken shell, 0.3 to 0.9m high.

Tides—Currents.—The flood and ebb currents in Hanstal Creek attain a velocity of 5 knots in the channel between the mangrove bushes; during freshets, the velocity may sometimes increase to 7 knots.

The tidal rise at Navlakhi is 7.2m at MHWS and 6.2m at MHWN.

Depths—Limitations.—The approach channel to Hanstal lies between Kapoor Shoal and Singare Shoal to the N, and Baptista Shoals to the S. Kapoor Shoal was previously described in [paragraph 1.28](#) with Kandla. Singare Shoal (Singari Shoal), with depths of less than 5.5m, extends up to 1.5 miles off the S side of Flamingo Flat and has a least depth of 2.4m on its S edge. Baptista Shoals, similar in composition to Kapoor Shoal, dry 1.2m, and lie about 0.8 mile SE of the E end of Kapoor Shoal.

Navlakhi Bet lies on the N side of Sui Creek, at its junction with Hanstal Creek, about 4 miles NE of the entrance to the latter creek. The alongside facilities for **Navlakhi** (22°58'N., 70°27'E.), a lighterage port, are situated on the S side of Navlakhi Bet. Cargo is worked at the anchorage. The largest vessel accommodated was 24,600 dwt.

Aspect.—Murga Bet (Murga Island), consisting of several islets covered with mangroves, lies in the middle of Hanstal Creek, about 0.8 mile NW of Navlakhi Bet.

Beacon F, painted black, with a ball topmark and 12m high, is situated near the SE extremity of Sathsaida Bet.

Beacon D, painted black, with a diamond topmark and 12m high, lies about 3 miles W of Beacon F at the S extremity of Sathsaida Bet.

A wooden beacon, with a triangular topmark and 3m high, lies on the SW extremity of Murga Bet.

A light is shown from a conspicuous steel framework tower, 23.5m high, on the NW extremity of Navlakhi Bet.

Pilotage.—Pilotage is not compulsory, but if requested, local pilots can be provided by the Port Authority; the pilot will board in position 22°44'N, 70°05'E. The vessel's ETA should be provided 24 hours in advance. Pilot activities are during daylight hours only.

Anchorage.—The holding ground in Hanstal Creek is not good, as rock lies a little way beneath the mud, and the strong tidal currents cause a vessel to drag anchor easily.

Vessels over 2,000 grt should anchor, in 9m, about 0.8 mile NW of the entrance of Moti Patar Creek, which lies on the SE side of Hanstal Creek. The holding ground here is fairly good, and the directions of the tidal currents are fairly steady.

Small vessels can anchor farther N, but cross currents from the creeks cause excessive yawing and a great strain on the anchor cable.

Caution.—A wreck, with a depth of 3.7m, lies S of Kapoor Shoal, in the approach to Hanstal Creek. Local knowledge is necessary for navigating Hanstal Creek and its approaches.

The Gulf of Kutch to Porbandar

1.30 The coast of Kathiawar from Humani Point, the S entrance point of the Gulf of Kutch, to Kachchigadh, about 11.5 miles SW, is composed of low sandhills. Between Kachigadh and Dwarka Point, about 5.5 miles S, the coast is cliffy, and thence to Madhi, about 12 miles farther SE, the coast is again composed of low sandhills. The above coast forms the W side of a very low peninsula. At HWS tides and during the Southwest Monsoon, this peninsula is separated from the mainland by Okha Rann, which extends from Madhi in a NNE direction for about 12 miles to Pindara Bay.

A light, with a racon, is shown from a white, round, concrete tower with red bands at Kachchigadh.

A 30m sandhill with bushes on it lies about 2 miles N of Kachigadh.

Warwala, about 2.5 miles SSE of Kachigadh and 1 mile inland, is a large walled town. A square tower in the town is conspicuous and visible several miles to seaward.

Dwarka Point (22°14'N., 68°57'E.) is the W extremity of the promontory on which the town of Dwarka is situated. A light is shown from a white, square stone tower, 37m high, on the point. Three chimneys, the tallest being 70m high, are conspicuous near the point.

Caution.—A dangerous wreck lies 4.5 miles offshore, about 8 miles S of the light.

1.31 Dwarka Temple (Jagat Mandir), a stone structure, 51m high, carved with figures from base to summit, lies within Dwarka Fort on high ground close to the sea. In clear weather this temple is conspicuous and can be seen from 17 to 18 miles. A column lies close to the edge of the cliff a short distance W of the temple.

Rupen Bandar, the port for Dwarka, is shallow and obstructed by rocks at its entrance, about 1 mile N of Dwarka. The cliffs between Rupen Bandar and Dwarka are about 12m high and covered with cactus bushes.

Tidal currents abreast Rupen Bandar set N with the flood, at a velocity of more than 2 knots, and SSE with the ebb, at about the same velocity. Farther N, the tidal currents are stronger.

Anchorage for large vessels can be taken, in 20 to 22m, sand, with Dwarka Temple bearing 069°, distant 1.5 miles. The bottom is rocky in the approach to the Gulf of Kutch; several vessels have lost their anchors.

Madhi, about 12 miles SE of Dwarka, is a village with a small dark temple and an old tower lying on elevated rocky land near the coast. About 4.8 miles NW of Madhi, a freshwater current flows into the sea during the rainy season. There are many such streams along the Kathiawar coast, which cause breaks in the coral reef that fringes the coast, furnishing good landing places where small boats can lie aground in the mud.

The coast between Madhi and Meda Creek, about 22 miles SE, consists of a high sandy ridge, with dispersed gaps. The only conspicuous objects on this coast are two small conical hills about 3 miles SE of Madhi. A prominent radio mast,

marked by a red obstruction light, is situated 4.5 miles SE of Madhi.

Meda Creek, the estuary of a river, dries. Miani, a small village with a fort, lies on the E bank of the creek. On the W side of the creek, abreast the village, is a pagoda or temple on a hill about 56m high. Meda Creek has been reported to give good radar returns at 15 miles.

The coast between Meda Creek and Porbandar, about 16 miles SE, is low but rises gradually NW.

Porbandar (21°38'N., 69°36'E.)

World Port Index No. 48680

1.32 Porbandar is the largest town on the coast of Kathiawar. The principal imports are fertilizers, tiles, timber, fresh dates, and petroleum products; exports include cement, groundnut oil, and cotton.

Tides—Currents.—Tidal currents are not perceptible in the offing. In the entrance of the shallow creek, the ebb current runs very strongly and continues for some time after LW.

Depths—Limitations.—The indentation of the creek is shallow as the coastal bank, with depths of less than 5.5m, extends about 0.8 mile offshore.

An S-shaped breakwater, 2,560m in length, extends S from the point on which lies Kadar Pir and provides shelter for a port which is in operation throughout the year.

On the E side of the breakwater, about 0.8 mile S of Kadar Pir, there is a quay 235m long with depths from 9.5 to 11m alongside; the deck of the quay is a 5m above MHHW. The quay provides one berth for vessels up to 183m long with a draft of 8.5m. It was reported that the breakwater S of the berth had been breached in two places.

An anchor berth E of the breakwater is used for lighterage operations.

There is a mooring buoy about 0.25 mile E of the quay, in a depth of 7m. This buoy, and an anchor berth E of the breakwater, are used for lighterage operations.

Aspect.—The **Barda Hills** (Barda Range) (21°48'N., 69°44'E.) are conspicuous and make a good landfall; in clear weather they are visible from 25 or 30 miles.

Porbandar lies on the E side of the entrance to a narrow creek, which flows out between the town and a point on which lies Kadar Pir, a conspicuous mosque with an elevation of 8m. A conspicuous pillar is situated on the coast 0.5 mile NW of the mosque.

Porbandar Light is shown from a tall, round, stone tower with black horizontal bands lying on the coast in front of the town.

Conspicuous chimneys are situated 1 mile N and 0.5 mile ESE of New Hazur Palace. In addition, the towers of the water works, 1.5 miles N of the palace, are prominent.

The Rajah's old palace, a white square building with a red roof, lies 0.5 mile ESE of New Hazur Palace.

Pilotage.—Pilotage is compulsory for vessels proceeding to a mooring buoy or an alongside berth within the breakwater. Vessels requiring a pilot should anchor 0.3 mile S of the breakwater.

Anchorage.—The outer anchorage is 2.3 miles SSW of Porbandar Light, in a depth of 17m. Small vessels can anchor

closer inshore according to draft. An examination anchorage is established and is centered about 1.5 miles WNW of the head of the breakwater.

Caution.—During the Southwest Monsoon, a 0.6m swell is generated within the breakwater; heavy fore and aft springs are essential for ships berthed alongside.

Porbandar to Veraval

1.33 The coast between Porbandar and Navibandar, about 15 miles SE, consists of sandhills with clumps of trees near the villages. Inland there is an extensive swamp, which is flooded during the rainy season. At Tukda (Tunkra), about 10 miles SE of Porbandar, there is a conspicuous temple.

Navibandar (21°27'N., 69°47'E.) is a walled town close to the coast. A light is shown from the sea-face wall of the center bastion at Navibandar from September to June. The Bhadar River enters the sea about 0.8 mile NW of the town; its entrance is shallow and rocky.

Anchorage.—Good anchorage can be taken, in 9.1m, off the entrance of the Bhadar River, with the light structure at Navibandar bearing 099°.

Gorakhanath (21°32'N., 70°32'E.), 1,116m high, lies about 53 miles NNW of Diu Head and about 35 miles inland. The mountain is an enormous granite rock, conical, isolated, and bare, upon which there are numerous temples and monasteries. In clear weather, it is prominent from Porbandar to abreast Diu Head, but farther NW it is obscured by the Barda Hills.

Madhavpur, about 15 miles SE of Navibandar, is a small walled town on the coast. The town of Mangrol, about 12 miles farther SE and 1 mile inland, has a high tower which is conspicuous from 10 or 12 miles. Mangrol Light is shown from a square house at Mangrol Bandar. There is a pier, 122m long, on the coast SW of Mangrol.

The Megal River, about 11 miles SE of Mangrol, flows into the sea during the Southwest Monsoon, but, like most rivers on this coast, its mouth is generally choked with sand.

Veraval (20°54'N., 70°22'E.)

World Port Index No. 48690

1.34 The town of Veraval shows up well from seaward, as many of the houses rise up abruptly from the surrounding countryside. Somnath, a town of about the same size as Veraval, is situated on the coast about 1.8 miles ESE of Veraval.

Tides—Currents.—Tidal currents are not perceptible in the roadstead, but there is sometimes a surface drift of about 0.5 knot, depending on the wind

Depths—Limitations.—Veraval is an open roadstead where vessels load and discharge by lighters working to quays in the inner harbor. The inner harbor, close SE of the customhouse, is sheltered by a breakwater extending SE from the coast. The port is closed to shipping from May 15 to September 15.

A shoal, with a least depth of 10m, lies about 1 mile SSE of the breakwater head.

A dangerous wreck, marked by a white can buoy, lies about 0.2 mile ESE from the breakwater head.

A detached rocky shoal, with a least depth of 4.6m, lies about 0.2 mile SE of the breakwater head.

There are depths of 3 to 4m in the inner harbor. There are two basins in the inner harbor; two of the quays have depths of 4m alongside. The channels leading to the quays are maintained by dredging.

Aspect.—The customhouse, a large white building facing the sea, is the most conspicuous landmark.

A chimney, 51.5m high, is conspicuous about 1 mile NW of the customhouse.

Veraval Light (20°54'N., 69°23'E.) is shown from a white masonry tower, 33.5m high, with black bands, situated near the coast about 1 mile WNW of the custom house.

Deni Barra, a cliffy point, 9.1m high, with a temple, 7.6m high, is conspicuous about 0.5 mile NW of Veraval Light.

Bhirbhanjan Temple (Bhirria Temple) is conspicuous about 0.8 mile E of the custom house. Lighted Beacon A is shown from a white, square, masonry structure, 6.1m high, close SW.

Somnath, about 1.8 miles ESE of Veraval, is surrounded by a wall of dark-colored stone. A conspicuous temple, 56m high, lies on the seaward side of the town.

Two buoys, both of which are removed when the port is closed, mark the entrance to the inner harbor.

Pilotage.—Pilotage is not compulsory. Vessels should send their ETA messages through Mumbai or Kandla.

Signals.—There is a signal station at Veraval which vessels may communicate with by the International Code or Morse Code. Storm signals are displayed from the mast above the customhouse; the [General System](#) is used.

Anchorage.—Good anchorage can be obtained, in depths of 12 to 18m, sand, with the customhouse bearing 343°, the temple on Deni Barra bearing 315°, and with Bhirbhanjan Temple in line bearing 040° with Lighted Beacon A close SW.

In fine weather anchorage can be obtained farther inshore, in 10 to 12m, coral rock, with the customhouse bearing 348°, the temple on Deni Barra bearing 313°, and Bhirria Temple bearing 058°.

Veraval to Diu Head

1.35 The coast between Sutrapara, about 7.5 miles ESE of Veraval, and Mul Dwarka, about 11 miles farther ESE, is low and sandy with patches of cliffs at intervals.

Mul Dwarka (20°45'N., 70°40'E.) is below a small bluff point with a temple on its summit which has an elevation of 24m. The point can be identified by the white sand on the top of the cliffs and the dark building of the temple.

The port contains a 250m long private jetty used for unloading cement. The depth alongside the jetty is 9.5m.

The Surmat River flows into the sea about 1.5 miles W of Mul Dwarka; the Singavado River empties about 0.5 mile E of the point. The latter river has very little water in it except during the rains.

Kodinar, a town about 3 miles NE of Mul Dwarka, is just visible among the trees.

The coast between Mul Dwarka and **Diu Head** (20°41'N., 70°50'E.), about 10 miles ESE, consists of rocky points with sandy bays between and some cliffs 9m to 12m high. A submerged rock, with depth of 2m or less, lies about 2.5 miles W of Diu Head Light.

Chara is a village near the coast, about 3 miles ESE of Mul Dwarka. The coast is more densely wooded here and the trees are larger than elsewhere on the coast. A white tomb lies close to the coast about 0.8 mile W of Chara.

Tides—Currents.—Between Sutrapara and Diu Head, the ebb current sets WNW and the flood ESE at a velocity of 1 to 1.5 knots, but they are subject to irregularities. In December and January, with the current setting up the coast, the W tidal current is increased, while the E tidal current is weakened and may at times be imperceptible.

Caution.—The coast between Mul Dwarka and Diu Head is fronted by a rocky shoal lying about 1.5 miles offshore, with a least depth of 3m. A vessel should not approach it to a depth of less than 24m.