(1676) **PERSIAN GULF—Kuwait—Mina al Ahmadi—Pipeline removed.**—The submarine pipeline "M" charted from a position in (approx.) 29°02'39" N., 4[illegible]°10'[illegible]" E. in a 292°30' direction to the shore no longer exists and will be expunged.

(N.M. 11/66.)

(N.M. [illegible]7), London, 1966.)
H.O. Charts **6293 (Plan A), 3654, 3685.**
H.O. Pub. 62, 1960, page **253.**

(7624) **PERSIAN GULF—Kuwait approach—Light established.**—A steel pile showing a *Fl. R. 5 sec.* light has been established in 29°06'47" N., 48°19'21" E.

(N.M. 49/66.)

(N.N. 132, Bahrain, 1966.)
H.O. Charts 3654, 3639, 3647.
H.O. Pub. 112, No. **34930.**
H.O. Pub. 62, 1960, page **253.**

Berthing facilities for 8 vessels are available at the southern offshore oil loading T-headed wharf. This wharf is 2,805 feet in length in a north-south direction. The wharf is connected to the shore by a pier about 4,200 feet long. The tanker berths are numbered from 1 to 6 on the northern section of the wharf: two oil berths, Nos. 9 and 10, are located on the southern section of the wharf and can accommodate either tankers or dry cargo vessels. Depths alongside range from 40 to 49 feet. Vessels up to 855 feet long can use berth No. 4, and those 800 feet long can berth at No. 10. The wharf is exposed to heavy swells, but special fenders have been installed to withstand the shock of a vessel's movement while berthed.

Southward of the pier root is a breakwater enclosed small craft and lighter harbor, dredged to a depth of 8 feet. Berths Nos. 7 and 8 on the T-headed wharf are also reserved for the use of local craft and are not equipped with the special fenders.

Each tanker berth at the southern wharf is equipped with derricks to handle the cargo hoses. Cargo vessels normally use their own booms. Portal cranes of 5 tons capacity are available. A stiffleg derrick of 50 long tons capacity is located at the northern end of No. 10 berth, known as berth 10A. Cargo is loaded into trucks as there are no rails on the wharf.

North Pier, the northernmost oil wharf, consists of a wharf which is about 2,300 feet long and connected to the shore by a pier 4,750 feet long. There are depths of 57 to 60 feet alongside. The wharf is equipped with gravity fenders similar to those of the southern wharf. Three berths, Nos. 11, 12, and 14, are on the seaward side. Berths Nos. 15 and 16 are on the inshore side. Vessels up to 950 feet long with a 55-foot draft can use these berths. There are no general cargo facilities. A prominent two-story building is located near the seaward end of the approach pier and contains recreational and medical facilities for ships' crews.

In addition to the berths at the wharves, there are seven submarine pipeline berths, designated "A", "B", "D", "E", "H", "J", and "M". It was reported (1963) that berth "A" was the only one in operation. There is about 45 feet of water at these berths, and vessels moor in them, using their anchors forward and securing their sterns to mooring buoys which are fitted with quick release hooks. Berths "B", "D", "E", and "H" are located northward of the southern wharf, the remaining are located southward of the southern wharf.

A number of tugs, ranging up to 1,500 horsepower, are available for berthing and unberthing vessels. There are about 20 steel barges and a number of launches available in the port.

Bunkers and diesel oil can be taken at the northern and southern wharves at a loading rate of about 200 tons per hour. Marine lubricants are normally available. There are fresh water connections on three wharves, but all fresh water is produced by distillation and is in limited supply. Food supplies are available.

Minor repairs can be made, and vessels requiring such repairs should notify by radio in advance "Marine Kuoco Kuwait," giving the detailed requirements. At the southwestern end of the small boat harbor is a small marine railway suitable for tugs and lighters. Salvage equipment, divers, and diving gear are available.

There is a radio station in Mina' al Ahmādī; the radio towers are near the oil tanks.

Radio telephone service is available on Channel 16 (156.8 mcs.).

A dispensary in the port will treat seamen. Those requiring hospital treatment will be taken to Al Kuwayt. The quarantine medical officer will be available for consultation on board if required. Pratique will be granted at the anchorage or at the berths.

COASTAL FEATURES (Continued)

7D–20 Abū Ḩulayfah, which has a small fort and a few date palms nearby, is located about 2½ miles northward Al Fuḩayḩīl. Finṭās, the northernmost of four villages, is situated about 2½ miles northward of Abū Ḩulayfah and has a small date grove. About 3½ miles north-northwestward of Finṭās is a conspicuous tree which stands about ½ mile inland; about 4½ miles farther in the same direction is Sirra Hill Fort. The fort is a small square conspicuous structure standing at an elevation of 180 feet about 5 miles southwestward of Ra's al Arḑ. About 1¼ miles north-northwestward of the fort is another hill, surmounted by a Shaikh's palace which is conspicuous and smaller than the fort.

Ra's al Arḑ, from which a 2-fathom shoal extends less than 200 yards, is low and sandy and lies about 11 miles northward of Finṭās. During southeasterly winds, a very heavy sea breaks on the point. At springs, the tidal currents off the point are strong. A **light** is shown on the point; a disused light tower stands close northeastward of the light.

A small 1-fathom patch is located 7½ miles southward of Ra's al Arḑ and about ¾ mile offshore. Kola Patch, a steep-to rock patch with a depth of 6 feet, is located about 3½ miles southward of Ra's al Arḑ and about 1,600 yards offshore. A shoal with a least depth of 13 feet is located about 2 miles southward of Ra's al Arḑ and about 1,200 yards offshore; a 35-foot patch lies about ½ mile eastward of the above shoal, and a 14-foot patch lies about 330 yards north-northeastward.

7D–21 KUWAIT HARBOR (*29°25′ N., 48°00′E.*) is a large inlet indenting the coast between Ra's al Arḑ and a point about 12 miles north-northeastward and extends some 20 miles westward, gradually narrowing at its head. The entrance between Ra's al Arḑ and the flat extending from the northern shore is about 3 miles in width and has charted depths in the

fairway of 6 to 14 fathoms. From the entrance, the depths in the fairway decrease to the 5-fathom curve about half way in. The shamāl raises a considerable sea in the southern part of the inlet; southeasterly winds also cause a heavy swell in the harbor, much greater than would be expected from the strength of the wind.

Northwestward of Kuwait Harbor is the Al Agthi Country, the hills of which are dusky brown in color, probably 200 to 300 feet high, and have a level summit ending abruptly on the seaward side in cliffs; the surrounding country is a desert of white sand.

Dangers in the approach to Kuwait Harbor.—Jazīrat Faylakah is situated on a flat of mud, sand, and rocks, with its western extremity about 10 miles east-northeastward of Ra's al Arḑ. The island is 7½ miles in length in a northwest-southeast direction and is very low. On its southwestern side is a clump of date palms, located about 2 miles from the southeastern end of the island. On the same side about ½ mile eastward of the western end of the island is a small mound, about 30 feet high, the highest part of the island. Near this mound is a small but conspicuous tomb. Az Zaur, a village near which is a small date grove, is situated along the middle of the western side of the island. Off this side are depths of 2 to 6 feet, but there is good boat landing at all stages of the tide, especially at the village. Native boats anchor off the tomb and shift around the point on which it stands according to the direction of the wind.

Abu Jezzah Flat is the name given to the extensive flat within the 10-fathom curve located 35 to 41½ miles off the northern entrance point of Kuwait Harbor and the coast northeastward.

'Awhah, a sandy islet about 8 feet high and covored with scrub, is located about 2 miles east-southeastward of the southeastern extremity of Jazīrat Faylakah. A **cairn** about 6 feet high is on the southern side of the islet; the stump of a mast, about 20 feet high, stands in the center of the islet. A light is shown from a framework tower near the center of the islet. Ra's al Yahi, a rocky patch which dries 2 feet, extends about ½ mile northeastward from a position about 1¼ miles east-northeastward of 'Awhah and is located on the eastern end of the flat surrounding Jazīrat Faylakah. Soundings afford no guide when a vessel is approaching this danger from northward or eastward. The depths are shoal between Ra's al Yahi and 'Awhah, and also between these two and Jazīrat Faylakah. A dangerous wreck lies about 9 miles northeastward of 'Awhah. A tide gage is located about 4 miles northward of Ra's al Yahi. A red light is shown from an oil drilling structure, about 8¾ miles southwestward of 'Awhah light tower.

Mashjān, a sandy islet about 10 feet high, is located about 1¾ miles northwestward of the northwestern side of Jazīrat Faylakah and is situated on Ihārub Flat, an extensive mud area between Jazīrat Faylakah and Khawr aṣ Sabīyah, about 8 miles northwestward.

Mashjān **Light** is shown on the southeastern side of the islet. Another **light** is shown on the northwestern side. A **wreck** lies about 4½ miles northeastward of Ra's al Arḑ.

7D–22 Coastal features in Kuwait Harbor.—The northern shore of the harbor is fringed by a mud flat. Depths of less than 3 fathoms extend as far as 8 miles southward from the shore.

The southern shore of the harbor is formed by three bays, in which, for the most part, the depths are shallow. The eastern part of the middle cove contains the port of Al Kuwayt.

The bight between Ra's al Ard and Ra's 'Azūzah, about 5½ miles west-northwestward, is almost filled by a shoal with depths of less than 3 fathoms; the outer edge of the shoal is as much as 1,800 yards outside the line joining the points. A narrow channel with charted depths of 7 to 11 fathoms runs in close to the shore westward of Ra's al Arḑ. A 3-foot patch lies on the western side of the channel entrance in a position about 1,600 yards northwestward of Ra's al Arḑ.

Dawḥat Kāẓimah, the inner part of Kuwait Harbor, is entered northward of Ra's Ashairiq, about 8 miles westward of Ra's 'Azūzah. The shores of this bay are low, sandy, and covered with scrub. Jazīrat Umm an Namal, close eastward of Ra's Ashairiq, is a rocky islet about 10 feet high. A conspicuous stone building is located on the northeastern extremity of this

islet; however, it has been reported to be hard to identify. Two patches with depths of 18 and 16 feet, lie about 2½ and 3¾ miles, north-northeastward, respectively, of Jazīrat Umm an Namal; a sunken rock lies about ¾ mile northwestward of the 16 foot patch.

Kita atain Ushairiz, about 1¾ miles west-northwestward of Ra's Ashairiq, is a mud patch that dries; a rock with a depth of 8 feet lies close northeastward.

Kutat abu Taleh, about ½ mile west-southwestward of Kita atain Ushairiz, is a small reef with a depth of 2 feet.

The southern shore of Dawḥāt Kāẓimah is fringed by rocky or sandy shoals, on which are many fish traps, and some dangers are situated as far as 1½ miles offshore in the outer half. The edge of the 3-fathom curve indenting Dawḥat Kāẓimah is foul, and should be avoided.

Ra's al Kādhima, a swampy point just above water at high tide, is located on the northern side of the bay about 5½ miles west-northwestward of Ra's Ashairiq. About ½ mile inland from the northwestern shore of Dawḥat Kāẓimah the ground is sandy, covered with scrub, and rises gradually to the foot of a range of hills about 2½ to 3 miles inland. Northwestward of the head of the harbor these hills attain an elevation of about 410 feet.

Northeastward of Ra's al Kādhima, a soft mud flat, which makes landing very difficult at low water, extends from 600 yards to over 1 mile offshore. Fasht Qushair, a reef with a depth of less than 6 feet, is located about 1½ miles offshore in a position about 5 miles northeastward of Ra's al Kādhima. With the exception of this reef, the depths on the northwestern side of Dawḥat Kāẓimah decrease gradually toward the mud flat. Westward of Ra's al Kādhima, the bay is very shallow.

Khwesat, about 1¾ miles westward of Ra's al Kādhima, is the only landing place at the head of Dawḥat Kāẓimah. Al Jahrā, a village with a large white building close westward, is located about 3½ miles southwestward of Khwesat and 1½ miles inland. A boat passage to the landing place leads northward of Fasht al Jathir, a reef drying 1-foot and located about 1,600 yards southwestward of Ra's al Kādhima.

AL KUWAYT

Position:	29°23'N., 47°58'E.
Depths:	Approach, 7 fathoms.
	Anchorage, 3½ to 8 fathoms.
	Channel, 24 feet.
	Alongside, 0 to 33 feet.
Tidal range:	Mean, 6 feet.

7D–23 The port of Al Kuwayt is located on the northeast coast of the Arabian Peninsula near the head of the Persian gulf. It is the capital of Kuwait and is the second principal port.

7D–24 Navigation.—For the track to Madaira Reef, see section 7–2. From a position 3 miles northeastward of Madaira Reef, a course of 296° for about 20 miles will lead to a position about 1¾ miles northward of Al Kubr. From the latter position, a course of 295° for about 19½ miles will lead to a position within 4 miles of the coast. A vessel on the course of 295° will be heading for Sirra Hill Fort, which is difficult to identify from the surrounding landscape in the early morning hours. From the last position, a course of 351° for 7 miles will lead to a position about 2 miles eastward of Ra's al Arḍ. For the continuation of this track, see section 7D–34.

7D–25 Winds and weather.—The prevailing wind is the shamāl, particularly strong between May and October. Dust storms, common during this period, may delay ship movements. Any northwesterly wind of more than force four produces a steep short sea in the outer harbor, making lighter work difficult or impossible. Strong southeasterly winds occur during winter, causing a swell in Kuwait Harbor. Temperatures at Al Kuwayt range from 27° to 117°. Kuwait is the healthiest town in the Persian Gulf.

7D–26 Tides and currents.—The mean range of the tide is about 6 feet; the diurnal range is about 8¼ feet.

At springs the tidal currents are strong off Ra's al Arḑ, usually causing an indraft along this section. In the entrance of the anchorage area southward of Fasht al Hadiba, the tidal currents set about east-northeastward and west-southwestward, and at springs attain a rate of about 2 to 3 knots. In Bandar ash Shuwaikh the current sets fairly through the channel.

7D–27 Depths—Dangers.—The least depth in the approach to the anchorage off Fasht al Hadiba is about 7 fathoms. In the anchorage berths northward and westward of Fasht al Hadiba there are depths of 22 to 49 feet; the anchorage in Bandar ash Shuwaikh was dredged to 28 feet in 1960.

In the channel leading to Bandar ash Shuwaikh, there is a controlling depth of 24 feet at low water. The greatest draft vessel that entered the port and docked at Main Wharf was 31½ feet in 1960.

A rocky area which dries about 2 feet and has fish weirs on it extends about 700 yards northward from Ra's 'Azūzah. A 3-fathom patch, nearly 1½ miles north-northwestward of Ra's 'Azūzah, is the extremity of a shoal with depths of less than 3 fathoms; the shoal extends northward from the shore. The northeastern extremity Fasht al Hadiba, a rocky patch with a least depth of 8 feet, lies about 2 miles northward of Ra's 'Azūzah.

7D–28 Aspect—Landmarks.—The port of Al Kuwayt is the name given the bight between Ra's 'Azūzah and Ra's Ashairiq, about 8 miles westward. The town of Al Kuwayt is built on a slope, the houses on the seafront being about 50 feet below those behind. The wall on the inner side of the town has a number of towers and several gates. The houses are built mostly of stone and dried bricks, but outside the town is a large suburb of mat huts. In 1958 the town was being rebuilt with modern reinforced concrete buildings; the old town of stone and dried bricks is gradually disappearing. The aspect of the town will change from year to year as the new buildings are completed.

The Shaikh's house, which is a white structure, a white building near it, and the brown British Residency all stand on Ra's 'Azūzah and are conspicuous. The Shaikh's house is only conspicuous when bearing east and west. The Shaikh's palace, about 1¾ miles southwestward of Ra's 'Azūzah, has a small roof which is the highest point of any building in town; a flagstaff stands in front of the palace. A number of radio masts are also conspicuous in town.

In Shuwaikh, the chimneys of the distallation and power plants are conspicuous; a line of dolphins are between the heads of the piers of the power plants. Southwestward of Shuwaikh are a number of buildings including a hospital and a school with a conspicuous dome. A conspicuous square tower, 120 feet high, stands about 100 yards from the school.

7D–29 Harbor.—The harbor entrance lies between Ra's 'Azūzah and Ra's Ashairiq. Dawḥat Abu Tala, at the head of the harbor, is filled with extensive drying sand and mud flats. Al 'Akāz is an extensive reef in the center of the harbor which dries in patches and consists of dead coral, mud, and sand. Jazīreh Qurayn, an inconspicuous barren islet on the southern side of Al 'Akāz, has a 30-foot peak at its southern end.

On the eastern side of the harbor is the town of Al Kuwayt with several boat basins which dry at low water. The beach in front of the town dries for a considerable distance, although at high water the sea washes up to the houses. Native boats are hauled up on the beach inside the substantial breakwaters of the boat harbors.

Southward of Al Kuwayt is Shuwaikh, which is fronted by Bandar ash Shuwaikh. It is the principal part of the harbor and has deepwater berthing facilities. A marginal quay can accommodate 4 deep draft cargo vessels; a small craft horbor is formed by the western extension of the quay. A T-head pier, 480 feet with 26 feet alongside, is close north-northeastward of the quay.

7D–30 Navigational aids.—A light is shown from a brick water tower a little over ½ mile westward of Ra's 'Azūzah. A light is

shown from a signal tower on top of the Port Office Building, which is located nearly 2 miles southwestward of Ra's 'Azuzah. Lights are shown at the entrance of the large boat harbor in front of the signal station and from the heads of two piers at Shuwaikh.

Obstruction lights are shown from a number of minarets, large towers, and radio masts in and around the town; these lights together with the ordinary town lights sometimes make it difficult to distinguish the navigational lights.

Two lights in range 224 1/2° lead through the outer part of the entrance channel for about 1 mile, the range structures being positioned about 1 1/2 miles and 2 miles northeastward of Jazireh Qurayn.

Two beacons at Shuwaikh in range 198 1/2° lead through the inner part of the entrance channel for about 2 miles to Bandar ash Shuwaikh.

A lighted beacon is about 1 1/2 miles north-northwestward of Ra's 'Azuzah. Another lighted beacon about 1 mile westward of the above beacon marks the eastern extremity of Fasht al Hadiba.

A light is from a steel tower, with black and white horizontal bands, about 5/6 mile northwestward of Ra's Azuzah.

A dangerous wreck lies about 3 miles northward of Ra's 'Azuzah; a light buoy, painted green, is moored close southward of the wreck.

The entrance channel leading to Bandar ash Shuwaikh is marked by light buoys. These buoys should not be relied upon, and vessels should take care not to mistake any dhows in the vicinity for the buoys.

A dangerous wreck, marked by a light buoy, lies about 3/4 mile southward of the entrance channel to Bandar ash Shuwaikh and northwestward of the signal station.

A black and white buoy, equipped with a reflector, is moored about 1 3/4 miles west-northwestward of the signal station and is used principally by small craft.

A beacon, consisting of a truncated cone 28 feet high and painted black, stands on the summit of Jazireh Qurayn.

7D-31 CHANNELS.—Outer and inner entrance channels, 500 feet wide and dredged (1960) to 24 feet, lead from a position about 1/2 mile southward of Fasht al Hadiba to the harbor area at Bandar ash Shuwaikh.

7D-32 ANCHORAGES.—Numbered anchorage berths have been established for the convenience of vessels and for facilitating the working of their cargo. There are a total of seven berths which are for the use of vessels of 500-foot overall length and are located in the area southward and northward of Fasht al Hadiba. Little shelter is afforded from southeasterly winds; therefore, the farther westward anchorage is taken, the better the shelter will be. In the berths southward of Fasht al Hadiba, 6 shackles of cable is used and 8 shackles of cable is used in the berths northward of the shoal. When vessels notify their agents of their estimated time of arrival, to be sent 24 hours in advance, the draft on arrival should be stated so that a suitable berth may be assigned.

Anchorage for a larger number of vessels is available in Dawhat Kazimah (sec. 7D-22), which is sheltered from the shamal and lies 10 to 15 miles from the port area.

Vessels with a maximum draft at 26 feet and up to 550 feet long can be accommodated at the two mooring berths opposite the marginal quay. Al 'Akaz, northwestward of the anchorage, and the shoals northward and northeastward of this reef, afford little or no protection, and winds from west-northwest through north to northeast raise a breaking sea which makes boat work dangerous. The holding ground is exceptionally good, and, on occasions, vessels rode out a heavy shamal in this anchorage.

Vessels approaching the anchorage should signal their International Code signal letters by flag during daytime, and by flashing light at night. The vessel shall provide a proper accommodation ladder (lighted) and a boat rope.

A visual signal station at the small boat harbor in front of Al Kuwayt maintains a 24-hour watch and will relay messages between vessels and their agents.

Numerous mooring buoys are located in Bandar ash Shuwaikh and are moved in accordance with the oil company's needs.

Anchoring is prohibited in the approach channel to Bandar ash Shuwaikh, and also off the buoy berths and off the deepwater berths in a maneuvering area where vessels turn.

CAUTION.—A foul area exists about 1 3/4 miles northward of Ra's 'Azuzah. Vessels anchoring should avoid the foul area.

7D-33 PILOTS.—Pilotage is compulsory for merchant vessels over 400 gross tons; pilots board in the outer anchorage. Naval vessels are not permitted to enter the entrance channel without prior permission from the harbormaster. Twenty-four hour pilotage service is not maintained. A berth must be obtained from the harbormaster before entering. Vessels may anchor northward of Ra's 'Azuzah without a pilot.

7D-34 DIRECTIONS FOR ENTERING.—From a position about 2 miles eastward of Ra's al Ard (sec. 7D-20), continue on course 351° for about 2 miles, or until Ra's al Ard bears 220°. From the latter position, alter course to west-northwestward so as to pass about 1/2 mile northward of the light beacon about 1 1/2 miles northward of Ra's 'Azuzah, and then proceed to the anchorage.

A vessel bound for Bandar ash Shuwaikh should, after passing northward of the just-mentioned light beacon, alter course gradually southwestward until the outer channel range lights bear 224 1/2°, then steer for them. When the inner channel range beacons are in alinement bearing 198 1/2°, alter course and steer for them until close westward of the last channel buoy; then steer as necessary for the berth assigned by the harbormaster. At night the inner channel light buoys are the only guide.

Vessels are prohibited from anchoring in the dredged channel, but care is necessary on dark nights as barges and local craft moored offshore in the dredged area at Bandar ash Shuwaikh do not always show lights and are not easy to distinguish. There is a speed limit of 6 knots in the dredged channel.

7D-35 AL KUWAYT (Kuwait), the capital city of the independent shaikhdom of Kuwait, had in 1961 a population of about 96,860. Revenue from oil operations is being used for lage scale development works, including power stations, modern medical facilities, harbor works, and for the supply of fresh water. The chief imports are cement, building materials, and manufactured goods.

The monetary unit is the Kuwaiti *dinar* (U.S. $2.80).

There are no deepwater wharves at Al Kuwayt. Numerous berths inside the boat harbors fronting the town include a customs quay opposite the center of the town. Berths are only suitable for shallow-draft craft such as dhows and lighters and are limited to use within a few hours either side of high water, as berths dry out for a considerable period each side of low water.

At Bandor ash Shuwaikh are several piers, one of which is suitable for deeper-draft vessels. The Kuwait Oil Company Pier, which is a T-headed facility, is 600 feet long and is connected to the shore by a 325-foot causeway. The depth at the head is 28 feet; along the inner side of the eastern and western arms there are 14 and 16 feet, respectively.

Mooring buoys are placed off this pier so that a moderate -draft vessel can lie with its bow or stern 50 feet off the head of the pier.

A lighter pier, with 16 feet at its head, is near the above pier. The power plant pier dries at low water. The distillation plant pier has 24 feet at its head. There are several boat piers at Ra's 'Azuzah.

Main Wharf, a marginal quay about 2,400 feet long, provides berthing space for 4 large vessels in depths of 33 feet. The wharf is used for general cargo. An extension of the marginal quay with 13 to 18 feet alongside, forms a small boat harbor with a depth of 11 feet. Westward of the marginal quay are East and West Finger Piers with depths from 7 to 13 feet, which are used for lighters and small craft.

The mechanical handling facilities available at Al Kuwayt, Shuwaikh, and the port storage areas consist of a large number of mobile cranes, track and rail cranes with capacities up to 40 tons.

The oil company operates several tugs, ranging from 300 to 1,000 horsepower, for berthing vessels and barge towing. A number of launches are available for barge towing and running vessel's lines. Numerous lighters are also available.

Fresh water can be procured alongside at Bandar ash Shuwaikh. Sheep and fish can be procured, and fresh fruit and vegetables arrive by air two or three times a week. Fuel and diesel oil can be obtained.

Minor repairs can be made. There are two small machine shops with very limited equipment. There are several boatbuilding yards for the construction of wooden craft. A slipway, with a 1,000-ton lifting capacity is available. A diver is reported to be available.

Steamer communication is maintained with other ports in the Persian Gulf. There is air communication with all parts of the world. Al Kuwayt is connected to the general telegraph system.

Radiotelephone service is maintained from 0300 to 2100 G.M.T. on calling frequency 2182 kcs.; working frequency 1650 kcs. Traffic list at 5 minutes past each odd hour; weather reports at 0405 and 1605 G.M.T.

There is a government hospital, an American Mission hospital, and a hospital maintained by the Kuwait Oil Company.

COASTAL FEATURES (Continued)

7D–36 Kuwait Harbor to Khawr 'abd Allāh.—Jazīrat Būbiyān (*29°50′ N., 48°15′ E.*), a low barren island partly covered at high water, lies with Ra's al Abrayshah, its southern extremity, about 3 miles northeastward of the northern entrance point of Kuwait Harbor. It is separated from the mainland northeastward by Khawr 'abd Allāh and from the mainland southwestward by Khawr aş Şabīhīyah; the latter channel trends around the northern end of Jazīrat Būbiyān, separating it from Jazīrat al Warbah. Off the southern approach to Khawr aş Şabīhīyah are numerous rocks and dry patches, and the channel is accessible only to boats when the tide is above mean sea level. Qaşr aş Şabīhīyah, on the western side of the entrance, is a ruined mud enclosure surrounded by tamarisks.

The flat of mud, sand, and rocks around Jazīrat Faylakah continues northeastward as a mud flat and extends about 3 miles from the southeastern side of Jazīrat Būbiyān. Jazīrat Al Warbāh is mostly low, flat, and covered with reeds and coarse grass. A sandspit with depths of 1 foot to 6 feet extends nearly 1½ miles eastward from this island.

Khawr 'Abd Allāh, entered about 10 miles southwestward of the entrance of Shaṭṭ al 'Arab (sec. 8B–1), trends about 30 miles northwestward to Jazīrat al Warbāh. Both shores of the channel are low alluvial land covered with reeds and grass, and shallow flats extend a considerable distance offshore. Ra's al Qayd, on the southwestern side of the entrance, is located about 15½ miles northeastward of Ra's al-Abrayshah; about 2¾ miles southward of Ra's al Qayd is a ruined fort.

At Jazīrat al Warbāh, Khawr 'Abd Allāh divides into two channels, the southern of which is not recommended. The northern channel consists of two parts, Khawr Sheltana the eastern part, and Khawr Sakaa the western part. The channel about 4 miles above the western end of Khawr Sakaa is known as Khawr Umm Qaşr, and above that, it is known as Khawr az Zubayr. At Umm Qaşr, on the west bank of Khawr Umm Qaşr, port works have been in progress since 1961 to provide berthing and other facilities for at least 3 vessels, each 600 feet long and having a draft of 30 feet.

Depths.—A depth of 24 feet is available in the channel to within about 2 miles of Jazīrat al Warbāh. A draft of 21 feet can be carried to the channels on either side of the island, and a depth of 16 feet can be carried as far as the fort on the west bank at Umm Qaşr. It was reported that pilots are available through the Port Directorate, Al Başrah.

Dangers.—On the southwestern side of the fairway are several shoals, located as far as 2½ miles northeastward, 4 miles eastward, and 14 miles east-southeastward of Ra's al Qayd. Athan Shoal, the farthest east-southeastward, has a least depth of 1½ fathoms. Fasht al Ayk, about 7 miles east-southeastward of Ra's al Qayd, dries 3 feet. Atlassi Shoal, with a least charted depth of 2½ fathoms, is located about 6 miles northward of Ra's al Qayd. Numerous other shoals of 1-fathom and greater lie in Khawr 'Abd Allāh. A dangerous wreck with masts showing, lies about 10 miles eastward of Ra's al Qayd.

Currents.—In the entrance of Khawr 'Abd Allāh the spring tidal currents attain a rate of 1½ knots on the rising tide and 2¼ knots on the falling tide. Three days of observations in September of one year seem to indicate that at the northern end of Khawr 'Abd Allāh the outgoing tidal current attains a rate of about 3 knots.

Navigational aids.—The Fairway or Entrance Buoy, painted black and yellow horizontal stripes and conical in shape, is moored about 13 miles east-southeastward of Ra's al Qayd.

The channel leading through Khawr 'Abd Allāh is marked by buoys.

Beacons are located along the shore lines of the inlet and indicate the east and west banks. A beacon is located on a small islet close eastward of Jazīrat al Warbāh.

Anchorage.—Vessels locally acquainted can anchor anywhere in Khawr 'Abd Allāh northward of Ra's al Qayd according to draft. **Anchorage is prohibited** in an area northeastward of Ra's al Qayd because of submarine cables. The area is designated on the chart.

Anchorage can be obtained in Khawr Umm Qaṣr in a position about 2 miles below the fort.

Directions.—Considerable difficulty may be experienced in fixing the position of the vessel in the approach and in Khawr 'Abd Allāh. The beacons marking the entrance of Shaṭṭ al 'Arab can be used in clear weather. The buoys indicate the fairway in Khawr 'Abd Allāh; however, they are liable to break adrift in bad weather. The beacons marking the banks may be used for fixing the vessel's position if positive identification can be made.

ANCHORAGES

7D–37 Mīnā' al Abdullah.—See section 7D–6.

Mīnā' al Ahmadī.—See section 7D–16.

Al Kuwayt.—See section 7D–32.

Khawr 'Abd Allāh.—See section 7D–36.

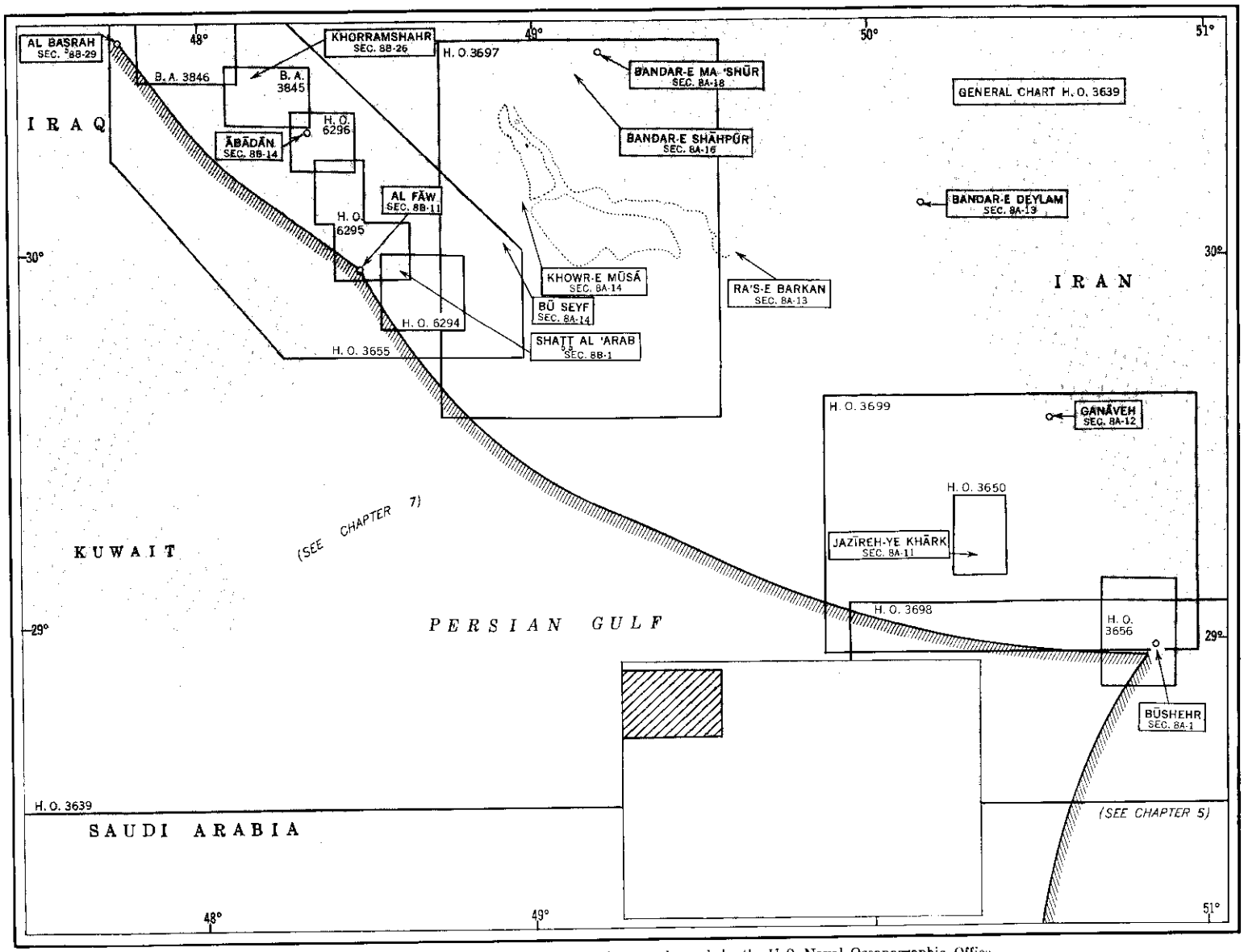

Chart limits shown are of the best scale charts issued to naval vessels by the U.S. Naval Oceanographic Office.
Section numbers refer to the place in the text where a description of the designated locality begins.

CHAPTER 8—GRAPHIC INDEX

CHAPTER 8

HEAD OF THE PERSIAN GULF—BŪSHEHR TO SHAṬṬ AL 'ARAB

Part A. Būshehr to Shaṭṭ al 'Arab
Part B. Shaṭṭ al 'Arab and tributaries

Plan.—This chapter describes the coast, islands, and dangers along the northern part of the Persian Gulf from Būshehr to its head and Khowr-e Mūsá and Shaṭṭ al 'Arab which empty into it. The arrangement is generally northwestward from Būshehr.

GENERAL REMARKS

8–1 The stretch of coast from Būshehr to Shaṭṭ al 'Arab, excluding the complex indentations between Ra's-e Barkan and Shaṭṭ al 'Arab, has a total length of about 210 miles. The coast for the most part is low, and mountains with the exception of Kūh-e Bang, are some distance inland. Two small islands lie off the southern part of this coast. Important river and tidal-inlet oil ports are reached through the head of the gulf. Banks of less than 3 fathoms extend offshore from 1 mile to 1½ miles, and bars and shoals constitute nearshore obstructions. Exposed anchorage is 2 to 3 miles offshore; several tidal inlets offer shelter for small craft.

Caution.—A drilling platform, marked by lights and equipped with a horn, is located about 55 miles southeastward of the entrance of Shaṭṭ al 'Arab. Other platforms, which may or may not show lights, may exist from time to time almost anywhere in this area.

NAVIGATION

8–2 See section 5–2 for the offshore track leading to the head of the Persian Gulf from the vicinity of the islands in its eastern part.

WINDS—WEATHER

8–3 See sections 1–46 and 5–3.

CURRENTS—TIDAL CURRENTS

8–4 Currents in the Persian Gulf are variable in strength and direction. Tide and current conditions at the head of the gulf are very complex because of the variation in flow of water from Shaṭṭ al 'Arab at various seasons, the presence of extensive drying mud flats and tidal inlets, and the influence of onshore or offshore winds. Local effects of currents are described with the related features.

Part A. BŪSHEHR TO SHAṬṬ AL 'ARAB

8A–1 Bushehr (*28°59′ N., 50°50′ E.*), a town at the northern end of a 12-mile-long peninsula, is situated on a rocky ridge having an elevation of not over 40 feet. The port facilities face the inlet which separates Būshehr from the mainland to the eastward.

COAST—GENERAL

8A–2 Between Būshehr and Ra's-e Barkan, about 88 miles northwestward, the coastline is fairly regular except for two large shallow bays. The coast itself consists of a low, sandy plain of varying width, with large marshy areas in places and an occasional rocky hill. A rough mountain range backs the plain, and heights up to 3,400 feet are within 35 miles of the shore. Kūh-e Bang, about 985 feet high, is 52 miles north-northwestward of Būshehr, its summit rising about 2 miles inland; its seaward face is precipitous, and from southward appears as a conspicuous bluff. Small coastal villages are along this stretch. (See Views Nos. 56 and 58.)

Anchorage is generally poor because of exposure to the shamāl or the kaus. Small craft can shelter in the bay northward of Būshehr and in the many tidal inlets and stream mouths. The best anchorage for large vessels is in the bay eastward of Ra's-e Barkan. Anchorage in the lee of Jazīreh-ye Khārk offers shelter from the shamāl or a kaus, but the holding ground is rocky and indifferent.

Between Ra's-e Barkan and the estuary of Shaṭṭ al ʻArab, about 55 miles westward, the coast is a complex of indentations and poorly defined. The shores are almost entirely marshy or swampy and fringed by extensive mud flats. Most of the shores are subject to temporary inundation and are intersected by many tidal inlets and several large rivers. Backing the marshy shores is a low swampy plain, which extends a considerable distance inland before giving way to desert plains. Several small villages lie along the river banks and on the more solid parts of the plain. The important ports of Bandar-e Shāhpūr and Bandar-e Ma ʻshur are about 34 and 41 miles from the bar at the entrance of Khowr-e Mūsá. Ābādān and Khorramshahr are about 42 and 56 miles inside Shaṭṭ al ʻArab from Rooka Channel entrance. Anchorage can be taken almost anywhere in the channels and inlets which interesect the fringing mud flats, and anchorage and berthing facilities are available at the four above-mentioned ports; the degree of protection offered varies at the different anchorages.

DEPTHS—DANGERS

8A–3 The offshore approaches to the coast between Būshehr and Ra's-e Barkan are clear except for two small easily avoided islands about 30 miles northwestward of Būshehr. Nearshore approaches should be made with caution and during high water because of mud flats and shoals which fringe most of this coast. The 10-fathom curve ranges from 5 to 24 miles offshore.

Between Ra's-e Barkan and the mouth of Shaṭṭ al ʻAraab, about 55 miles westward, the offshore approaches are mostly shallow and obstructed by shoals and drying mud flats, except for dredged channels leading into Khowr-e Mūsá and Shaṭṭ al ʻArab. The 10-fathom curve will be found from 15 to 40 miles off the poorly defined shore.

NAVIGATION

8A–4 After clearing the shoals off Būshehr a vessel can steer direct, about 102 miles, for a position about 3 miles southeastward of Palinurus Shoal (sec. 8B–2), thence through Khawr al Amaya to the entrance of Outer Bar Reach.

If a kaus suddenly sets in when off the bar and it becomes necessary to anchor, it is reported that Maidān ʻAli offers the best anchorage, because the force of the sea on this bank is less than in the channels or farther seaward.

CURRENTS—TIDAL CURRENTS

8A–5 Along the coast, between Būshehr and Ra's-e Barkan, the tidal currents run generally parallel to it and have a velocity of about ½ knot to 1½ knots.

In the vicinity of Jazīreh-ye Khārk and Jazīreh-ye Khārkū, tidal currents set northwestward and southeastward at a rate sometimes exceeding 2 knots.

Off Ra's-e Barkan, the 1-knot tidal currents set almost eastward and westward.

Between Ra's-e Barkan and Shaṭṭ al ʻArab, the tide and current conditions are extremely complex. The shallowness of the offshore areas, the intricacy of the tidal channels, and the variation in water level of the rivers during different seasons all combine to cause variable tide and current conditions.

The tidal currents in the lower part of Khowr-e Mūsá set north-northwestward and south-southeastward, turning about at the time of high or low water. In the vicinity of Ban-

dar-e Shāhpūr, currents attain a velocity of 3 knots.

WINDS—WEATHER

8A–6 The dominant wind in this area of the Persian Gulf is the northwesterly shamāl, which prevails for nine months of the year. In winter, the shamāls average force 3 to 4, although occasionally they may reach force 7 for three or more days at a time. During the summer, although there is not much change in the prevailing direction, the winds tend to decrease in force. The shamāl causes dust storms in the Persian Gulf which reduce visibility at sea to less than 2 miles. Other strong local winds are experienced, such as the southeasterly kaus, the northeasterly nashi, and the southwesterly suhaili. See sections 1–49 and 1–50.

In the summer, from April to September, the coastal regions experience temperatures of over 90° F., with maximum temperatures of over 120° F. in places; the whole coast is almost rainless, and the humidity is high. In winter, from October to March, the coastal regions have a mild and relatively pleasant climate, with daytime temperatures from about 55° to 70° F.; rainfall is about 10 inches near the head of the Persian Gulf.

BŪSHEHR

Position:	28°59′ N., 50°50′ E.
Depths:	Entrance of Khowr-e Solṭānī, 4½ feet on bar.
	Berths, 3½ and 8 feet.
	Anchorage, 9½ to 22½ feet.
Tidal rise:	Springs, 5 to 7 feet; neaps, 4 to 6 feet.

8A–7 The port of Būshehr is suitable only for lighter and small-craft traffic. A small Iranian naval facility is located here.

Navigation.—From a position on the offshore track (sec. 5–2) about 10 miles southwestward of Nakhīlū, a course of 336° for about 70 miles leads to a position about 6 miles southwestward of Ra's-e Halīleh. From here on, the directions given in section 8A–8 can be followed to the outer anchorage off Būshehr.

Winds and weather.—The shamāl occurs from June to September, and dust haze reduces visibility to less than 1 mile. Gales from southwestward are frequent in winter; during January and February they prevent lightering operations about 3 days a week. The climate is hot and humid with a maximum recorded shade temperature of 115° F.; annual temperatures average 75° F.

Tides and tidal currents.—Tidal currents are generally weak in the outer roadstead and attain a velocity of about 1 knot at springs in Inner Anchorage; they set north-northeastward to east-northeastward and southwestward to west-southwestward. Off the town, in Khowr-e Solṭānī, the currents are very strong. The winds have a considerable effect on the currents and the water level. A northerly-southerly current has been reported along this section of coast which attains a rate of about 1½ knots. The shamāl causes the currents to turn and lower the general level, sometimes as much as 1 foot; the kaus raises the general level. The highest spring tide is reached during July.

Depths and dangers.—A sand and mud flat, with depths of less than 2 fathoms, extends northward and northwestward from Būshehr, and the coast in its vicinity, and westward from Jazīreh-ye Sheykh Sa'd. A number of sandy patches which dry from 1 foot to 3 feet, lie on the flat.

Raq'at as Sāfli, on the above flat, extends about 1 mile northwestward from Būshehr; it dries about 2 feet in patches, and through it are small channels which are used at high water by boats with local knowledge as a short cut between vessels at Outer Anchorage and the quay in Khowr-e Solṭānī.

Ra's al Marg, the northwestern extremity of the flat, is about 2 miles northwestward of Būshehr, has depths of 2 to 5 feet, and is steepto; it has been reported to be extending westward.

Lakfeh Sands, with depths of 2 to 3 feet, extend about 1¼ miles eastward from Ra's al Marg. Ra's al Jabri is the northeastern extremity of Lakfeh Sands. The sea seldom

breaks on the sands except at very low water or during strong winds.

Raq'at al 'Ali, with depths of less than 2 fathoms, is the southern extremity of an extensive flat extending southward from Ra's osh Shaṭṭ (sec. 8A–8) to nearly 3 miles west-northwestward of the old British Residency at Būshehr.

In depths of less than 1½ fathoms, the bottom is hard sand; in greater depths, it is sand and mud.

8A–8 Aspect and Landmarks.—Jazīreh-ye Sheykh Sa'd extends about 4 miles northward from a position about 2 miles east-northeastward of Būshehr. The island is low and swampy except for a narrow strip along its west and north coasts. Its northern extremity is 10 feet high and rocky; on it are a conspicuous village and a 50-foot tower; a conspicuous solitary palm stands about 2½ miles southward of the tower. A quarantine station is near the southwestern end of Jazīreh-ye Sheykh Sa'd.

Shif, a 25-foot high rocky point on which stands a small building, projects from the mainland about 1½ miles eastward of the tower on Jazīreh-ye Sheykh Sa'd. Eastward of the point it is low, barren, and swampy in places; a large area of swamp also extends northward from the point.

Ra's Tahima, a small sandy projection about 1¾ miles north-northwestward of Jazīreh-ye Sheykh Sa'd, has rocks extending some distance from it; at high water, it is occasionally used as a landing place.

Ra's osh Shaṭṭ, about 11 miles northwestward of Būshehr, is a narrow strip of sand, barely above water. Eastward of it is an extensive swampy area intersected by numerous creeks, which are fairly deep inside but have depths of only about 2 feet at their mouths. Between Ra's osh Shaṭṭ and Ra's Tahima, the nearshore area is composed of extensive mud banks on which are a number of drying sand knolls. Ra's osh Shaṭṭ and the banks afford shelter to the harbor of Būshehr from the shamāl.

Harbor.—The harbor at Būshehr is formed by Khowr-e Solṭānī, an inlet extending southeastward about 2 miles between the Būshehr peninsula and the mainland. A bar more than 1 mile wide, with a controlling depth of 4½ feet, lies across the mouth of Khowr-e Solṭānī. No specific entrance channel exists; lighters and other small craft cross the bar on the tide. The inlet has a variable width of 500 feet to ¼ mile and depths of 16½ to 42 feet in midstream. The northeastern side of the harbor is composed of extensive sand and mud flats which cover at high water. The western side is formed by the western side of the Būshehr peninsula, upon which are located the port and terminal facilities. A seawall, ⅓ mile long, extends northwestward from the port installations but dries along its face at low tide.

The principal quay, of masonry construction, is separated from the seawall by a wooden pile wharf. A small petroleum pier is located in Khowr-e Pūder, about 2 miles southeastward of the wharf.

Navigational aids.—A light buoy is moored in the vicinity of Outer Anchorage in a position about 4¼ miles west-southwestward of Būshehr.

A light buoy is moored in the approach to Inner Anchorage in a position about 2¼ miles west-northwestward of the northern end of Būshehr.

A light buoy is moored in Inner Anchorage in a position about 2¼ miles north-northwestward of Būshehr.

A light buoy is moored in the approach to Khowr-e Solṭānī in a position about ¾ mile north-northwestward of Būshehr.

The light buoys have been reported to be unreliable, both as to their charted positions and the effectiveness of their lights.

Anchorages.—Vessels can anchor in 4¼ fathoms or more in the vicinity of the light buoy in Outer Anchorage, but anchoring is pro-

hibited within a radius of 600 yards of that buoy; this anchorage is exposed to the shamāl and the kaus. An obstruction, consisting of a large boiler, lies about 4¾ miles west-southwestward of the old British Residency and close southwestward of the prohibited anchorage area.

Inner Anchorage is in Khowr-e Deyreh, a bight in the flats between Raq'at al 'Ali and Ra's al Marg (sec. 8A-7). Depths of 2¼ to 2¾ fathoms, soft mud, are in the approach to Inner Anchorage, but in the middle of the bight the depths increase to 3¾ fathoms, mud, good holding ground. Vessels drawing up to 15 feet can enter this anchorage at any stage of the tide, unless the shamāl is blowing. The farther northeastward anchorage is taken, the better is the shelter from the shamāl. A good berth is in about 3½ fathoms with the Governor's house, about ½ mile east-northeastward of the old British Residency, bearing 149° and the conspicuous solitary palm on Jazīreh-ye Sheykh Sa'd (sec. 8A-8) bearing 090°.

A **wreck** lies sunk in the approach to Inner Anchorage in a position about 2½ miles west-northwestward of Būshehr.

In fine weather, a small vessel can obtain temporary anchorage in 2¼ fathoms with the flagstaff of the old British Residency bearing 045°, distant about 1 mile.

Pilotage.—Pilots are available, weather permitting, but pilotage is not compulsory. Vessels requiring a pilot should await his arrival at Outer Anchorage. See section 1-22.

Directions.—Approaching from southeastward, a vessel should pass about 6 miles off Ra's-e Halīleh, thence continue northwestward in not less than 6 fathoms and anchor according to draft southward of the prohibited anchorage area at Outer Anchorage.

From southwestward, the mosque at Emāmzādeh and the former country house of the British Resident, close southward (sec. 5B-13), as well as the buildings and radio towers at Ra's-e Rīshahr will be the first objects sighted; they all look white, especially in the afternoon sun. The depths decrease regularly as the coast is approached.

Approaching from northward, a vessel passing Ra's osh Shaṭṭ (sec. 8A-8) should keep in depths of not less than 10 fathoms and proceed in those depths until the buoy marking Outer Anchorage is sighted.

A vessel approaching Inner Anchorage from southward can pass about 1 mile off Ra's ash Shaghāb (sec. 5B-13) and steer 359° until the Residency flagstaff bears 108°, thence steering 028° to the anchorage; the least depth by this route is 2½ fathoms.

8A-9 Būshehr, with a population of about 18,000 in 1957, has declined in importance with the development of the ports of Khorramshahr and Bandar-e Shāhpūr. Traffic in agricultural produce constitutes the chief commercial activity of the port. The only local industry of importance is cotton spinning and weaving.

Customs Quay has a berthing length of 720 feet, with 3½ feet alongside. The T-head pier at Khowr-e Pūder, used for the transfer of petroleum products, has 8 feet alongside.

Numerous lighters and a 10-ton mobile crane are available.

Some fresh provisions can be obtained, but previous notice is required. Water and bunker fuels are not available. Diesel oil can be supplied in limited quantities. There are no repair facilities.

Telephone and telegraph lines connect with the general systems of Iran. A radio station will handle public correspondence. There is regular steamer communication with other Persian Gulf ports.

The town is generally healthy, but during the hot summer malaria is prevalent. An Iranian hospital is in the town. Quarantine regulations are very strict.

COASTAL FEATURES—LANDMARKS

8A-10 Between Ra's osh Shaṭṭ (sec. 8A-8) and Ra's-e Barkan *(30°00'N., 49°33'E.)* there are no off-lying dangers, but the coastal bank, with depths of less than 3 fathoms, extends from 1 mile to 8 miles offshore. The only islands off this coast are Jazīreh-ye Khārk and Jazīreh-ye Khārkū, lying about 19 miles west-northwestward and 21 miles northwestward of Ra's osh Shatt.

Jazīreh-ye Khārk, 284 feet high, is about 4 miles long north-south and is the southern and larger of the two. Table-topped hills extend through the length of the island, and tombs can be distinguished in several locations. The hills at the southern end terminate in precipitous bluffs, and on the southern point are detached table-topped hummocks. Toward the northwestern extremity of the island, the hills decrease in elevation and terminate in 20- to 30-foot cliffs. Near the middle of the northern end of the island is a 200-foot wedge-shaped hill, which, except from northward, is fairly prominent. A large tank farm is on the high plateau in the center of the island.

The west coast of Jazīreh-ye Khārk consists of several rocky points, between which are sandy beaches; the hills on that side end abruptly in cliffs. On the eastern side of the island is a cultivated plain, which terminates in the low, sandy northeastern extremity and in the vicinity of which is a ruined fort and a village. Twin tombs, about 1 mile south-southwestward of the fort, are conspicuous. Kharg Island Oil Terminal (sec. 8A–11) is on the southeastern side of the island. On the northern side of the island, a submarine pipeline and cable are laid in a northerly direction to the southern extremity of Jazīreh-ye Khārkū.

Because of the dark brown color of the island, it can seldom be seen on a dark night; in moonlight it sometimes shows as a white streak, but not until close-to.

Jazīreh-ye Khārk is fringed by a reef which extends from 600 yards to ½ mile offshore; detached patches of less than 3 fathoms lie close off the reef along the northeastern side of the island. A sandspit with depths of 21 to 36 feet extends about 4/5 mile eastward from the northeastern extremity. During the period of the southeast-going tidal current in this vicinity, a velocity of 2 knots or more is attained over the spit. The best landing at low water is northward of the eastern angle of the ruined fort where a small pier is available.

In 1964, submarine pipelines were being laid in an area extending about 5¾ miles westward and about 7½ miles southwestward from the southern end of the island. Several lighted platforms, from which fog signals are sounded, stand within this area. Works are also in progress up to 2 miles southward of the island. Vessels are advised to keep clear of these areas.

Jazīreh-ye Khārkū, about 2 miles northward of Jazīreh-ye Khārk, is composed of white sand with a thin covering of coarse grass. It is very low and cannot be seen at night until dangerously close-to. A conspicuous tree has been reported standing about 1 mile from its southern extremity; the island is uninhabited.

Except off its steep-to northern end, Jazīreh-ye Khārkū is fringed by a flat reef which extends from ½ to 4/5 mile offshore; depths of 6 to 10 fathoms are close outside it. The best landing place is at the northeastern extremity of the island. A light is shown on the northern end of the island.

Jazīreh-ye Khārkū is connected to Jazīreh-ye Khārk and Ganāveh by pipeline; anchoring is probibited within about 2 miles of the pipeline on either side.

Construction work is in progress on the northern and southern extremities of the island.

KHARG ISLAND OIL TERMINAL

Position: 29°13'N., 50°20'E.
Depths: Approach, deep.
Piers, 60 to 65 feet.
Tidal range: 4 feet.

8A–11 Kharg Island Oil Terminal is on the southeastern side of Jazīreh-ye Khārk in the northeastern part of the Persian Gulf.

Navigation.—The approach from the coastal track is open and relatively free from navigational hazards. Vessels approaching from southward should pass at least 1½ miles eastward of the southeastern point of the island. Thereafter they should await the berthing master or pilot in a position about ½ mile eastward of the southern end of the loading pier. Vessels approaching from northward should keep westward of the island.

Winds and weather.—The prevailing winds are from the northwest and from this direction the loading pier is partially sheltered. Winds from the southeast are second in frequency, and under certain conditions, with the wind in this quarter, berths may become untenable.

Tides and tidal currents.—The current runs generally parallel with the coast on the east side of the island and may attain a maximum rate of about 1½ knots.

The maximum tidal range is about 7 feet and the average height of the tide above chart datum is 4 feet.

A tide gage is on the northeastern tip of the island and northward of the loading pier.

Depths and dangers.—The depths in the approach are adequate for any deep draft vessels. Alongside depths range from 60 to 65 feet.

(5565) **PERSIAN GULF—Jazireh-e-Khark—Chart amendment.**—1. A dashed line will be charted extending from the mooring buoy in 29°12.8′ N., 50°20.8′ E. (approx.) in a 299°30′ direction to shore. The legend *Pipeline* will be charted against the dashed line.

2. A water tower (*conspic.*) will be charted 1.23 miles 106° from the light (29°15.2′ N., 50°18.4′ E. approx.).

(N.M. 35/66.)

(B.A. Chart 11.)
H.O. Chart **3699** (1) and **(Plan)**.
H.O. Pub. 62, 1960, page **268.**

Dangers in the approach are described in section 8A-10. A dangerous wreck lies off the southeastern corner of the island.

ASPECT.—See section 8A-10.

HARBOR.—The crude oil loading terminal is situated on the southeast coast of the island and consists of a loading pier which runs about parallel to the coast and is connected to shore by a trestle and causeway.

An offshore oil loading terminal is about 1 3/4 miles eastward of the southern end of the island.

Being an open roadstead the port offers little protection from wind and sea, however, there is some protection from northwesterly winds.

REGULATIONS.—The safety regulations in force in other oil ports of Iran form the basis on which fire and safety regulations will be applied to the terminal.

Tankers arriving to load cargo must be sure that their ballast tanks contain only clean water. No slop lines or similar facilities are available, and ballast is discharged into the sea, any pollution of which will result in the vessel being penalized.

NAVIGATIONAL AIDS.—A light is shown from the center of the island, and another light is shown from the southern end. A light buoy is moored about 1 mile northward, and another about 1 mile southward, of the pier; still another buoy is moored between Jazireh-ye Khark and Jazireh-ye Kharku. Lights are shown on the pier.

Two lights in range 267 1/2° mark the approach to the pier; two lights are shown close eastward of the range lights.

A tower marked by red lights and a flare is about 1 1/2 miles west-northwestward of the root of the pier. Obstruction lights are shown from a radio mast about 1 mile westward of the root of the pier.

ANCHORAGE during the summer, sheltered from the shamal, can be taken in 7 fathoms about 800 yards offshore on the eastern side of Jazireh-ye Khark, about 1/2 mile southeastward of the northeastern extremity of the island. In winter, vessels should anchor farther out in about 10 fathoms.

Anchorage, with good holding ground, has been reported eastward and southeastward of Jazireh-ye Khark.

A mooring buoy lies about 500 yards off the northeastern tip of the island.

The anchorage off the eastern side of Jazireh-ye Khark offers good shelter when Outer Anchorage at Bushehr (sec. 8A-8) is untenable because of bad weather.

A prohibited anchorage area lies off the northern side of the island and encloses Jazireh-ye Kharku.

Anchorage is prohibited, due to submarine pipelines and oil well structures, in an area extending 5 3/4 miles westward and 7 1/2 miles southwestward of the southern end of the island. Vessels are advised to give this area a wide berth.

Anchorage is also prohibited within 1 mile of the oil pier.

PILOTS.—No pilots are necessary in the approach to the terminal. A pilot or berthing master is compulsory and will board vessel about 1/2 to 1 mile eastward of the southern end of the loading pier. Pilotage is also compulsory for shifting berth; vessels are berthed heading north or south depending on weather conditions.

As there is no signal station to advise an arriving vessel whether or not a pilot will board, it is suggested that vessels wait at least 1/2 hour before anchoring.

PRATIQUE.—Vessels having a clean bill of health may obtain radio pratique 24 hours before arrival; otherwise a Quarantine Officer will board when vessel is alongside.

KHARG ISLAND OIL TERMINAL is a deepwater oil loading port connected to the mainland at Ganavah (sec. 8A-12) by submarine pipelines.

The pier, an L-shaped structure, with 3,100 feet of berthing space, consists of a causeway, 1,625 feet long, and a trestle, 1,790 feet long. The pierhead extends at about right angles from the outer end of the trestle and will accommodate 4 large tankers in 60 to 65 feet of water. Works in progress (1964) making this a T-head pier will double its capacity.

The offshore oil loading terminal has a depth of 65 feet.

A small craft harbor is formed by a breakwater that extends from the causeway.

Two 1,500 h.p. tugs are available for berthing and unberthing.

Small quantities of fresh provisions can possibly be supplied locally, but 4-days notice is required.

Bunker "C" fuel oil is available and requirements should be made known in the ETA message. No water is available.

Arrival messages are routed through Bandar Mashur and addressed to Kharg Terminal on 460 kcs., call letters EPY8; precede message with "Khargiran". Ship-to-shore radio at Kharg Terminal operates on a frequency of 156.80 mcs., channel 16; call sign "Khargiran". The ETA should be sent 72 hours, 24 hours, and 12 hours prior to arrival and corrected as required. The 24 hour ETA should include a standard quarantine message to the Port Health Officer, Kharg Island. Vessels at the anchorage should maintain normal radio watches.

A hospital and clinic is available for seamen.

8A-12 BETWEEN RA'S OSH SHATT AND RUD-E HELLEH, about 3 miles northward, the coast is low and sandy with tufts of grass in places. The river, which floods regularly with the melting of the mountain snows, is navigable by small craft as far as a village about 6 miles northeastward of its mouth. The entrance is shallow and the banks cover at high water. Other inlets with shallow entrances are along this part of the coast but have greater depths inside.

FROM RUD-E HELLEH TO THE TOWN OF BANDAR-E RIG, about 20 miles northward, the coast continues low and sandy. Khowr ol Qoseyr, about 11 miles northward of Rud-e Helleh, is frequented by large boats; a small village is near its mouth. At Bandar-e Rig, two sandy islets front a small creek inside which local small craft lie aground at low water. ANCHORAGE has been taken in 2 3/4 fathoms, clay, off Bandar-e Rig with a white building in the center of the town bearing 052°, distant 2 3/4 miles. The bottom shelves gradually toward the shore. Between Bandar-e Rig and Ganaveh, about 8 miles north-northwestward, the coast is low and sandy. A tomb with a white dome is about 1 1/4 miles northwestward of Bandar-e Rig.

GANAVEH (29°33′ N., 50°31′ E.), a group of villages about 1/2 mile inland, has a few date palms and other trees and a large tomb with a spire. Khowr-e Khalil, the tidal mouth of a river in the vicinity has the quarters of an oil company southeastward of the entrance. A light is shown from the top of a conspicuous derrick post on a quay on the southern bank of the river. A light is shown from a lattice tower about 2 miles north-northwestward of the northern entrance point of the river. Farther southeastward are a water-tank, windmill, and buildings. Drying sands extend about 400 yards from the mouth of Khowr-e Khalil. Large dhows can enter the river at high water. (See View No. 57.)

The approach to Khowr-e Khalil is across a bar, which dries about 1 foot. A beacon, about 1/2 mile offshore marks the entrance. The eastern is marked by stakes; those on the port hand, entering, have oil drum topmarks. Inside Khowr-e Khalil, the greatest depths are on the starboard hand when entering, and about 400 yards within the entrance is a jetty with steps, which offers good sheltered landing at all stages of the tide. A tide gage is located off the entrance of Khowr-e Khalil. Two LIGHT BUOYS are moored about 1 mile and 4 1/2 miles south-southwestward of the tide gage. A black conical BUOY, with a red and white topmark, is about 2 3/4 miles southward of the tide gage.

ANCHORAGE can be taken in about 3 fathoms, clay and mud, good holding ground, about 1 1/2 miles offshore southwestward of Ganaveh; large vessels anchor farther out. At low water, landing on the beach is bad because several ridges of dry sand with a depth of about 2 feet inside them would have to be crossed.

BETWEEN GANAVEH AND SABZ PUSHAN, a rocky point about 3 1/2 miles northwestward, the coast continues low and sandy. About 1 mile northwestward of Ganaveh is the small village of Kalat Haidar with a few palms in its vicinity. Sabz Pushan rises steeply to 40- to 50-foot hillocks; a tomb is on its summit, but it cannot be seen until close inshore.

About 10 miles northwestward of Sabz Pushan, and under the highest part of Kuh-e Bang (sec. 8A-2), a small tomb is on one of the coastal hillocks, which are about 50 feet high. Between Sabz Pushan and this tomb, the coastal reefs do not extend more than 400 yards offshore along this stretch.

See N/M 4-1967 P 435

KHOWR-E SINEH, about 18 miles northwestward of Sabz Pushan, is a small inlet with a depth of about 2 feet in its entrance; greater depths are inside. EMAM HASAN, a small village with a conspicuous mosque, is about 1 1/2 miles southeastward of the inlet. An offshore oil loading berth is close southwestward of Emam Hasan.

KHOWR-E 'ABD, about 4 miles northwestward of Khowr-e Sineh, and KHOWR-E LEYLATEYN, about 3 miles farther northwestward, are both small. The entrance of Khowr-e Leylateyn is close southeastward of Ras at Tanb, a low sandy point from which a drying sandbank extends nearly 1 mile and depths of less than 3 fathoms from some distance farther. The land inland of the sandy coast in this vicinity is swampy for a number of miles. About 7 miles eastward of Ras at Tanb is a small light-colored table-topped hill, 165 feet high, with almost vertical sides. On the plain northward of this hill are several forts and date groves.

8A-13 DAWHAT-E DEYLAM, the shores of which are very low, is entered between Ra's at Tanb and Ra's-e Barkan, about 30 miles westward.

BANDAR-E DEYLAM, about 7 miles northward of Ra's at Tanb, is a small town having a large and conspicuous fort; when first seen from seaward, the fort appears as an island. The coast in this vicinity is merely a strip of rocky land, 10 to 15 feet high. Drying mud flats extend offshore in front of the town, and through them is a small drying creek in which lie local craft. Landing is difficult, even at high water. The bottom is hard sand for nearly 1/3 mile offshore and soft mud farther out.

ANCHORAGE can be taken in about 4 fathoms, soft mud, about 3 1/4 miles offshore, or in 3 fathoms, clay, about 2 1/2 miles from the town. The anchorage is sheltered from the shamal, and the kaus does not raise the usual sea and swell, even though it is strong.

SHAH ABU OL SHAH, a village about 7 miles north-northwestward of Bandar-e Deylam, is on the hillocks near the head of Dawhat-e Deylam. The village, which can be reached by a small creek, has in it a large white-domed tomb.

YELLOW HILL, 900 feet high, is about 5 miles northward of Shah Abu ol Shah and in the central part of a range of hills which extend about 15 miles east-southeastward and the same distance northwestward to Kuh-e Mishan, 822 feet high.

RA'S-E BARKAN is a very low strip of sand which is nearly covered at high water; a bank with depths of less than 3 fathoms extends about 5 miles southward from the point. Drying mud flats extend for some miles on either side of Ra's-e Barkan. Two conspicuous date groves are about 3 miles northward of the point. A gas flare was reported (1964) to be about 7 1/2 miles east-southeastward of Ra's-e Barkan.

Offshore oil platforms are positioned about 7 3/4 miles east-southeastward of Ra's-e Barkan. A SUBMARINE PIPELINE runs south-southwestward for about 6 miles from the platforms. Moorings are at the south end of the pipeline.

A BEACON about 2 1/2 miles southwestward of Ra's-e Barkan marks a channel for local craft. A black and white BUOY is moored about 7 miles southeastward of the beacon.

RUD-E ZOHREH empties into the Persian Gulf approximately 5 miles northwestward of Ra's-e Barkan (30°00'N., 49°33'E.). The delta of the river appears to have several mouths, but there is only one main channel. The principal entrance is very shallow and has been only partially surveyed. The approach to it, through an extensive mud flat, has been reported to be marked by poles surmounted by cans. Small local craft use Rud-e Zohreh, and a steamer with an 8-foot draft has ascended as far as the charted village of Hendijan; the course of the river is very tortuous. Shah Mir Na'aman, a shrine, is nearly 5 miles eastward of the river mouth. SIRMEH, about 11 miles northwestward of Ra's-e Barkan, has a clump of trees on the low shore, which is a mark for the entrance of Rud-e Zohreh. A (continued on page 271)

wreck, visible at low water, lies about 3½ miles west-northwestward of the beacon off Ra's-e Barkan.

From Sīrmeh, the coast trends westward about 9 miles to low Ra's-e Tanūb. **Fasht ol Movā,** a bank of sand and mud which dries in patches, extends about 11 miles south-southeastward, 9½ miles southward, and 14 miles southwestward from Ra's-e Tanūb; it is separated from that point, and the coast eastward of it, by **Khowr-e Gazlān,** which has depths of about 9 feet. Khowr-e Gazlān is approached through a 3¼-mile-wide channel, with depths of 1½ to 3 fathoms, which is between Fasht ol Movā and the flats westward of Ra's-e Barkan.

An oil rig is operating in the northwestern part of Fasht ol Movā about 10 miles east-northeastward of Bū Seyf. It is a conspicuous radar target.

KHOWR-E MŪSÁ

8A–14 Khowr-e Mūsá is entered between Ra's-e Tanūb and Bū Seyf (*30°01′ N., 48°55′ E.*), about 20 miles west-southwestward. Navigation is restricted by tidal flats, which dry in places, to a comparatively narrow channel.

About 3 miles west-northwestward of Ra's-e Tanūb is the mouth of a tidal inlet with extensive ruins on its banks. The coast northwestward is mostly covered at high water and has not been surveyed; it is fronted by tidal flats which are intersected by a number of unsurveyed deep channels. Khowr-e Gazlān is connected by a narrow channel with Khowr-e Wāstah; the latter, which has not been surveyed, joins Khowr-e Mūsá about 21 miles northward of Bū Seyf.

Two spits, with depths of 3½ to 6 fathoms, extend up to 17½ miles southeastward and 19½ miles south-southeastward from Ra's-e Tanūb as a continuation of the shorebank fronting it. Numerous detached shoal patches, with depths less than 6 fathoms, are within 30 miles southward of Ra's-e Tanūb, and a 23-foot patch was reported (1950) about 22 miles southward of that point.

A shorebank with depths of less than 3 fathoms extends about 13 miles southeastward from Bū Seyf, and depths of less than 36 feet are found within 27 miles southeastward of that point. In 1961 it was reported that this shorebank is extending eastward in the area about 15¾ miles southeastward of Bū Seyf.

A dangerous **wreck,** marked by a **drum buoy,** is reported to lie in position *29°44′ N., 49°09′ E.*

Bū Seyf is the southeastern extremity of a low swampy area intersected by creeks which extends about 12½ miles westward to the mouth of Khowr-e Bahmanshīr (sec. 8A–18). Khowr-e Soleyk Baḥrī, which empties close westward of Bū Seyf, has a depth of 6 feet in its entrance and is reported to connect with Rud-e Kārūn (sec. 8B–26). Khowr-e Kūrīn, the entrance of which is about 7 miles westward of Bū Seyf, also connects with Rud-e Kārūn, but neither have been surveyed for any distance.

Low **Jazīreh-ye Būneh,** on which is a ruin, has its eastern extremity about 3 miles west-northwestward of Ra's-e Tanūb. Low **Jazīreh-ye Darā,** about 5 miles southwestward of Jazīreh-ye Būneh, and separated from it by Khowr-e Gazlan, is marked by a beacon, which is a conspicuous radar target.

The navigable channel of Khowr-e Mūsá is entered by crossing a bar, with a depth of 31 feet (1964) about 7 miles eastward of Bū Seyf; within the bar, the channel is about 1½ miles wide. The banks in the entrance of Khowr-e Mūsa are liable to change. The southwestern edge of Fasht ol Movā, which forms the eastern side of the channel, is bordered by a chain of drying sandbanks.

A conspicuous but disused tide gage, consisting of a framework structure surmounted by a 15-foot-diameter white dial, stands westward of the bar in a position about 6¼ miles eastward of Bū Seyf; tidal signals may still be indicated but must be ignored. The structure, about 80 feet high, forms an excellent daymark.

An electronic tide gage night signal is located just above the bar.

Two shoal patches with depths of 28 feet and 29 feet were reported (1959) to lie about 2 miles and 2⅛ miles north-northwestward, respectively, of the disused tide gage.

In the approach to the bar from seaward, Khor Musa Lightfloat is moored about 36½ miles southeastward of Bū Seyf. The float is painted red with the name *Khor Musa* in white letters, and has a red framework steel tower with a radar reflector.

Depths of 5¼ to 10 fathoms have been reported (1961) within 3¼ miles southwestward and 14 miles southward, respectively, of Khor Musa Lightfloat.

Light Buoy No. 12 is moored about 11½ miles east-southeastward of Bū Seyf.

Inner Light Buoy is moored on the northeastern side of the channel about 9 miles east-southeastward of Bū Seyf.

Caution.—The characteristics of light buoys in Khowr-e Mūsa are not to be relied upon.

8A–15 The navigable channel, as far as the area in the vicinity of Jazīreh-ye Qabr-e Nākhodā, about 17½ miles northward of Bū Seyf, is marked by lighted buoys which, in 1963, consisted of seven on the eastern side and eight on the western side. Three small triangular beacons, about 12 feet high, stand near the eastern side of the bar. A beacon stands about 700 yards north-northwestward of the disused tide gage; bearing Nos. 1 and 2, and Nos. 3 and 4, light buoys and across the bar.

Above Jazīreh-ye Qabr-e Nākhodā, the channel is marked on its southeastern side by a light beacon and four light buoys; on its northwestern side, the channel is marked by a light buoy and two light beacons.

An extensive reef, which dries 7 feet, is on the eastern bank of Khowr-e Mūsá about 6½ miles northwestward of Jazīreh-ye Darā.

Qassār bin Siswān, a rocky patch with a depth of 4 feet and marked by a **light buoy,** is in the middle of the fairway of Khowr-e Mūsá about 1¾ miles north-northwestward of the aforementioned extensive reef; the principal channel is on the western side of Qassār bin Siswān.

Low Jazīreh-ye Qabr-e Nākhodā lies on the flat on the eastern side of the channel about 6½ miles north-northwestward of Qassār bin Siswān. Above Jazīreh-ye Qabr-e Nākhodā, the left bank of Khowr-e Mūsá is clearly defined and always above water.

Khowr-e Kanāgeh, which extends westward from abreast Jazīreh-ye Qabr-e Nākhodā, can be ascended about 5 miles above its junction with Khowr-e Mūsá by keeping in midchannel; farther up, the channel becomes too narrow for a vessel of any length to turn. Flats lie on either side of its mouth, but inside the entrance the banks are steep-to.

Khowr-e Dowraq, about 15 miles above Jazīreh-ye Qabr-e Nākhodā, trends northwestward and is somewhat tortuous in its lower reaches, above which it trends northward and probably connects with Rūd-e Kārūn.

The fairway of Khowr-e Mūsá continues east-northeastward about 5 miles and from there on is known as Khowr-e Ma 'shūr.

Tides and tidal currents.—Tidal currents in the lower part of Khowr-e Mūsá set north-northwestward and south-southeastward, turning at about the time of high water and low water, respectively. The greatest rate recorded was 1½ knots in 1922.

High water on Khowr-e Mūsá bar is 20 minutes before high water at Shaṭṭ al 'Arab; ordinary spring rise is 10 feet and neaps 7 feet. The tidal current rate at springs is about 4 knots.

Caution should be observed when passing Qassār bin Siswān where the outgoing current attains a rate of about 3 knots and causes eddies and tide rips over the patch.

The most difficult part of Khowr-e Mūsá is reported to be in the vicinity of its junction with Khowr-e Wāstah (*30°23′ N., 48°56 E.*), especially when the currents are strong.

Pilotage.—Pilotage is compulsory. A pilot vessel, painted white and with the name *Khor Musa* in black letters on each side, is stationed about 1 mile southeastward of approach Light Buoy No. 12. The vessel has 2 masts and a yellow funnel; when absent from the station, it is replaced by a tug. See section 1–22.

During periods of low visibility from one cause or another, the pilot vessel will, in addition to the signals required to be made under such conditions, sound **PV** in Morse code on the steam siren every 15 minutes, commencing at each hour. On the near approach of vessels, the signal will be sounded more frequently. Vessels should approach the pilot vessel to within 500 yards.

When so requested, the pilot vessel will also function as a radiobeacon, and vessels requiring such service should obtain the exact position of the pilot vessel. This radiobeacon service

should be arranged by direct radio contact with the pilot vessel; the call sign is EPPB.

It was reported (1958) that pilots will take vessels in at night.

ANCHORAGE.—Vessels which are outward bound and find it necessary to await flood tide can anchor in the vicinity of Light Buoy No. 8. The electronic tide gage can be read from this anchorage.

In the event of fog or a thick duststorm, suitable anchorages are off Light Buoys Nos. 8, 10, 12, 14, and Lighted Beacon No. 11. Vessels should avoid anchoring in the vicinity of Qassar bin Siswan.

Because of the considerable depths, there are no suitable anchorages from the mouth of Khowr-e Wastah to Khowr-e Khanam, about 6 1/2 miles eastward.

BANDAR-E SHAHPUR

Position:	30° 26′ N., 49° 05′ E.
Depths:	River entrance bar, 31 feet.
	Anchorage, 10 to 20 fathoms.
	Berths, 38 feet.
Tidal rise:	Springs, 18 feet; neaps, 12 feet.

8A-16 The river port of Bandar-e Shahpur is about 34 miles from the bar at the entrance of Khowr-e Musa. The port itself is built on reclaimed land enclosed by a coral wall; the adjacent area in all directions consists of barren marshes and mud flats. The port area is subject to flooding during heavy rains.

NAVIGATION.—From a position on the offshore track (sec. 5-2) about 10 miles southwestward of Nakhilu (sec. 5B-9), a course of 320° for about 150 miles will pass about 2 miles southwestward of Khor Musa Lightfloat. From hereon, vessels should proceed to the vicinity of the pilot vessel described in section 8A-15, avoiding the shoal patches (sec. 8A-14) in the general area.

WINDS AND WEATHER.—The prevailing wind is the northwesterly shamal, which blows throughout the summer months, starting about 0900 daily and drying out about sunset. The northerly winds of winter are often interrupted by a strong southeasterly kaus. With a combination of high wind and choppy sea, berthing and cargo lightering are not permitted.

The rainfall is about 6 inches annually; it is experienced during November through March and is usually associated with southerly gales.

Between April and November, the maximum daily shade temperature ranges between 90° and 125° F.; sun temperatures often reach 165° F.

Fog may occur during October and November.

TIDES AND TIDAL CURRENTS.—The mean tidal rise at high water springs is 18 feet; at high water neaps, 12 feet. Tidal currents in the vicinity of the port attain a velocity of 3 knots.

DEPTHS AND DANGERS.—The fairway above the bar is wide, deep, and well marked and presents no navigational difficulties. Silting in Khowr-e Musa is negligible. In the vicinity of the principal berths, central depths are 38 to 60 feet at MLWS. The controlling depth in Khor Zahid is about 7 feet at MLWS. A wreck lies sunk about 3/5 mile south-southwestward of Light Buoy No. 22. A 2-fathom shoal, marked on its eastern side by Light Buoy No. 21, is about 1/2 mile southward of the western jetty.

ASPECT.—The port area is surrounded by salt marshes and tidal mud flats, which extend northward 7 miles and southward to the Persian Gulf. Buildings are mainly offices, shops, and warehouses connected with port operations. Khor Zahid extends northward from Khowr-e Musa about 1 mile westward of the port.

HARBOR.—Khowr-e Musa provides a natural harbor for the port. No official harbor limits are designated, but they are normally considered to be that portion of Khowr-e Musa extending approximately 2 miles on either side of the junction of the two berthing jetties and the lower 1 3/4 miles of Khor Zahid.

In the vicinity of the principal berths, the average width of the harbor is about 1/2 mile. The harbor capacity and pier facilities permit efficient movement and berthing of vessels.

Vessels 740 feet long with a maximum draft of 33 feet can enter the port.

NAVIGATIONAL AIDS.—Light Buoy No. 22 is moored about 2/3 mile westward of the southwestern corner of the walled port area.

Light Buoy No. 19 is moored about 1 mile southwestward of the head of the western jetty.

ANCHORAGE.—Anchorage can be taken immediately southward and westward of the port in 10 to 20 fathoms, mud, fair holding ground. A minimum of protection is afforded; the anchorage is completely exposed to the prevailing winds and strong currents. Cargo can be discharged into lighters at the anchorage, weather permitting. A quarantine anchorage area is located off the jetties.

A prohibited anchorage area lies southward of a line extending about 1 mile east-northeastward from Light Buoy No. 19 to a position close northward of Light Buoy No. 21.

PILOTS.—Pilotage is compulsory (sec. 8A-15). The Harbormaster usually boards when near Bandar-e Shahpur and will berth all vessels. See section 1-22.

8A-17 BANDAR-E SHAHPUR, with a population of about 5,000 in 1952, is a terminus of the Trans-Iranian Railroad and comprises a transshipment point for cargo; it is the second-ranking port of Iran in import tonnage. A customhouse in the port is administered by a Director of Customs whose authority extends to Bandar-e Ma'shur and Ahvaz (sec. 8B-36).

Berthing facilities consist of two jetties, both connected with the railroad system, which front the town. The western jetty is about 2,100 feet long; there are berths for 4 or 5 vessels on the outerside in depths of 35 to 38 feet. The eastern jetty is about 1,600 feet long with three berths having 25 to 28 feet along the outer side. There is 6 feet alongside the inner part of the eastern jetty which is used for small craft. Vessels discharge with their own gear. When the port is connected, vessels may be worked in the stream except during extremely bad weather.

Two tugs of 1,000 hp. each and one of 1,600 hp. are available from Bandar-e Ma'shur for berthing and unberthing vessels.

Supplies are available only in very limited amounts. Water can be obtained in limited quantities from tank cars; 48 hours notice is required. Fuel oil can be supplied at Bandar-e Ma'shur.

A radio station is located at Bandar-e Shahpur. Communications in this area are extremely slow. There is telephone connection with Al Basrah, Abadan, Ahvaz, Khorramshahr, and Bandar-e Ma'shur, but it is very unreliable, especially from October through May.

BANDAR-E MA'SHUR

Position:	30° 28′ N., 49° 11′ E.
Depths:	River entrance bar, 31 feet. Berths, 40 to 45 feet.
Tidal rise:	Springs 18 1/2 feet; neaps 12 1/2 feet.

8A-18 The river port of Bandar-e Ma'shur is located in Khowr-e Ma'shur, a branch of Khowr-e Musa. The port lies about 6 miles east-northeastward of Bandar-e Shahpur and about 40 miles from the bar at the entrance of Khowr-e Musa.

NAVIGATION.—See section 8A-16.

WINDS AND WEATHER.—See section 8A-16.

TIDES AND TIDAL CURRENTS.—The mean tidal rise at HWS is 18 1/2 feet; at HWN; 12 1/2 feet. For tidal information on the bar, see section 8A-15. Tidal currents in the vicinity of the port attain a velocity of 3 1/2 to 4 knots.

DEPTHS.—There is a least depth of 40 feet in the area off the port and depths of 40 to 45 feet alongside the berths. The maximum recommended draft is 38 feet, however, a tanker sailed successfully from the port with a draft of 39 3/4 feet. A delay can occur to vessels loading over 37 1/2 feet if the high water is low and if the wind is strong north-

westerly, which will lower the tide about one foot. Conversely, a strong southeasterly wind will raise the tide about one foot.

Depths of 33 and 35 feet were reported (1963) about 400 and 460 yards northward and north-northeastward, respectively, of Beacon "A" (30° 27.7′ N., 49° 11′ E.).

HARBOR.—The port, located on the north bank of Khowr-e Ma'shur, has 6 T-head piers which provide berthing for large oil tankers; general cargo is handled at a barge jetty. Tankers up to 740 feet long, with drafts up to 38 1/2 feet can enter the port.

All vessels should arrive with clean ballast as it is discharged overboard at the berth.

No anchorage area is available off the port; vessels can use the anchorage off Bandar-e Shahpur while awaiting quarantine examination or a berth.

NAVIGATIONAL AIDS.—See section 8A-16 for the aids in the channel to Bandar-e Shahpur. The channel leading from Bandar-e Shahpur to Bandar-e Ma'shur is wide, deep, and clear. It is marked by several light buoys and light beacons and also by pile beacons with topmarks. A pair of range beacons in range 056 1/2°, lead in the channel abreast the berths.

PILOTS.—Pilotage is compulsory (sec. 8A-15); vessels are taken in at night. Very large vessels are handled in daylight hours only. See section 1-22.

(7901) PERSIAN GULF—Shatt al Arab approach—Drilling platform.—A drilling platform (lighted) exists in 29°27.8′ N., 49°23.2′ E. (approx.)

(N.M. 51/66.)

(N.M. 140, Bahrain, 1966.)
H.O. Charts 3639, 3647.
H.O. Pub. 62, 1960, page 275.

Vessels anchor at Bandar-e Shāhpūr to await pratique and to disembark the pilot. The berthing master boards and pilots the vessel the remaining distance. The time that the vessels anchors in this position is considered to be the official arrival time.

Vessels should contact the radio station at the port as soon as possible to give their ETA, the amount of cargo required in long tons or U.S. barrels, quantity and grade of bunkers, and vessel's discharging port or ports. Delays may result if this information is not given with the first ETA message.

8A–19 Bandar-e Ma'shur, an oil port, exports several million tons of crude oil a month.

Berthing facilities consists of 6 short T-head piers with 40 to 45 feet alongside. These piers have an average length of 200 feet across their face side. Pipelines are laid on the piers for loading tankers. A barge jetty, which has one 15-ton derrick, has 12 feet alongside; it is served by the railroad. Floating cranes with capacities of up to 50 ton are available in the port.

Provisions can be obtained in moderate quantities if 48 hours advance notice is given. Chlorinated drinking water is available in moderate quantities. Unlimited amounts of fuel and diesel oils can be supplied. Three tugs of up to 1,500 hp. are available. Medical service is available at the oil company clinic. A radio station is maintained in the port.

Khowr-e Mūsá to Shaṭṭ al 'Arab.—From Bū Seyf (*30°01′ N., 48°55′ E.*), the western entrance point of Khowr-e Mūsá, the coast trends westward about 12½ miles to Khowr-e Bahmanshīr.

Khowr-e Bahmanshīr, which has depths of 6 to 19 feet, is about 40 miles long from its mouth to its junction with Rūd-e Kārūn near Khorramshahr. The unmarked channel in its approach is between the flats of Meydān 'Alī and Maraqqat Ābādān, which have depths of 3 to 5 feet for about 2 miles. The mud banks on either side of the approach do not start to dry until the flats have been crossed. The river can apparently be ascended for about 23 miles by vessels drawing up to 7 feet. The northern 15 miles is very shallow and depths are irregular; some of the mud banks dry almost across the channel. No regular pilots are available for Khowr-e Bahmanshīr. The river should be entered on the rising tide, and once inside the greatest depths are close to the bank on the concave side of each bend.

ANCHORAGES

8A–20 Būshehr.—See section 8A–9.
Jazīreh-ye-Khārk.—See section 8A–11.
Bandar-e Rīg.—See section 8A–12.
Ganāveh.—See section 8A–12.
Bandar-e Deylam.—See section 8A–13.
Bandar-e Shāhpūr.—See section 8A–16.

Part B. SHAṬṬ AL 'ARAB AND TRIBUTARIES

GENERAL

8B–1 Shaṭṭ al 'Arab is formed by the joining of the Tigris and Euphrates Rivers at a point about 110 miles above the Persian Gulf. The eastern bank of Shaṭṭ al 'Arab as far as Khaiyin Canal (*30°27′ N., 48°07′ E.*) is in Iranian territory; the western bank from the entrance of the river as far as Khaiyin Canal, and then both banks above that, are in Iraq. Shaṭṭ al 'Arab is navigable as far as Al Baṣrah by any vessel able to cross the bar at its entrance. Outer Bar Reach, the channel across the bar, has a maintained low-water depth (1958) of 27 feet. Both banks are very low at the mouth of the river and are bordered by palms.

It has been reported that Shatt al 'Arab entrance is a good radar target at a distance of 15 miles under normal conditions.

Ra's al Bīshah, the western entrance point of Shaṭṭ al 'Arab, has black South Mast Beacon, 75 feet high, at its southeastern extremity. On the opposite bank, about 4 miles northwestward of this beacon, stands an old Persian mud fort.

The seaward and lower parts of the banks on both sides of the river have a thick growth of reeds and coarse grass. Above the entrance, the banks on both sides continue very low to above Al Baṣrah and are intersected by numerous irrigation canals; except for the plantations enclosed by embankments, the land is often submerged.

On the falling tide, the water is fresh even at Al Fāw, about 5½ miles above Ra's al Bīshah, except at low river in autumn when it is slightly brackish; about 10 miles above Al Fāw, the water is fresh at all times.

DEPTHS—DANGERS

8B–2 In the approach to Shaṭṭ al 'Arab, shoals with depths of 27 to 34 feet lie 29 to 36

miles south-southeastward of Ra's al Bīshah.

See caution in section 8–1.

Palinurus Shoal, with a depth of 18 feet, lies about 22 miles southeastward of Ra's al Bīshah. A 20 foot patch lies about 1½ miles southward and a 28-foot patch lies nearly 2 miles southeastward of Palinurus Shoal. Depths of less than 36 feet are between Palinurus Shoal and the southeastern edge of Maraqqat 'Abdullāh, a bank extending about 8 miles east-southeastward from Ra's al Bīshah; the bank dries in patches at LWS.

A 31-foot patch is about 5 miles northward of Palinurus Shoal. An obstruction lies about 7 miles north-northwestward of Palinurus Shoal.

Shatt al 'Arab Lightship is moored about 42 miles southeastward of Ra's al Bīshah. A brown buoy is moored about 15 miles eastward of the lightship to mark the position of an oil well. Less water than charted was reported (1961) in an area about 15 miles west-northwestward of the lighthsip. A 30-foot shoal lies about 6 miles eastward of Palinurus Shoal. About 1½ miles farther northeastward is a long narrow bank with a least depth of 25 feet. Between the latter bank and the entrance of Outer Bar Reach is a similar bank with depths of 33 and 34 feet. From a position about 4¼ miles north-northeastward of the 30-foot shoal, the eastern side of the fairway leading to the entrance of Outer Bar Reach is bordered by a bank, with depths of less than 6 fathoms, on which are patches with depths of 22 to 25 feet. An 18-foot patch lies about 15 miles southward of Bu Seyf.

Mariners are notified to be alert to the frequent changes in the position of Shatt al 'Arab Lightship.

In the vicinity of Palinurus Shoal, the tidal current on the rising tide attains a velocity of ½ knot to 1½ knots; on the falling tide it is 1½ to 2½ knots.

Pile Beacon *(29°50'N., 48°43'E.)* stands on the coastal bank about 9 miles east-southeastward of Ra's al Bishah. An obstruction was reported (1935) about 3¼ miles southwestward of Pile Beacon. An obstruction lies about 4 miles east-northeastward of Pile Beacon.

A spoil ground lies about 6 miles east-northeastward of Pile Beacon. A small area of foul ground lies about 9 miles southeastward of Pile Beacon.

Two black survey beacons, each 37 feet high and consisting of a steel framework, surmounted by a diagonal-cross topmark, on a 4-pile base, stand about ¼ mile east-northeastward and 2¾ miles west-northwestward of Pile Beacon.

A light is shown on a pile structure about 5½ miles east-southeastward of Pile Beacon.

A red and white banded can buoy is moored about 22 miles southeastward, and another about 24 miles southeastward of Pile Beacon.

A wreck, with mast showing, lies sunk about 4 3/5 miles southeastward of Pile Beacon.

A wreck with 58 feet over it lies sunk about 1¼ miles southwestward of Shatt al 'Arab Lightship.

Rooka Light Buoy, with a radar reflector, is moored about 5 miles east-southeastward of Pile Beacon.

A lighted black and yellow buoy is moored about 3½ miles southeastward of Pile Beacon.

NAVIGATION

8B–3 See section 5–2 for the offshore track leading to the head of the Persian Gulf.

Pilotage is compulsory for Shaṭṭ al 'Arab, with the exception of certain government vessels and local craft. The pilot vessel is black, with *Pilots* in white letters on each side, and has a yellow stack and two masts; it is stationed about 8 miles southeastward of Pile Bea-

con. Vessels approaching from seaward should display their number and then their draft in feet and inches, and a pilot will be sent. See section 1-22. If the pilot vessel is temporarily off station, the vessel requiring a pilot should anchor and communicate with the Channel Control Station at Al Fāw (sec. 8B-5). Anchoring is prohibited northward of a line extending from Pile Beacon through Rooka Light Buoy.

REGULATIONS

8B-4 The following regulations are mostly for vessels approaching Outer Bar Reach. Inward-bound vessels must not pass northward of a line extending from Pile Beacon through Rooka Light Buoy until outward-bound shipping is clear of the dredged channel. Permission to enter Outer Bar Reach must be obtained through the pilot vessel from the Channel Control Station.

An inward-bound vessel must not enter Outer Bar Reach later than 4 hours before high water; when so excluded, the vessel must wait until outward-bound vessels are clear.

A vessel having received permission to enter and being unable to do so at the specified time shall inform the pilot vessel, and apply again for permission to enter when ready, in order that outward-bound traffic and dredging will not be delayed.

Vessels are not allowed to enter the dredged channel on a falling tide unless specific permission to do so has been obtained from the Channel Control Station.

A vessel shall not on any account attempt to enter Outer Bar Reach if by doing so she will meet or pass another vessel.

A vessel inward bound and wishing to enter the dredged channel should obtain permission to do so from the pilot vessel.

A vessel entering from seaward must make the signal prescribed in section 8B-5 and be guided by the reply.

Vessels engaged in surveying display a red cone, and all vessels under way should make an effort to keep clear of them.

Vessels employed in lifting weights or moorings, or from which a diver is working, display a blue square flag; passing vessels should slow to the lowest safe speed and give such a vessel as wide a berth as possible. This rule also applies to small craft engaged in dredging, grabbing, or pile driving.

Vessels should regulate their speed so as not to approach a vessel ahead closer than 1 mile. This applies to vessels bound both inward and outward.

Between sunrise and sunset, all vessels at anchor in or near a fairway shall display forward, where it can best be seen, one black ball 2 feet in diameter.

A vessel grounding between the outer light buoys and the inner bar should immediately display International Code signal AT by day, or at night two red lights displayed vertically; in addition, if blocking the channel, the letter U should be sounded in Morse Code (. . —) on the whistle or siren until answered by a tug or any following vessel repeating the signal. Should the grounded vessel be in such a position that it is considered there is room for a following vessel to pass, the signal U shall be followed by 1 short blast to indicate that she is aground on her starboard side of the channel and that following vessels may pass on her port side.

The signal U followed by 2 short blasts is to indicate that she is aground on her port side of the channel and that following vessels may pass on her starboard side. These signals shall be repeated by the following vessel to indicate that she intends to attempt to pass.

A vessel requiring the assistance of the Channel Control Station should display flag T of the International Code of Signals where it can best be seen.

Special regulations are in force in the ports and harbors of Ābādān and Al Baṣrah and will be included with the description of those places.

Quarantine regulations.—When approaching Shaṭṭ al 'Arab, vessels must contact Al Fāw radio station 24 hours before arrival off the pilot vessel and send the standard quarantine message, as prescribed by the International Code of Signals Vol. II, addressed to "Port Health, Al Fāw." Vessels should not enter before pratique has been granted. The health declaration should be completed as usual and surrendered to the quarantine official at the ship's destination; they board at the berth.

SIGNALS

8B–5 The **Channel Control Station** at Al Fāw (*29°58′ N., 48°29 E.*), from which traffic signals are displayed, is equipped with radio. The traffic signals, and also tidal signals, are shown from masts on a large square building.

Traffic signals.—Two black balls displayed vertically by day and a green light over a white light at night indicate the channel is closed to all outbound vessels.

Three black balls displayed vertically by day and two green lights, one at each yardarm of the mast, by night indicate the channel is closed to outbound vessels of 28-foot draft and over.

A black cone, point up, or flag N of the International Code of Signals indicates that no vessel is to pass the Channel Control Station. At night the station communicates by flashing light; the leading vessel is to acknowledge the signal and repeat it to the next vessel astern until answered.

A black drum with a white horizontal band by day or two green lights displayed vertically, 6 feet apart, by night indicate that an inward-bound vessel has entered Outer Bar Reach, and that outward-bound vessels must navigate with caution and not pass the inward-bound vessel eastward of No. 13 light buoy (sec. 8B–10).

8B–6 Tidal signals.—Signals indicating the rise of the tide on the bar above chart datum are shown by day and at night at Al Fāw. By day the following signals are displayed:

A cone, point up, indicates a rise of 1 foot or 7 feet.

A cone, point down, indicates a rise of 2 feet or 8 feet.

Two cones, points up, indicate a rise of 3 feet or 9 feet.

Two cones, points down, indicate a rise of 4 feet or 10 feet.

Two cones, point to point, indicate a rise of 5 feet or 11 feet.

Two cones, base to base, indicate a rise of 6 feet or 12 feet.

A square shape displayed from the opposite yardarm indicates an additional rise of 6 inches.

When two cones are used they will be separated by a 2-foot tackline.

At night the following signals are shown:

One green light indicates a rise of 0 feet or 12 feet.

One white light indicates a rise of 1 foot or 7 feet.

One red light indicates a rise of 2 feet or 8 feet.

Two red lights displayed vertically indicates a rise of 3 feet or 9 feet.

One red light over one white light indicates a rise of 4 feet or 10 feet.

One white light over one red light indicates a rise of 5 feet or 11 feet.

Two white lights displayed vertically indicates a rise of 6 feet.

One green light shown under any of the above signals, with the exception of the one indicating 0 feet or 12 feet, indicates an additional 6 inches above the exact foot.

When the channel is closed to all outbound vessels, no tidal signals will be shown at Al Faw, but when the channel is closed only to vessels of 28-foot draft and over, they will be shown.

CAUTION.—When a strong shamal is blowing, a considerable amount of sand in the air sometimes makes it difficult to distinguish whether a red light is above or below a white light. Great care should be taken, therefore, when any signal is shown which consists of both red and white lights.

DREDGING SIGNALS.—A dredge engaged in dredging operations will show the following signals:

By day.—Three black balls in the form of a triangle, one at the masthead and one at each yardarm.

When necessary, a red flag will be displayed at the yardarm, instead of the black ball, on that side on which the channel is not available for navigation.

At night.—Three white lights in the form of a triangle, one at the masthead and one at each yardarm.

When necessary, a red light at the yardarm, instead of the white light, on that side on which the channel is not available for navigation.

When a dredge is working in Outer Bar Reach, inward-bound vessels arriving at Rooka Light Buoy must sound a prolonged blast on the whistle or siren and must not enter the channel until the dredge replies with four prolonged blasts or four long flashes with the blinker light; these signals indicate the dredge is keeping clear of the channel, or that while the dredge remains in the channel vessels may pass her, in which case the above-mentioned dredging signals will be shown.

These signals are also to be used in all dredged channels whenever a vessel wishes a dredge to leave the channel clear.

CURRENTS—TIDAL CURRENTS

8B-7 In Shatt al 'Arab, both the time and height of the tide are much affected by the prevailing wind. A strong kaus will raise the level of the river by 2 or 3 feet and accelerate the time of high water; a strong shamal will lower the level of the river and retard the time of high water.

The change in the tidal current in Shatt al 'Arab does not occur at low water, because the ingoing current must attain sufficient strength to overcome the river outflow, which varies seasonally, being greatest in May, June, and July and least in October and November.

The strength of the current in the outer part of Shatt al 'Arab varies considerably, depending upon the height of the tide and the stage of the river. The ingoing current may be nonexistent or it may attain a rate as great as 2 knots. The maximum rate of the outgoing current is 3 to 3 1/2 knots at springs and 2 to 2 1/2 knots at neaps. Mixed currents are common, with the surface current running in one direction and the subsurface current running in another or even the opposite direction.

In Outer Bar Reach, the currents set fairly through the channel, except at spring tides when at either end there is a strong northerly set on the ingoing current and a strong southerly set on the outgoing current; at neap tides, these cross/currents are inappreciable. The maximum rate of the ingoing current, which at springs is from 1 1/2 to 2 knots and at neaps from 1 knot to 1 1/2 knots, occurs at about

half tide. The maximum rate of the outgoing current is from 3 to 3 1/2 knots at springs and from 2 to 2 1/2 knots at neaps. At spring tides, the ingoing current continues to flow for about 40 minutes after the time of high water; at neaps it is irregular but usually continues for about 1 hour after high water. The outgoing current continues for about 30 minutes after low water at springs anf for about 1 hour after low water at neaps.

During the river flood season, when there are small tides, the flood tidal current is not felt at all, especially upriver, and even at a position about 1 mile above Outer Bar Reach Rear Light Beacon "D" little or no flood current is felt.

RIVER LEVEL.—Seasonal variations in the level of the river are small at the outer bar, less than ± 1/2 foot, but at Al Basrah they are considerable, + 2 1/2 feet in June and -1 1/2 feet in October; these affect high and low water equally. In the river, the highest levels occur in May, June, and July when the river is discharging the combined flood waters of the Euphrates and Tigris Rivers. The lowest levels occur in October and November.

The dry season commences in autumn and continues until spring when the inland snows begin to melt; during winter, however, frequent freshets are caused by local rains.

Current conditions peculiar to river ports are described with them.

WINDS—WEATHER

8B-8 See sections 1-43 and 8A-6.

SHATT AL 'ARAB APPROACH TO ABADAN

8B-9 KHAWR AL AMAYA, a comparatively deep and narrow gut, leads northwestward from Shatt al 'Arab Lightship past Kafka Light Buoy to Outer Bar Reach.

The Khawr al Amaya Deepwater Terminal is 15 1/2 miles east-southeastward of Ra's al Bishah (Sec. 8B-1).

The terminal consists of a structure about 1300 feet long with depths of about 72 feet alongside. It is connected to the storage tanks and pumphouse at Al Faw (sec. 8B-11) by two submarine pipelines.

Vessels bound for Khawr al Amaya Deepwater Terminal should contact the pilot vessel, which cruises about 2 miles southeastward of the terminal. Vessels are requested to contact Basrah Petroleum Company Limited, Basrah, 48 hours prior to arrival. Tugs will assist in berthing.

TIDES AND CURRENTS.—High water at the terminal occurs about 1/2 hour before high water at Shatt al Arab Outer Bar.

Currents in the vicinity are rotatory and rarely exceed 2 knots. Maximum currents are generally along the berthing faces but at certain states of the tide cross sets may be experienced, maximum 3/4 knot.

A light is shown from a radio tower at the center of the terminal, and the northern and southern ends of the terminal are marked by lights.

A large anchor with 130 fathoms of cable was reported lost (1960) about 3 miles southeastward of Khawr al Amaya Deepwater Terminal.

Outer Bar Reach is approached through Khawr al Amaya. The channel as far as Al Faw is marked by lighted range beacons and other light beacons. Only the range beacons are described here because of frequent changes made to the other aids. Other lighted and unlighted beacons stand on each side of Outer Bar Reach at some distance from the dredged channel.

Eastern Approach Light Beacon stands about 3 3/4 miles north-northeastward of Pile Beacon (sec. 8B-2). Elf Beacon, a black pile structure 30 feet high, stands on Maraqqat 'Abdullah nearly 2 3/4 miles northwestward of Pile Beacon.

The axis of the seaward part of Outer Bar Reach is marked by light beacons in range 304°. The front light is shown on Outer Bar Reach Beacon "C", standing about 2 1/2 miles north-northwestward of Pile Beacon, and the rear light is shown on Outer Bar Reach Beacon "D", standing about 5/6 mile northwestward of the front range beacon; both are surmounted by a white triangular daymark.

The axis of the inner part of Outer Bar Reach is indicated by two pairs of range lights. The front light of the inner pair is shown on (continued on page 281)

Outer Bar Reach Front Beacon "E", standing about 2¾ miles northwestward of Elf Beacon, and the rear light is shown on Outer Bar Reach Rear Beacon "F", about ⅝ mile northwestward of the front light beacon; these lights are in range 301°. The front light of the outer pair is shown on Outer Bar Reach Front Beacon "B", surmounted by a white triangle, situated about 2¼ miles east-northeastward of Pile Beacon, and the rear light is shown on Outer Bar Reach Rear Beacon "A", surmounted by a black triangle, situated about ⅝ mile southeastward of the front light beacon; these lights are in range 121°.

A **light** is shown on Turning Beacon, which stands on the northern side of the channel about 1¾ miles north-northeastward of Pile Beacon.

Kafka Light Buoy is moored off the entrance of Outer Bar Reach about ⅘ mile southeastward of Outer Bar Reach Rear Beacon "A".

Outer Western Light Buoy is moored on the northern side of the entrance of Outer Bar Reach about ⅖ mile southeastward of Outer Bar Reach Rear Beacon "A".

Two light buoys are moored close north-northeastward and about ½ mile west-northwestward of Outer Bar Reach Front Beacon "B"; they are for use of the dredging service and are not intended, primarily, as navigational aids.

It was reported (1960) that the improved low water navigable depth in Outer Bar Reach is 28 feet.

Western Channel.—Western Channel is entered about 300 yards northward of Outer Bar Reach Rear Beacon "A". Its axis is indicated by a pair of lights in range 306°. The front light is shown on Western Channel Front Beacon, surmounted by a white triangle and a white lantern, situated about ⅘ mile west-southwestward of Can Beacon, and the rear light is shown on Western Channel Rear Beacon, surmounted by a black framework topmark and a red lantern, situated about ⅗ mile northwestward of the front light beacon.

Rooka Channel.—This channel is situated northeastward of Western Channel but is no longer in use.

A light is shown on No. 4 Beacon, a red pile structure situated on the southern side of Rooka Channel about 1¼ miles southward of Eastern Approach Light Beacon.

A light is shown on No. 5 Beacon, a black pile structure on the northern side of Rooka Channel about 1¼ miles west-northwestward of No. 4 Beacon.

8B–10 Inner Bar Reach.—This reach extends about 5 miles from a position a little more than ⅝ mile west-northwestward of Outer Bar Reach Rear Beacon "D" to a position about 1½ miles east-northeastward of South Mast Beacon (sec. 8B–1).

In 1960, it was reported that the improved low water navigable depth in Inner Bar Reach is 28 feet.

The centerline of the dredged channel through the reach is marked by two pairs of lighted range beacons. The front light of the inner pair is shown on a white column with a triangular daymark on piles, and the rear light is shown on a white framework tower with a black triangular daymark located about ⅓ mile northwestward of the front light; these lights are in range 304°.

A radio **tide gage** is about 5/6 mile southeastward of the front light of the inner range. A **light** is shown from this gage.

The front light of the outer pair is shown on a white circular column with a triangular daymark on piles, and the rear light is shown on a black framework structure with a white triangular daymark on piles located about ⅘ mile southeastward of the front light; these lights are in range 124°.

A **light** is shown on Inner Rooka Beacon, located nearly ½ mile south-southwestward of Outer Bar Reach Front Beacon "E" (sec. 8B–9).

Several **light buoys** are moored along Inner Bar Reach; one of these buoys is at the junction of that reach and Al Fāw Reach.

Al Fāw Reach.—This reach extends from Inner Bar Reach to Al Fāw, a distance of about 6 miles. The axis of the dredged channel is marked by five pairs of range lights. The

front light of the outer pair is shown on Outer Al Fāw Reach Front Beacon, located about 2 miles east-northeastward of South Mast Beacon, and the rear light is shown on Outer Al Fāw Reach Rear Beacon, about 3/5 mile east-southeastward of the front light; these lights are in range 107½°.

The front range light of Al Fāw Middle Reach is shown on a white cylindrical beacon situated on the southwestern bank of the river about 1¾ miles below Al Fāw, and the rear light is shown on a white framework structure about 900 yards westward of the front light; these lights are in range 282°.

The front range light of Al Fāw Reach is shown on a white framework structure situated on the southwestern bank of the river about ½ mile below Al Fāw, and the rear light is shown on a black framework tower with a triangular daymark situated about 5/8 mile west-northwestward of the front light; these lights are in range 290½°.

The inner part of Al Fāw Reach is marked by two pairs of range lights. The front light of the inner pair is shown on a column with a triangular daymark on piles situated on the southwestern bank of the river about 1¾ miles above Al Fāw, and the rear light is shown on a black framework tower, the lower part painted white, with a black triangular topmark situated about 700 yards west-northwestward of the front light; these lights are in range 303°. The front light of the outer pair is shown from a white steel structure with a white triangle halfway up situated on the southwestern bank of the river about 2½ miles below Al Fāw, and the rear light is shown on a white framework structure with a black daymark situated about ½ mile east-southeastward of the front light; these lights are in range 123°.

Two light buoys are moored in Al Fāw Reach.

It was reported (1960) that the improved low water navigable depth in Al Fāw Reach is 28 feet.

Loaded vessels with a draft of up to 35½ feet can proceed through the dredged channels of Al Fāw Reach, Inner Bar Reach, and Outer Bar Reach on high tides having a rise of 10 feet or over. Vessels of over 28,000 tons calling at Al Fāw should notify the Port Officer in advance giving the loaded draft and expected date of arrival.

Information on the estimated depth of water on the bar for the following 24 hours is available from the Control Officer at Al Fāw. This information is always passed to the masters of tankers loading at Al Fāw in sufficient time to allow the maximum cargo to be loaded.

A tide gage is located on the southern side of the river in Al Fāw Reach about 1⅖ miles northwestward of South Mast Beacon (sec. 8B–1); the depth is indicated by white figures on a black background. **A mooring buoy** is positioned about ½ mile northwestward of the tide gage; a similar **buoy** is moored about 250 yards farther northwestward of the first buoy.

8B–11 Al Fāw (*29°58′ N., 48°29′ E.*) is a repair and stores depot for the dredges working in the area, and is also the buoyage depot for the port of Al Baṣrah and the Persian Gulf lights; an oil terminal is located there. Four T-head loading piers with 26 to 32 feet alongside, extend offshore from abreast the oil terminal. Shoaling was reported (1959) in these berths. A fifth loading pier was under construction (1959) close southward of the above loading piers. Vessels not over 650 feet long can be accommodated at the terminal, however, vessels over 630 feet long require special approval. The turning room is limited. Tugs are available. The mean tidal range at the terminal is 6.1 feet. Maximum current velocity is 2½ knots.

Black notice boards with the word *Slow* in white letters are located on the southwestern bank of the river about ½ mile below and 3½ miles above Al Fāw; while between them, vessels must proceed at slow speed.

Two mooring buoys are anchored off the northern bank of the river across from the town. Two similar buoys, for the use of local craft are eastward of the oil piers; two others are moored close to the oil piers for the use of oil tankers loading at the berths.

Anchorage is prohibited in an area between both banks of the river from the front light of the inner range of Al Fāw Reach to a position about 1¾ miles southeastward.

A framework radio mast, 150 feet high, is at the oil terminal about 1¼ miles west-northwestward of Al Fāw. Other radio masts are about 200 yards northwestward and 600 yards northeastward of the latter mast. Three radio towers stand near Al Fāw, one about 900 yards eastward, the other two about 1 mile west-northwestward, and ¾ of a mile northwestward, of the rear range light structure at Al Fāw.

Fresh and staple provisions and limited amounts of water can be obtained in the port. No fuel oil or diesel oil are available. Vessels bunkering at Ābādān should obtain fresh water there. Minor emergency repairs to tankers can be undertaken. A radio station, telegraph office, and hospital are in the town.

Expired Deratization Certificates can be renewed at Al Fāw. Rat guards are required.

Vessels bound to Al Fāw should contact the Al Fāw radio station 24 hours before arrival at the pilot station and send the standard code quarantine message as prescribed by the International Code of Signals Volume II addressed to Port Health, Al Fāw. (See sec. 8B–4).

The maximum draft is 33½ feet for vessels at Al Fāw; this depends on the depth over the bar, seasonal variations, and meteorological conditions. Southeasterly winds may raise the river level as much as 3 feet; northerly winds may lower the level a corresponding amount. The estimated depth on the bar for the next 24 hours is generally made known to the vessel while loading so that it can load to the maximum draft.

8B–12 Qasbat Reach.—This reach extends from a bend in the river at Qaşabeh Point, on the eastern bank about 2 miles above Al Fāw, to North House, a square mud house used as a police post and situated on the eastern bank about 3¼ miles above Qaşabeh Point. On the same side, and about 1¼ miles southward of North House, is a conspicuous square fort. In this part of the river the channel skirts the eastern bank.

The axis of the channel is indicated by two lights in range 178°. The front light is shown on a white framework structure, surmounted by a diamond and situated on the southwestern side of the river about ¾ mile southwestward of Qaşabeh Point; the rear light is shown on a framework tower, the lower part white and the upper part black, surmounted by a black triangle, situated about 300 yards southward of the front light.

On the western side of the river, about ⅘ mile above the front range light for Qasbat Reach, is the first pair of four sets of anchoring beacons for vessels of deep draft waiting to cross the bar. The front beacon of each set is lighted and has a triangular daymark; the unlighted rear beacons each carry a daymark consisting of a St. George's Cross. These pairs of beacons are lettered consecutively from seaward "A", "B", "C", and "D" in white on a black background. The berths indicated by the beacons are about 1,350 feet apart.

Less water was reported (1962) near the range line eastward of beacon "B".

Kasba Beacon, a black and white survey beacon, 50 feet high, stands between "B" and "C" rear anchorage beacons.

A light is shown about 857 yards eastward of Kasba Beacon. A mooring buoy is located close northward, and a dolphin and a mooring buoy are located close southward of the light. A floating pipeline extends to the western shore from the light; vessels must not attempt to pass between the light and the river bank.

North House Beacon, 45 feet high, is a black- and white-banded steel mast standing close westward of North House.

A light buoy is moored about 350 yards westward of North House Beacon.

Vessels proceeding upriver, after passing the square fort in Qasbat Reach, should steer to pass between North House Beacon and the light buoy. Deep-draft vessels should avoid arriving off North House at low water when the depth in the channel there is not more than 26 feet (MLW).

A sunken **wreck** on the western side of the channel abreast North House is marked by a light buoy close off its northern side.

Tide Gage Light Beacon, a 4-pile structure with a lantern mounted on a black cylindrical column, is located nearly ¾ mile northwestward of North House Beacon.

(7070) **PERSIAN GULF—Shatt al Arab—Chart amendment.**—1. The lighted buoy in 30°11.7′ N., 48°24.6′ E. (approx.) is now painted *red*.

2. A beacon will be charted about 700 yards 143° from the light (30°14.5′ N., 48°21.3′ E. approx.).

Note.—(*a*) A dashed line will be charted extending in a 323° direction for 0.7 mile from the beacon in (2), thence as a solid line for 4.4 miles.

(*b*) The legend "Lt and Bn in line 143°" will be inserted near the northwestern extremity of the solid line.

3. A beacon will be charted about 675 yards 312°30′ from the light in (2).

Note.—(*a*) A dashed line will be charted extending in a 132°30′ direction for 1.25 miles from the beacon in (3), thence as a solid line for 2.6 miles.

(*b*) The legend "Lt and Bn in line 312°30′" will be inserted near the southeastern extremity of the solid line.

(See N.M. 28(3629) 1964.)

4. The lighted buoy (30°15.0′ N., 48°21.0′ E. approx.) will be relocated about 1,230 yards 333° from the light in (2).

5. The mooring buoys in the following approximate positions will be expunged:

(*a*) Five buoys in the vicinity of 30°18′34″ N., 48°17′37″ E.

(*b*) 30°18′39″ N., 48°17′32″ E.

(*c*) About 50 yards northwestward of (5*b*).

(*d*) No. 1; 30°19′10″ N., 48°17′07″ E.

(*e*) No. 2; about 50 yards northwestward of (5*d*).

(*f*) Seven buoys located between 30°20′10″ N., 48°15′45″ E. and 30°20′14″ N., 48°15′10″ E.

6. A dangerous wreck will be charted about 1.34 miles 143° from the flagstaff (30°19′22″ N., 48′17′15″ E. approx.).

7. The area bounded by a line joining the following points and the shore has been reclaimed:

(*a*) 1,375 yards 166°40′ from the flagstaff in (6).

(*b*) On shore 230° from (7*a*).

(*c*) 360 yards 138°45′ from (7*a*).

(*d*) On shore 229° from (7*c*).

8. A radio tower exists about 1,690 yards 162° from the flagstaff in (6).

9. The radio mast in 30°18′30″ N., 48°17′29″ E. will be expunged.

(Cancel N.M. 35(5088) 1965.)

(N.M. 45/66.)

(B.A. Chart 3844.)

H.O. Charts **6296, 6295**(1).

H.O. Pub. 62, 1960, pages **284–286.**

8B–13 North House *(30°04′N., 48°27′E.)* **to Kabda Point.**—About 1¼ miles above North House, the channel closes the western bank.

Chellabi Light Buoy is moored about ¾ mile northwestward of North House Beacon.

A light buoy is positioned about 1¼ miles north-northwestward of North House Beacon.

Dora Light Buoy is moored nearly 2 miles northwestward of North House Beacon; deep-draft vessels pass eastward of this buoy. Less water than charted was reported (1963) about 365 yards northwestward of the buoy.

An illuminated **tide gage** is on the southwestern bank of the river about 2¾ miles above North House.

Two notice boards carrying the letters "E" and "F" are located 200 yards and 350 yards, respectively, below and above the tide gage to indicate anchorage berths for deep-draft vessels awaiting the tide to cross the bar off North House.

A large conspicuous house stands on the southwestern shore about 1¾ miles northwestward of the tide gage, but in 1947 it was reported to be obscured by trees.

Brick Kiln Light is shown on the western shore of the river about 2¾ miles above the tide gage.

A light buoy is moored on the eastern side of the fairway about ½ mile northeastward of Brick Kiln Light.

After passing Chellabi Point, which is on the eastern side about 5 miles above North House, the channel closes the eastern bank. About 1½ miles above this point, and on the same side of the river, is the village of **Khusroābad (Khosrowābād)** where there are numerous mud and sandstone buildings, a stone pier, and an Iranian customs station.

An oil terminal, connected with Ābādān by pipeline and used to avoid congestion at that place, is located on the eastern bank of the river about 1 mile above Khusroābad. Four piers, each 150 feet in length and capable of accommodating a vessel 500 feet in length, extend offshore from the terminal. A harbormaster berths all vessels.

An Iraqi customs and police station with a flagstaff is located on the western bank about ⅝ mile above Brick Kiln Light.

Two black notice boards with *Slow* in white letters stand on the western bank about 1⅔ miles and 3¼ miles north-northeastward of Brick Kiln Light. The river area between these notice boards is known as Kabda Harbor. The northern notice board stands on Kabda Point *(30°11′N., 48°25′E.)*.

Bāvardeh (Bāwardā) Reach.—This reach is between Kabda Point and Al Khast Point, about 12 miles northwestward. For the first 9 miles, the channel follows the southwestern bank of the river, the opposite bank being bordered by a chain of islands and flats of which Jazīreh-ye Moʿāvīyeh and Jazīreh-ye Dū Asīr are the largest islands.

Moʿāvīyeh Light Buoy, surmounted by a topmark, is moored about 300 yards southwestward of the extremity of Moʿāvīyeh Spit, which extends about ⅖ mile south-southeastward from Jazīreh-ye Moʿāvīyeh. Vessels of deep draft should pass eastward of the buoy, but vessels of light draft may pass westward of it.

A wreck lies stranded about 500 yards southward of the northwestern extremity of Jazīreh-ye Moʿāvīyeh; a light buoy is moored about 150 yards westward of the wreck.

The fairway is indicated by a pair of lights in range 141°, astern, situated on the west bank of the river. The front light is about 1,200 yards southward of the northwestern extremity of Jazīreh-ye Moʿavīyeh, and the rear light is about 800 yards from the front light. A black and white beacon stands about 300 yards west-northwestward of the front light. A light beacon consisting of a 4-pile structure surmounted by a cylindrical black and white horizontally-banded column stands 150 yards northward of the flagstaff (30°14′N., 48°21′E.) at an Iraqi customs station. Discontinued beacon structures stand about 700 yards southeastward and northwestward of the light beacon.

Bavardeh Reach Light Buoy is moored about 1,400 yards north-northwestward of the afore-mentioned customs station flagstaff.

ĀBĀDĀN

Position: 30°20′ N., 48°16′ E.
Depths: Harbor, 30 to 35 feet.
Berths, 7 to 33 feet.
Anchorages, 32 to 44 feet.
Tidal rise: 6¾ feet HHWS.

8B–14 The river port of Ābādān is situated about 42 miles from the entrance of Outer Bar Reach and 32 miles below Al Baṣrah. It is the largest and best equipped port in Iran, and its facilities are devoted almost exclusively to the handling of petroleum products and supplies for the refinery and town.

NAVIGATION

8B–15 See section 8B–3.

WINDS—WEATHER

8B–16 The northwesterly shamāl and the southeasterly kaus are the principal winds affecting this area. See sections 1–49 and 1–50.

From June through mid-August, a maximum shade temperature of 123° F. and a maximum sun temperature of 165° F. can be expected. Because of the extreme heat, general cargo operations are usually suspended in the afternoon during this period. Otherwise, weather conditions in general do not adversely affect port operations, although high winds may require special precautions during loading and discharging.

The winters are damp and raw, and temperatures as low as 24° F. have been recorded. Thunderstorms are quite common from February through April.

TIDES—TIDAL CURRENTS

8B–17 At Ābādān, during the river flood season, the flood tidal current will not have any appreciable effect when the tide is less than 8 or 9 feet on the outer bar. At the height of the flood season, the flood tidal current may be entirely overcome; at this time the ebb current may attain a velocity of 5 knots.

Under ordinary conditions, the flood tidal current commences at Ābādān about the time of high water on the outer bar, but the time of the commencement of the ebb current varies greatly. The average velocity of the flood current is 1½ knots and the ebb 3 knots. A strong kaus will accelerate the time of high water and raise the level 2 or 3 feet. A strong shamāl will retard the time of high water and lower the level so much that the tide may fall below the zero of the tide gage. In the river, the highest water level occurs between May and July; the lowest levels occur in October and November.

DEPTHS

8B–18 Central depths in the river harbor fronting the area are 30 to 35 feet, and depths alongside the principal berths range from 7 to 33 feet, all at mean low water; in the three tidal basins in the vicinity, the depths are about 7 feet.

In 1961, depths of less than 5 fathoms were reported in the main channel west of Abādān.

HARBOR

8B–19 The harbor area has no clearly defined natural limits, but *"Slow"* notice boards just southward of Bāvardeh and westward of Bereym, the area on the northern side of the river abreast Al Khast Point, mark the official harbor limits. The harbor consists of the river fronting the tank farms, refinery area, and residential district. It is approximately 4 miles long and ¼ mile wide, with all facilities located along the northeastern and northern side of the river; Central Stores Creek, Bereym Creek, and Drum Creek are three improved tidal basins which extend a short distance inland on the same side.

The Harbor Master's Office and the Port Office are on two hulks on the east side of the river at Bāvardeh.

Vessels up to 600 feet long can safely enter the port. The width of the river in the pier areas is the limiting factor. Under special conditions, vessels exceeding this length may be accommodated.

The deepest draft that can be safely carried by vessels entering the port or berthing is 32½ feet. Under favorable conditions of wind and tide, vessels can depart from Ābādān with a draft up to 32½ feet.

The southwestern bank has extensive date groves, with their protecting low mud walls, but it is otherwise unimproved.

At Ābādān and Bāvardeh, about 1 mile southeastward, there are 27 berths, some of which can accommodate oceangoing vessels.

NAVIGATIONAL AIDS

8B–20 A light is shown on Jetty No. 3, and two lights are shown on the northwestern part of Cargo Jetty.

A light is shown on each end of No. 1 floating drydock, which is moored off the southwestern bank of the river southwestward of Jetty No. 8. Two lights, vertically disposed, are shown on each end of No. 2 floating drydock, which is moored about 200 yards off the southwestern side of the river southwestward of Jetty No. 5; a blue flag is displayed when this dock is being raised or lowered, and mariners are warned to reduce speed when passing.

ANCHORAGE

8B–21 Six anchorage berths, with depths of 32 to 44 feet, are in an area opposite and southward of Bāvardeh. The berths are marked "A" to "F" from seaward and the limit of each is indicated by transit beacons on the western bank of the river.

Anchoring is prohibited within the limits of the harbor indicated by the "*Slow*" notice boards, and is also prohibited in an area extending about 1½ miles above the harbor limits.

A number of mooring buoys are anchored on the southern side of the prohibited anchorage area northward of Al Khast Point.

A number of mooring buoys, each of which is numbered, are anchored on the southwestern side of the river. All seagoing vessels, either waiting a berth or loaded, must be moored below the last jetty at Bāvardeh; no vessel bound for Bāvardeh or Ābādān may ascend the river above that point until boarded by a harbormaster.

PILOTS

8B–22 A vessel bound for Ābādān will be boarded outside the harbor limits by a harbormaster who will berth the vessel. See section 1–22. A ball displayed on the harbormaster's boat, stationed off Bāvardeh, indicates he is on his way, while a cone indicates the arriving vessel is to anchor. See section 8B–3.

REGULATIONS

8B–23 The whole harbor area at Ābādān is a danger zone and special regulations are in force therein. Cooking is not permitted on board; shore facilities are provided.

Vessels bound through the area must proceed at slow speed, especially in the vicinity of the floating drydocks (sec. 8B–20).

Vessels carrying dangerous cargo or explosives shall inform the harbormaster on being boarded.

Vessels proceeding in the same direction are not permitted to overtake or pass each other between Mō'āvīyeh Spit and Outer Western Light Buoy (sec. 8B–9).

Vessels in Bāvardeh Reach should not sound their sirens for any reason other than an emergency, as the "fire alarm" at Bāvardeh and Ābādān is given by siren.

Fire on board vessels is indicated by a continuous ringing of the ship's bell together with a succession of long blasts on the ship's whistle.

Only clean ballast can be discharged overboard. It is strictly forbidden to dump refuse over the side.

It is essential that rat guards be installed on all mooring lines when alongside piers.

FACILITIES

8B-24 ABADAN, a town with a population of 300,000 in 1962, has many large buildings with tall conspicuous chimneys at the refineries of the oil company. A framework radio mast is located about 2/3 mile inland.

Berths.—Numerous principal berthing facilities are on the northeastern side of the river at Abadan and the tank farm at Bavardeh. Twelve of these are deepwater T-head or L-head oil loading piers, most of which have a depth of 33 feet alongside, and comprise Jetties No. 3, 9, 11, 12, 12a, 16, 18, 19, 21, 22, 25, and 26. Jetty No. 24, a T-head oil loading pier, has 16 feet alongside. Jetty No. 10, with 18 feet alongside, is used for small vessel bunkering. Jetty No. 4, with 18 feet alongside, is used for the handling of packaged oil products and general cargo.

Cargo Jetty, with a berthing length of 1,480 feet, has 33 feet alongside and is used mainly for the handling of imported equipment and supplies for the town and refinery; a number of 3-ton cranes are on this jetty. Floating cranes of up to 200-ton capacity are available. Other cranes with capacities of 2 to 10 tons and a 25-ton derrick are in the port. Several powerful tugs are available for berthing or other use, and there are numerous lighters.

SUPPLIES.—Provisions are not usually obtainable at Abadan except by special arrangement. Water is available from hydrants at all alongside berths, and water barges can supply vessels in the stream.

All types of petroleum fuel are available for bunkering, and pipelines are at all oil piers; tank barges can supply vessels in the stream.

REPAIRS.—Minor repairs can be accomplished. A drydock with a lifting capacity of 650 tons is available.

COMMUNICATIONS.—There are no rail lines clearing Abadan. An airfield accommodates a number of local and international air lines. The oil company maintains a very efficient telephone and telegraph system linking all its activities.

MEDICAL.—The oil company maintains a large modern hospital staffed with competent personnel.

ABADAN TO KHORRAMSHAHR

8B-25 Above Abadan, the river is divided into two channels by Jazireh-ye Salbukh (Muhalleh), that around the southern end of the island being the principal fairway, the other only for boats.

Al Khast Reach extends from Al Khast Point to about 1/2 mile above Harthah Point, a distance of about 7 1/2 miles. Northward of Al Khast Point the deep channel is on the northern side of the river, but then crosses to the southern side southeastward and southward of Jazireh-ye Salbukh. It then skirts the western side of that island, passing between it and Jazirat al Qit 'ah, the island of Abu Dood, and the banks extending northward from the latter.

An illuminated tide gage is on a 4-pile structure located off the southeastern extremity of Jazirat al Qit' ah.

A LIGHT BUOY is moored on the western side of the channel about 1/4 mile southwestward of Harthah Point, the latter situated on the eastern bank a little more than 1/2 mile northward of Jazireh-ye Salbukh; the buoy marks the eastern edge of the bank extending northward from Abu Dood.

A DANGEROUS WRECK lies about 700 yards southward of Harthah Point.

With a strong outgoing tidal current, an eddy, which must be guarded against, is formed in the southernmost part of the curve southward of Jazireh-ye Salbukh.

KARUN BAR.—This bar extends from about 1/2 mile above Harthah Point to just below the junction of Hafar Channel with Shatt al 'Arab, about 2 1/2 miles farther northward.

The track across the bar varies considerably, especially at the beginning of the flood season in March or April, when very rapid changes in the channel can be expected. Such changes prevent the establishing of permanent range marks, and light buoys, which are moved as necessary, are used to indicate the channel. During times the bar is in an unsettled condition, a surveying vessel is stationed there to check the depths, and when necessary a special pilot boards inbound vessels in the vicinity of Harthah Point to conduct them across the bar.

Depth over the bar (1965) is 23 feet (MLWS); the maximum fresh water draft is 28 feet. Vessels arriving with deeper draft are required to lighten and barges for this purpose can be sent down either from Al Basrah or Khonasmshahr, depending on the vessel's destination. This is a seasonal bar formed by the freshets from Rud-e Karun bringing down silt into Shatt al 'Arab before the latter river is sufficiently in flood to keep the silt moving.

Under normal conditions, high water on this bar occurs about 3 hours after high water on the outer bar; the rise is approximately 6 1/2 feet at springs, except during the flood season, when it may be as much as 9 1/2 feet.

Numerous surveying markers are maintained on each bank of the river in the vicinity of the bar, those bearing even numbers stand on the eastern bank and the odd-numbered on the western bank.

ANCHORING IS PROHIBITED in the vicinity of a submarine pipeline extending across the river close southward of No. 3 survey marker, about 1 3/4 miles northward of Abu Dood; the shore ends of the pipeline are each marked by a notice board.

A LIGHT BUOY is moored on the western side of the channel about 1 mile above Harthah Point.

Two lights are shown off the southeastern extremity of Um al Rasas, the southeastern part of the island of Umm al Khasaif (Dabbah), about 2 1/2 miles above Harthah Point. Dabbah Spit Light Buoy, moored about 1 mile below the mouth of Hafar Channel, marks the extremity of the spit extending southeastward from Um al Rasas (30° 25′ N., 48° 10′ E.).

HAFAR CHANNEL is the outer part of Rud-e Karun between Shatt al 'Arab and Khorramshahr. A statue, with a flagstaff close northeastward of it, stands on the southeastern entrance point of Hafar Channel.

KHORRAMSHAHR

Position:	30° 26′ N., 48° 11′ E.
Depths:	Hafar Channel, 11 to 18 feet.
	Channel off Sentab Jetty, 33 feet.
	Sentab Jetty, 23 to 26 feet (MLWS).
	Other berths, 7 to 8 feet (MLWS).
Tidal rise:	Springs, 7 1/2 feet; neaps, 5 feet.

8B-26 The port of Khorramshahr is an improved river harbor located at the junction of Shatt al 'Arab and Rud-e Karun about 59 miles upriver from the Persian Gulf and 19 miles downstream from Al Basrah; it is essentially a transshipment place. The Iranian Navy maintains a base in the vicinity of the southeastern entrance point of Hafar Channel.

NAVIGATION.—See section 8B-3.

WINDS AND WEATHER.—The northwesterly shamal and the southeasterly kaus are the principal winds which affect the port by their influence on the time and height of the tide.

Climatic conditions have little effect on port operations. From March through September, daytime shade temperatures may reach 120° F.; sun temperatures in July sometimes approach 165° F. In winter, temperatures of 30° F. have been recorded; the mean daily minimum temperature for January is 47° F.

The average annual rainfall is 8.4 inches; December and January are the wettest months. Relative humidity varies from 25 percent in July to 77 percent in January.

TIDES AND TIDAL CURRENTS.—The tidal rise at Khorramshahr is about 7 1/2 feet at springs and 5 feet at neaps. The maximum velocity of the flood current is 1 1/2 knots; the ebb current, 3 knots. The tides vary according to the season; the highest tides occur during May-June and the lowest in October. Both time and height of tide are greatly affected by the prevailing wind. A strong kaus will raise the water level 2 to 3 feet; a strong shamal will retard the time of high water and lower its level, causing the water level to fall below the zero of the tide gage. Winter floods cause a maximum rise of 11 1/2 feet in the water level.

An illuminated tide gage stands on the northeastern side of Um al Rasas (sec. 8B-25) in a position west-northwestward of the entrance of Hafar Channel.

DEPTHS AND DANGERS.—Depths in the harbor area of Khorramshahr range from 22 feet on Karun Bar to 33 feet in the channel off Sentab Jetty and from 16 feet at the entrance of Hafar Channel to approximately 5 feet off Khumba Jetty, a distance of about 3 miles. Winter (Continued on page 289)

floods may cause as much as 11½ feet increase in these depths. The only controlling factor for vessels approaching the port from seaward is Karun Bar.

Harbor.—The harbor area of Khorramshahr comprises that portion of Shaṭṭ al 'Arab between Fīlīyeh Creek, about 1⅓ miles above Sentab Jetty, and Harthah Point. The harbor consists of two sections, the old port on Rūd-e Kārūn and the new port on Shaṭṭ al 'Arab and Fīlīyeh Creek. The old port occupies the northern bank of Rūd-e Kārūn fronting the town and has numerous small piers and wharves for lighters and other small craft. The new port provides the only deepwater berthing facilities. Vessels are limited to a length of 550 feet because of lack of maneuvering space in the river; the limiting draft is 25 feet.

Anchorage.—Anchorage can be taken in midstream off Harthah Point in about 30 feet, mud. Four mooring buoys are anchored off the eastern bank of the river just below the entrance of Hafar Channel. Four mooring buoys are provided along the northeastern side of the river above Sentab Jetty; the channel in this area is wide enough for 3 free-swinging berths.

Vessels whose draft permits can anchor in 15 to 21 feet in Hafar Channel off the town of Khorramshahr, but there is little swinging room. On the southern bank are four sets of anchoring beacons, lettered "A" to "D" in white. The front beacons have a triangle topmark; the rear beacons are surmounted by a St. Andrew's cross. Each anchoring berth, indicated by a set of beacons in range with each other, is 1,000 feet long, 200 feet apart, and marked by transit beacons at both ends. Some mooring buoys are in Hafar Channel.

Anchorage is **prohibited** in the entrance of Hafar Channel, and also in an area about 1 mile inside that channel, because of submarine cables.

Pilots.—Pilotage is compulsory for Shaṭṭ al 'Arab (sec. 8B–3). A special pilot is stationed at Karun Bar to conduct vessels across the bar during flood season when the channel is subject to sudden change. At Khorramshahr, a harbormaster boards and berths all vessels. See section 1–22.

8B–27 Khorramshahr, a town with a population of about 200,000, is the most important maritime center of Iran; industry other than shipping is negligible. The principal imports are iron and steel, machinery, cement, and wheat; chief exports are cotton, minerals, raisins, wood and cork.

The port of Khorramshahr has a total of about 6,500 feet of commercial wharfage with depths of 1 to 26 feet alongside. The principal berthing space is at Sentab Jetty, which has a berthing length of 4,575 feet and depths of 18 to 26 feet alongside.

Fīlīyeh Creek Wharf is a marginal lighter wharf, 1,340 feet long, fronting the southeastern bank of the creek situated about 1⅓ miles northwestward of Sentah Jetty; it has 1 foot alongside at MLWS.

Customs Quay, about ⅝ mile southeastward of Sentab Jetty, is about 330 feet long with 16 feet alongside. Railroad tracks are laid on Sentah Jetty and Fīlīyeh Creek Wharf, and sidings are adjacent to Customs Quay. Fīlīyeh Creek Wharf has three 5-ton cranes and one 100-ton derrick.

At the naval facility on the southern bank of Hafar Channel are seven T-head piers with 10 feet alongside at MLWS; a 5-ton hand-operated crane is on one of the piers.

A 60-ton derrick, two 25-ton cranes, and other smaller cranes are available in the port area. It is reported that a floating crane of 200-ton capacity is available when not in use at Bandar-e Shāhpūr.

Three tugs and a number of lighters are available in the port.

Provisions and supplies are available in limited amounts. Water can be supplied by water barge to vessels alongside or in the stream. Vessels normally proceed to Abādān for fuel, or fuel can be delivered from that port by barge.

The port has no repair facilities except for naval craft; most repairs can be accomplished at Abādān or Al Baṣrah.

An Iranian medical officer will board the vessel at the berth or anchorage and grant pratique for Iran; see section 8B–4 for quarantine regulations for Iraq. Minor injuries and ailments can be treated locally.

Khorramshahr is connected by rail with Ahvāz where it joins the Trans-Irianian System. There are telephone and telegraph facilities in the town; a radio station is located here.

For quarantine regulations, see section 8B–4.

KHORRAMSHAHR TO AL BAṢRAH

8B–28 On the southern side of the main channel between the entrance of Hafar Channel and Al Baṣrah are the islands of Umm al Khasaif, Umm al Libābī, Ar Rumaylah al Kabīrah, and Al Baljānīyah; on the northern side are the islands of Ash Shamshamīya, Jazīrat Umm aṭ Ṭuwaylah, and 'Ujayrawī-yah.

The channel follows the northern bank of the river to the western end of Umm al Khasaif where it passes through Satan's Gap (*30°27′ N., 48°06′ E.*) between Umm al Khasaif and Ash

Shamshamīya. It then skirts the southern sides of Ash Shamshamīya and Jazīrat Umm aṭ Ṭuwaylah until about 2 miles above the western end of 'Ujayrawīyah, whence it follows the southern bank of the river.

A palace is on the northern bank of the river about 3 miles above the entrance of Hafar Channel, and about ¼ mile farther upstream is the mouth of Khaiyin Canal.

White **pillars,** marking the boundary between Iran and Iraq, are located on each side of the mouth of Khaiyin Canal.

An illuminated **tide gage** on a 4-pile structure is on the northern bank of the river about 400 yards westward of the Iraqi boundary pillar.

Satan's Gap is a narrow passage, the channel of which is marked on its northern side by a **light buoy** and on the southern side by a **can buoy.**

The remains of a **wreck** lie sunk in a depth of 28¼ feet near the middle of Satan's Gap and causes a large deflection of the compass when a vessel is passing over it.

When vessels bound in opposite directions sight each other on approaching Satan's Gap, the vessel stemming the current should reduce speed or stop until the other vessel has passed clear.

A 23-foot patch, marked by a **light buoy** close off its western side, is about 300 yards north-northwestward of the western extremity of Al Baljānīyah.

Several **mooring buoys,** for the use of ocean-going vessels, are on the northern side of the channel about 5 to 5½ miles above the western extremity of Al Baljānīyah; the village of Qaryat as Sunqur stands on the southern bank of the river opposite the moorings.

A **light buoy** is moored off the western side of a sunken **wreck** about ¼ mile southward of the Quarantine Hospital on the northwestern extremity of the island of 'Ujayrawīyah.

AL BAṢRAH

Position: 30°30′ N., 47°49′ E.
Depths: Channel, 30 to 50 feet.
Principal berths, 24 to 28 feet.
At moorings, 30 to 36 feet.
Tidal rise: 7¼ feet, MHHW.

8B–29 The river port of Al Baṣrah (Basra), located on the western bank of Shaṭṭ al 'Arab about 70 miles above its mouth, is the single deepwater commercial port of Iraq. It is connected by rail, road, and inland waterway routes with many parts of Iraq, and is the terminal point for most of the country's foreign trade.

Navigation.—See section 8B–3.

Winds and weather.—Strong winds are rare in Al Baṣrah, the average force being 3 knots. The summer months are usually dry and hot with prevailing winds from the north. Southerly winds, which are fairly frequent during April, May, August, and September, usually cause a sharp increase in humidity. From June through mid-August, the average temperature is well over 90° F., and maximums of over 120° have been recorded. During the winter months, from November through April, the climate is damp and raw. Temperatures may occasionally drop below freezing. Rainfall averages 5.2 inches a year, most of which occurs during the winter months in short heavy downpours.

Tides and tidal currents.—Tides in Shaṭṭ al 'Arab are considerably affected by wind conditions and by seasonal variations in the river level.

A strong southeasterly wind will raise the level of the river by 2 or 3 feet and will also accelerate the time of high water. A strong northwesterly wind will cause the level of the river to drop below zero on the tide gage and will retard the time of high water. The mean rise at higher high water on the outer bar is 10.3 feet and at Al Baṣrah is 7.3 feet.

Seasonal variations in the level of the river are small at the outer bar, but at Al Baṣrah they are as much as +2.5 feet in June and −1.5

feet in October. In the river, the highest levels occur in May, June, and July when Shaṭṭ al 'Arab is discharging the combined flood waters of the Tigris and Euphrates Rivers. The lowest levels occur in October and November.

Tidal currents vary considerably throughout Shaṭṭ al 'Arab; at Baṣrah the velocity of the tidal currents varies with the seasons. During the flood season, the outgoing current may attain a rate of 4 knots. During the dry season, the outgoing and ingoing currents vary from 1 to 2 knots. The time of turning of tidal currents does not coincide with the times of high and low water. At Al Baṣrah, the ingoing current begins 3 hours, 23 minutes before the time of high water, and the outgoing current begins about 1 hour, 40 minutes after the time of high water.

Depths and dangers.—The minimum depth in the central part of Shaṭṭ al 'Arab fronting the port of Al Baṣrah is 30 feet, but the average depth is 35 feet to 50 feet. Depths alongside the principal berths range from 24 to 28 feet.

A spit with a depth of 11 feet at its outer end extends about ½ mile southeastward from Jazīrat al Waqf al Muhammadīyah (Coal Island), situated in the middle of the river nearly ½ mile north-northwestward of the last upriver wharf at Al Ma'qil; a black buoy is moored on the spit about 600 yards from the southeastern extremity of the island. A 3-fathom patch lies about 100 yards southeastward of the extremity of the spit.

There are two **tide gages** on the southwestern side of the river at Al Ma'qil.

The limiting draft in the approach to Al Baṣrah is based on the depth on Karun Bar (sec. 8B–25).

8B–30 Harbor.—Al Baṣrah harbor area comprises a 7-mile section of Shaṭṭ al 'Arab and consists of the town of Al 'Ashār, which lies along the river on both sides of Nahr al 'Ashshār (Ashar Creek), and Al Ma'qil, the modern port on Shaṭṭ al 'Arab about 4 miles above the entrance of Nahr al 'Ashshār. The mouth of the latter creek, with the customhouse on its northern side, is situated a little more than 1 mile above the northwestern extremity of the island of 'Ujayrawīyah. The town of Al Baṣrah proper is located about 1½ miles inland on both sides of Nahr al 'Ashshār.

Except for an unused lighter basin at Kibāsī on the eastern bank of Shaṭṭ al 'Arab, the port facilities are all located on the western side of the river and concentrated largely at Al Ma'qil in the upper part, and Al 'Ashār in the lower part of the harbor area. The width of Shaṭṭ al 'Arab in this vicinity ranges from a maximum of 1,500 feet just below Jazīrat al Waqf al Muhammadīyah to a minimum of 800 feet just below Main Wharf at Al Ma'qil. The longest vessel reported to have entered the harbor area and turned around was the 630-foot British cruiser *Norfolk*. The channel width between 30-foot contours varies from 800 feet off Al Ma'qil to 200 feet off Nahr al Jubaylah (Jubailah Creek), about 1½ miles below the principal wharves at Al Ma'qil. The project depth at the latter wharves is maintained by dredging.

The Port Directorate is located about 300 yards behind Berth No. 7 of Main Wharf at Al Ma'qil.

Red aviation obstruction **lights** are shown on three 98-foot radio masts standing about 1¾ miles west-northwestward of the entrance of Nahr al 'Ashshār.

Red aviation obstruction **lights** are shown on a 60-foot water tower located about 1¼ miles south-southwestward of the entrance of Nahr al Jubaylah.

An aeronautical **radiobeacon** (*30°33′ N., 47°48′* E.) transmits at Al Ma'qil.

Anchorage.—Off Al 'Ashār are several mooring berths in charted depths of 5 to 6 fathoms, where vessels secure bow and stern to mooring

buoys. Vessels bound for moorings will be boarded below Nahr al Khawrah (Khora Creek), about 1 mile below Nahr al 'Ashshār, and must anchor to await a harbormaster. When anchoring, all vessels of more than 200 gross tons are required to moor with two bower anchors with 60 fathoms of chain on each; the anchors are laid up and down the river.

Because of submarine cables crossing Shaṭṭ al 'Arab, anchoring is **prohibited** in an area about 1 mile above Nahr al 'Ashshār, the limits of which are indicated by notice boards on each bank of the river.

Pilots.—See section 8B–3. A vessel bound for the principal wharves at Al Ma'qil will be boarded by a harbormaster off Nahr al Jubaylah, about 2 miles above the entrance of Nahr al 'Ashshār. A ball displayed at the signal station, about ½ mile above Nahr al Jubaylah, indicates that a harbormaster is on his way to board the vessel; if a cone is displayed, the vessel should anchor to await his arrival. See section 1–22.

Regulations.—Special regulations are in force at the port of Al Baṣrah, and vessels should obtain a copy of such regulations on arrival.

All vessels, except British naval vessels, shall be considered to be in quarantine until the port health officer has boarded and granted pratique. Mail steamers and oil tankers are inspected on arrival, other vessels between sunrise and sunset only.

Infected or suspected vessels must anchor off the quarantine hospital at the northwestern extremity of the island of 'Ujayrawīyah (sec. 8B–28) for medical inspection.

8B–31 Al Baṣrah, with a population of 159,355 in 1956, has a large terminal area which includes deepwater wharves, covered storage facilities, and railroad yards.

The port has 10 deepwater berths and two lighter berths at Al Ma'qil. The deepwater berths are numbered consecutively from upstream downward.

As a general rule, vessels loading are moored in the stream. Vessels discharging normally do so at the wharves.

Berths Nos. 1 to 10 at Al Ma'qil have a continuous frontage along Grain Wharf and Main Wharf of about 4,600 feet and depths of 24 to 28 feet alongside. They are served by a number of cranes with capacities up to 15 tons. A floating crane of 100-tons capacity is available.

Other downstream berths include No. 12, 13, and 14, the latter equipped with a 60-ton fixed crane.

Berth No. 12, about 3/5 mile above Nahr al Jubaylah, is about 300 feet in length with depths of 15 to 20 feet alongside. Special berths are reserved for the handling of various petroleum products. A grain pier, about 335 yards southeastward of Nahr al Jubaylah, can accommodate vessels up to 500 feet in length with a draft not more than 27 feet.

If possible, a vessel should berth on the ebb current with bow upstream as the flood is frequently weak or absent altogether, in which case casting off with bow downstream may be difficult. Several tugs are available.

Reasonable supplies of fresh vegetables can be obtained during most of the year. Some provisions are available. Good water can be supplied from hydrants at all berths of Main Wharf at Al Ma'qil or delivered by barge anywhere in the harbor area. Boiler water can be taken direct from the river. Vessels requiring fuel oil usually bunker at Abādān, but, by arrangement, they can be supplied in the stream by oil barge. Small craft can obtain liquid fuels at the oil jetties at Muftīyah, about ½ mile below Nahr al Jubaylah.

Al Baṣrah has no facilities for drydocking ocean-going vessels; three marine railways at Al'Ashār, the largest having a lifting capacity of 600 tons, can accommodate small vessels up to 250 feet long. There is a general cargo berth at Al Ashār. The port engineering workshop is about 700 yards below berth No. 10 at Al Ma' qil.

Regular steamer communication is maintained with Bombay and Persian Gulf ports. The railroad in the harbor area connects with Baghdād and the Iranian Railways system. Telephone and telegraph are available. Medical facilities are limited.

An airport close northwestward of Al Ma'qil has regular worldwide service. A radio station will handle public correspondence.

The climate of Al Baṣrah is considerably drier and more healthful than that of the Persian Gulf, and the heat is less oppressive. A hospital will admit seamen.

Deratization can be carried out and Deratization Exemption Certificates can be issued at Al Baṣrah.

AL BAṢRAH TO AL QURNAH

8B–32 Shaṭṭ al 'Arab is navigable as far as Al Qurnah, about 40 miles above Al Baṣrah, by vessels with a draft of 15 feet. The deeper channel is northeastward of Jazīrat al Waqf al Muhammadīyah and North Island, about ¼ mile farther northwestward; the bottom everywhere is mud.

Ḩawr al Hammār (Hammār Lake) discharges through Qarmat Ali Channel into Shaṭṭ