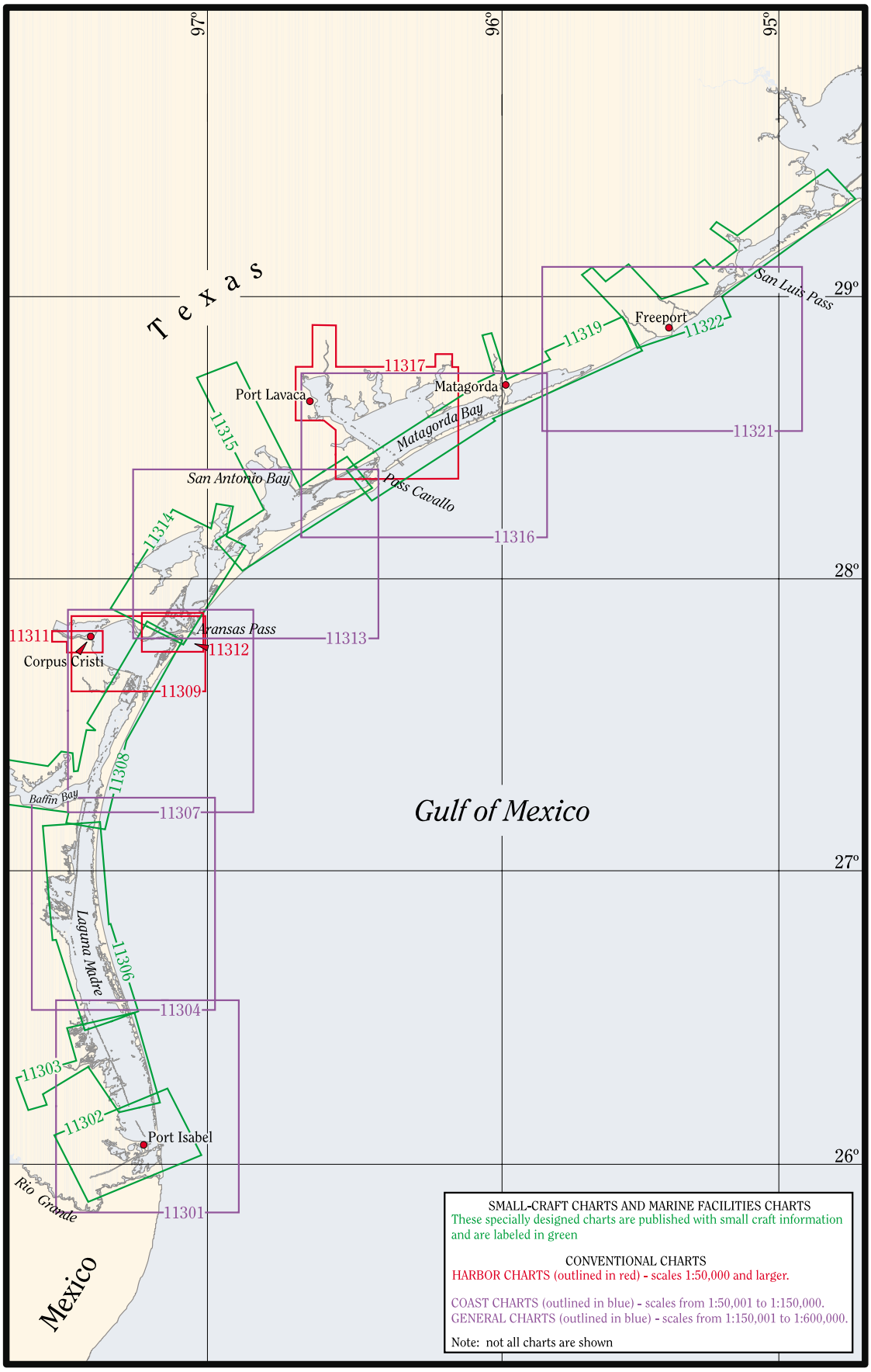
97°
96°
95°
29°
28°
27°
26°
Texas
Mexico
Gulf of Mexico
San Luis Pass
Freeport
Matagorda
Port Lavaca
Matagorda Bay
Pass Cavallo
San Antonio Bay
Aransas Pass
Corpus Cristi
Baffin Bay
Laguna Madre
Port Isabel
Rio Grande
11317
11319
11322
11321
11315
11316
11314
11313
11311
11312
11309
11308
11307
11306
11304
11303
11302
11301
SMALL-CRAFT CHARTS AND MARINE FACILITIES CHARTS
These specially designed charts are published with small craft information and are labeled in green
CONVENTIONAL CHARTS
HARBOR CHARTS (outlined in red) - scales 1:50,000 and larger.
COAST CHARTS (outlined in blue) - scales from 1:50,001 to 1:150,000.
GENERAL CHARTS (outlined in blue) - scales from 1:150,001 to 1:600,000.
Note: not all charts are shown

San Luis Pass to the Rio Grande

(1) This chapter describes the Texas Gulf Coast from San Luis Pass to the Rio Grande, a distance of about 238 miles, and Matagorda, Tres Palacios, Lavaca, Aransas, and Corpus Christi Bays and their tributaries. Also discussed are the deepwater ports of Freeport, Point Comfort, Corpus Christi, and Brownsville, and many of the smaller barge ports.

COLREGS Demarcation Lines

(2) The lines established for this part of the coast are described in **80.845 and 80.850**, chapter 2.

Charts 11300, 11330

(3) From San Luis Pass to the entrance to Matagorda Bay at Pass Cavallo, the coast trends for 80 miles in a general SW by W direction. From Pass Cavallo it curves gently SW for 100 miles to latitude 27°N., where the trend is S; thence it curves gently a little E of S for 58 miles to the mouth of the Rio Grande. Throughout its whole distance the coast encloses a chain of shallow bays or lagoons, some of considerable size. These are separated from the Gulf by long, narrow islands and peninsulas which are generally low and sandy, with few natural distinguishing marks. Some of the bays and lagoons may be entered from the Gulf through dredged passes protected by jetties, and others through small passes partly obscured by bars with little depth on them.

Shipping Safety Fairways and Fairway Anchorages

(4) A system of shipping safety fairways has been established along the Gulf Coast to provide safe lanes for shipping that are free of oil-well structures. Vessels approaching the passes and entrances to ports, or bound along the Gulf Coast between San Luis Pass and Brazos Santiago Pass should proceed in the charted shipping safety fairways. Caution should be exercised when approaching or navigating in these fairways as they are unmarked.

(5) **Fairway Anchorages** have been established off some of the entrances to the ports, which will be generally free oil-well structures. (See **166.100 through 166.200**, chapter 2, for regulations governing the **fairways** and **anchorages.**)

Dangers

(6) The coast has fairly uniform depths with few outlying dangers except in the vicinity of the passes and off the mouth of the Brazos River where shoaling to 18 feet is reported as far as 5 miles offshore; otherwise, vessels of any draft can approach to within 2.5 miles of the shore. Other reported dangers are about 20 miles SW of the entrance to the Brazos River and consist of occasional ridges of soft mud having as little as 4 fathoms over them, with general surrounding depths of 5 to 5½ fathoms. Oil wells may be encountered offshore, especially in the vicinity of Freeport Harbor. Mariners are cautioned to give them a wide berth especially when drilling operations are in progress.

Caution

(7) Hurricane Beulah in September 1967 caused considerable damage in the Gulf Coast area. Mariners are advised to exercise extreme caution as depths may vary from those charted and mentioned in the Coast Pilot. In addition, Hurricane Beulah created many new cuts or passes through the beach. Many of these cuts were reported in the stretch of beach extending N from about 6 miles N of Port Mansfield Channel for a distance of 20 miles. These openings in the beach should not be used for navigation.

Currents

(8) Along the W side of the Gulf of Mexico between Tampico and Corpus Christi is a N flow which in the vicinity of the 100-fathom curve off the mouth of the Rio Grande has an average velocity of nearly 0.5 knot.

(9) Strong currents caused by winds would be expected to set somewhat to the right of the wind direction or, near the coast, in a direction parallel to the shoreline, current velocities of 0.5 to 1 knot being produced by wind velocities of 20 to 40 miles per hour.

(10) However, it has been reported that at times strong currents set W toward the coast and the possibility of being carried inshore by such currents should be guarded against. The grounding of a vessel at a location 9 miles SW of Aransas Pass was reported caused by strong W currents that accompanied winds from the N and NE.

Weather

(11) The climate of the coast from San Luis Pass to the Rio Grande is the product of the combined effects of the humid subtropical region to NE, the semi-arid area to W and SW, and the warm, moist, moderating influences of the Gulf of Mexico. The maritime flow predominates, modifying the humidity and temperatures and decreasing the range of extremes. As a result, the few continental cold fronts reaching this coast are seldom severe. Winters are usually mild, and temperatures rarely drop below freezing in coastal waters. Inland, freezes occur on about 4 to 8 days annually. Spring is characterized by mild, brisk days with frequent showers. There is little change in the day-to-day weather of summer, except for an occasional rain shower or possibly a thunderstorm. Tropical cyclones are a threat from late May into early November. The early fall is an extension of summer, while November is a transition to winter with its greater temperature ranges, stronger winds, and first occurrences of "northers".

(12) While the frequency of N winds increases in winter because of the southerly latitude, southeasterlies remain predominant. However, northerlies and northeasterlies are responsible for most of the windspeeds over 20 knots. At times during the winter, an atmospheric wave will develop along a stationary front off the coast. This is usually associated with the remnants of a polar high. These waves may intensify and head NE. They can develop into strong extratropical storms, known as "Texas Lows". Offshore, gales blow 1 to 2 percent of the time, and seas of 8 feet or more occur 10 to 15 percent of the time from November through March. Seas of 20 feet or more, while not frequent, do occur occasionally during winter.

(13) Another winter navigational hazard is fog, which is reported 2 to 7 percent of the time in open waters from December through April. Visibilities fall below 0.5 mile about 1 to 3 percent of the time. Fog is most likely with winds out of the E through S.

(14) During the warmer months, the Bermuda High increases in strength and generates a persistent southeasterly flow, which produces an almost monotonous summer period interrupted only occasionally by a rain shower or tropical cyclone. Windspeeds drop, on average, during the summer, although annual extremes are likely to occur if there is hurricane activity. On average, an 85-knot wind is likely once in 10 years, while a 105-knot wind blows once every 50 years.

(15) While the hurricane season lasts from late May into early November, tropical cyclones are most likely during August and September along this coast. Since 1900, some 45 tropical cyclones have affected this area; 26 of these have generated hurricane-force winds. A hurricane can be expected about every 3 years, on average. Many of the hurricanes that strike this area are devastating. Between 1875 and 1900, three hurricanes generated tides that nearly destroyed Indianola and Brownsville. Since 1900, seven severe hurricanes have hit this area. From Freeport to Brownsville, they have generated tides of 10 to 17 feet and wind gusts to 175 mph. During the September 1919 hurricane, some 300 to 600 people lost their lives in Corpus Christi as tides rose to 16 feet. In August 1945, the Matagorda Bay area was devastated as 135-mph winds were reported at Port Lavaca, while 153-mph gusts were measured on the anemometer of the Bauer Dredging Co. before the instrument failed. Beulah generated 18-foot tides on Padre Island in September 1967, while Celia in August 1970 delivered 130-mph sustained winds at Aransas Pass.

Charts 11321, 11322, 11330

(16) **Freeport Harbor**, lying 40 miles SW of Galveston entrance, is the harbor for the town of **Freeport.** The area is known locally as Brazosport. The principal industry is the Dow Chemical Corporation which operates two large plants. Other industries are oil, sulfur, and shrimp. Oil and chemical products are the principal exports. The Intracoastal Waterway crosses Old Brazos River about 1 mile above the jettied entrance. At this point, the Dow Barge Canal leads N and the river channel W. Old Brazos River has been dammed about 6 miles above the jettied entrance. Below the dam, the old river channel is now a tidal estuary and the harbor is protected against flood conditions in the river.

Prominent features

(17) The buildings, stacks, and tanks of the large chemical plant are the most prominent features. From seaward, by day, the State Route 322 fixed highway bridge crossing the Intracoastal Waterway is also prominent. By night, the numerous lights and flared gas at the chemical plant can be seen, and the obstruction lights on the radio towers at Freeport are conspicuous. **Freeport Coast Guard Station** is on the N side of the entrance channel.

(18) **Vessels should approach Freeport Harbor through the prescribed Safety Fairways.** (See **166.100 through 166.200**, chapter 2.)

COLREGS Demarcation Lines

(19) The lines established for Freeport Harbor are described in **80.845**, chapter 2.

Channels

(20) The ship channel has been improved by construction of jetties on either side of the entrance. Federal

project depths are 47 feet from deep water in the Gulf to the jetty channel, thence 45 feet to the upper turning basin, in the channel to Barzosport turning basin and in the turning basin, in the channel to the upper turning basin and in the upper turning basin, thence 36 feet in the Brazos Harbor approach channel and turning basin, thence 25 feet to and in Stauffer turning basin. (See Notice to Mariners and latest editions of charts for controlling depths.)

(21) A vertical lift tide gate with a horizontal clearance of 75 feet, a reported vertical clearance of 69 feet, and a depth over the sill of 16 feet, crosses the channel just above Stauffer turning basin. The tide gate is closed during hurricane conditions or when tides are 2.5 feet or more above normal.

(22) Above Stauffer turning basin, a depth of 10 to 12 feet can be carried to the wharves at Freeport.

Anchorages

(23) Vessels should anchor off the entrance to Freeport Harbor in the Freeport Fairway Anchorage. (See **166.100 through 166.200**, chapter 2.)

Dangers

(24) About 6 miles SW of the entrance to Freeport Harbor, Brazos River has generated a shoal extending about 5 miles into the Gulf off the mouth of the river. This area is foul and should be given a wide berth. It is reported that several vessels have stranded in this vicinity and that the depths are considerably less than charted. The bottom is soft mud, indicating that silting from the river has occurred.

(25) Oil drilling structures may be erected in the Gulf near the approach to Freeport Harbor. Mariners should be on the lookout for these structures and give them a wide berth.

Security Zones

(26) The Captain of the Port (COTP) Houston-Galveston has established a Security Zone in Freeport including Brazos Harbor and its junction with Old Brazos River Cut; thence the Dow Barge Canal and its junction with the Intracoastal Waterway. (See **165.30 through 165.33 and 165.814**, chapter 2, for limits and regulations.) Unauthorized vessels/persons are excluded from these areas without express permission of the COTP.

Bridges

(27) No bridges cross the channel from the entrance to the upper turning basin. An overhead power cable with a clearance of 63 feet crosses the harbor just above the Stauffer turning basin. A fixed highway bridge with a clearance of 60 feet crosses the harbor about 0.4 mile above the turning basin; overhead telephone cables at the bridge have clearances of 107 feet. The Missouri-Pacific railroad bridge, with a swing span having a clearance of 11 feet, crosses the harbor about 1 mile above the turning basin. (See **117.1 through 117.59 and 117.975**, chapter 2, for drawbridge regulations.) A highway bridge that has a 36-foot fixed channel span and a clearance of 20 feet is about 0.3 mile above the railroad bridge. An overhead power cable at the bridge has a clearance of 58 feet.

Tides and currents

(28) The diurnal range of tide at Freeport Harbor entrance is 1.8 feet. The current off the entrance generally sets to the W, with a countercurrent near the beach, largely influenced by the direction of the wind. The bar is rough with an E breeze.

(29) Strong cross winds and currents at the jetty entrance make navigation difficult for larger vessels. Difficulty in navigation is experienced with larger vessels at the junction with the Intracoastal Waterway when strong currents are flowing from the canal. Large vessels are difficult to turn in the smaller upper turning basin.

Weather

(30) Weather in this area is only an occasional navigational problem. Winds blow at 28 knots or more about 3 to 4 percent of the time in November and from January through April. Average speeds are 12 to 14 knots during this period. Fog is also a winter problem, and visibilities drop below 0.25 mile on about 3 to 6 days each month from November through April. Thunderstorms are most frequent from April through September, during the afternoon and evening. These thunderstorms are usually air mass types as opposed to the less frequent but more severe thunderstorms that occur with fronts and squall lines from fall through spring. Tropical cyclones, particularly severe hurricanes, are most likely in August and September.

Pilotage, Freeport

(31) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in foreign trade. Pilotage is optional for coastwise vessels that have on board a pilot licensed by the Federal government.

(32) Freeport and all ports in Brazoria County are served by Brazos Pilots Association, P.O. Box 1076, Freeport, Texas 77542; telephone 409-233-1120 (Answered 24 hours); FAX 409-233-7071. Brazos Pilots Association station address is: P.O. Box 1076, 2502 Deep Sea Drive, Freeport, Texas 77542.

(33) Vessels are taken in day or night. Pilots board vessels about 1 mile off of Freeport Entrance Lighted Whistle Buoy FP (28°52'36"N., 95°14'06"W.). The pilot

boat is 42 feet long, with black hull and white superstructure and the name FREEPORT PILOT in white letters on both sides of the hull and the word PILOT on the superstructure. Standard day and night pilot signals are shown. The pilot station monitors VHF-FM channels 14 and 16 between 0800 to 1700 weekdays. The pilot boat monitors VHF-FM channel 16 and uses channel 14 as a working frequency.

(34) Pilot boarding speed should be 6 to 8 knots. The height of the ladder should be 2.5 meters above water level. Vessels over 750 feet LOA or vessels having a beam in excess of 107 feet, and vessels of 700 feet LOA and over with drafts in excess of 36½ feet shall enter the harbor only during daylight hours. Other restrictions apply to specific docks and some movements will be on a per job basis; check with Pilot Station.

(35) Pilots can be obtained from the Brazos Pilots Association by the above telephone or FAX number or by prior arrangement through ships' agents; a minimum of 2-hour notice of time of arrival is requested.

Towage

(36) Tugs up to 4,200 hp are available at Freeport.

Quarantine, customs, immigration, and agricultural quarantine

(37) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(38) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.) Freeport has a hospital.

(39) Freeport is a **customs port of entry.**

Harbor regulations

(40) The Navigation and Canal Commissioners of the Brazos River Harbor Navigation District have jurisdiction and control of the navigable waters of the district. The district includes that portion of Brazoria County W of the W bank of Chocolate Bayou. A **speed limit** of 8 m.p.h. for all vessels proceeding in the channels and 5 m.p.h. while passing the wharf, dock, or moored craft is enforced. The general manager acts as Port Director. The Terminal Superintendent assigns berths on application for the facilities operated by the Brazos River Harbor Navigation District.

Wharves

(41) Freeport has more than 75 wharves and piers. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 26, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.) The alongside depths are reported; for information on the latest depths contact the operator. Almost all the piers and wharves have highway, railway, water, and shore power connections. General cargo at the port is usually handled by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility. A 500-ton floating stiff-leg derrick is available for heavy lifts by special arrangements.

(42) **Dow Chemical U.S.A., Texas Operations, A-14 Dock** (28°56'49"N., 95°18'21"W.): 122-foot E and W faces; 870 feet of berthing space; 38 feet alongside; deck height, 25 feet; pipelines extend to storage tanks with 41.675-million-gallon capacity; receipt of petrochemicals; owned and operated by Dow Chemical U.S.A.

(43) **Dow Chemical U.S.A., Texas Operations, A-13 Dock** (28°56'49"N., 95°18'25"W.): 100-foot W face, 260 feet of berthing space, 24 feet alongside; 100-foot E face, 340 feet of berthing space, 16 feet alongside; deck height, 16 feet; pipelines extend to storage tanks with 41.675-million gallon capacity; receipt and shipment of miscellaneous chemicals and petrochemicals by vessel and barge; owned and operated by Dow Chemical U.S.A.

(44) **Dow Chemical U.S.A., Texas Operations, A-8 Dock** (28°56'41"N., 95°18'28"W.): 61-foot face; 410 feet of berthing space; 36 feet alongside; deck height, 16 feet; receipt and shipment of chemicals and petrochemicals; owned and operated by Dow Chemical U.S.A.

(45) **Dow Chemical U.S.A., Texas Operations, A-5 Dock** (28°56'34"N., 95°18'46"W.): 260-foot face; 270 feet of berthing space; 34 feet alongside; deck height, 16 feet; mooring vessels and barges; owned and operated by Dow Chemical U.S.A.

(46) **Dow Chemical U.S.A., Texas Operations, A-2 Dock** (28°56'17"N., 95°19'19"W.): 471-foot face; 471 feet of berthing space; 32 feet alongside; deck heights, wharf 14.5 feet, bulkhead 17.5 feet; moorings barges; owned and operated by Dow Chemical U.S.A.

(47) **Seaway Crude Pipeline Co., Freeport Terminal, Berths Nos. 2 and 3** (28°56'21"N., 95°19'21"W.): 70-foot face; 760 feet of berthing space with dolphins; 42 feet alongside; deck height, 15 feet; pipelines extend to storage tanks with 250-million-barrel capacity; receipt of crude oil; owned by Brazos River Harbor Navigation District; and operated by TEPPCO Crude Pipeline, LP and Dyn McDermott Co.

(48) **Phillips 66 Co., Freeport Terminal, Ship Dock No. 2** (28°56'02"N., 95°19'49"W.): 88-foot face; 950 feet of berthing space with dolphins; 40 feet alongside; deck height, 16 feet; receipt and shipment crude oil and petroleum products; owned and operated by Phillips 66 Co.

(49) **Phillips 66 Co., Freeport Terminal, Ship Dock No. 3** (28°56'08"N., 95°19'57"W.): 88-foot face; 760 feet of berthing space with dolphins; 40 feet alongside; deck height, 16 feet; receipt and shipment crude oil and

petroleum products; owned and operated by Phillips 66 Co.

(50) **Brazos Harbor, Dock No. 5** (28°56'22"N., 95°20'32"W.): 752-foot face; 752 feet of berthing space; 36 feet alongside; deck height, 16 feet; 30,000 square feet open storage; receipt and shipment of general cargo in foreign and domestic trade; owned and operated by Brazos River Harbor Navigation District.

(51) **Brazos Harbor, Wharves Nos. 1 and 2** (28°56'23"N., 95°20'23"W.): 1,250-foot face; 1,250 feet of berthing space; 36 feet alongside; deck height, 16 feet; 145,000 square feet covered storage; receipt and shipment of general cargo and miscellaneous liquid and dry bulk commodities; owned and operated by Brazos River Harbor Navigation District.

(52) **Brazos Harbor, Wharf No. 3** (28°56'19"N., 95°20'13"W.): 640-foot face; 640 feet of berthing space; 36 feet alongside; deck height, 16 feet; 162,000 square feet covered storage; 25,000 square feet open storage; receipt and shipment of conventional and containerized general cargo in foreign and domestic trades; shipment of bulk and bagged rice; owned and operated by Brazos River Harbor Navigation District.

Supplies

(53) Gasoline, diesel fuel, marine bunkers, water, ice, and most marine supplies are available at Freeport.

Repairs

(54) The Port of Freeport has no facilities for making major repairs or for drydocking deep-draft vessels; the nearest such facilities are at Galveston. Freeport has several shipyards. The largest marine railway, at a yard on the Intracoastal Waterway 1.7 miles NE of Freeport Harbor Channel, can haul out vessels to 250 feet. A yard on the W side of the harbor 0.1 mile below Stauffer turning basin has a 220-foot marine railway. A yard on the N side of the Intracoastal Waterway at the junction with Freeport Harbor Channel has a 3,000-ton floating drydock with a length of 200 feet, width of 90 feet, and depth of 10 feet. The yard has a 165-ton mobile lift. All of the yards can make complete hull and engine repairs, and all have gasfreeing and barge cleaning facilities. A salvage company at Freeport has a 500-ton floating A-frame lift and salvage equipment.

Small-craft facilities

(55) Small craft can find excellent protection in the harbor at Freeport. Numerous small piers and wharves are along the waterfront. There are numerous small-craft facilities along the Intracoastal Waterway between the Freeport Harbor Channel and the entrance to Oyster Creek. Marine lifts to 70 tons are available for complete repairs and storage. Gasoline, diesel fuel, open and covered storage, launching ramps, ice, provisions, and marine supplies are available.

Communications

(56) The Missouri-Pacific Railroad serves the Freeport area. Numerous trucklines operate from the port, and buslines offer frequent service to Houston and other points. An airline has scheduled air service to Houston. Good paved roads and highways radiate to all points.

Charts 11321, 11322

(57) **Brazos River** enters the Gulf through the diversion channel about 6 miles SW of Freeport Harbor entrance. Because of logs, shoaling, and general foul ground, the mouth of the river is not used as an entrance. The Intracoastal Waterway crosses the river 1.6 miles above the mouth. A depth of 8 feet at ordinary river stage is available to **Bolivar Landing,** 36 miles upriver from the Intracoastal Waterway. Most of the traffic on the river consists of offshore oil supply vessels enroute to or from their base on the E side of the river, about 0.1 mile below the State Route 36 highway bridge, and chemical barges enroute to and from the wharf of a chemical company, about 2.7 miles above this highway bridge.

(58) Overhead power cables having a minimum clearance of 42 feet cross Brazos River between the Intracoastal Waterway and Brazoria. State Route 36 fixed highway bridge, 3.1 miles above the waterway, has a clearance of 50 feet. The FM Highway 2004 fixed bridge, 14.7 miles above the waterway, has a clearance of 37 feet. A railroad bridge and a highway bridge at **Brazoria,** and a highway bridge at **East Columbia,** cross the river about 20 miles and 26 miles, respectively, above the waterway; minimum clearance of the fixed channel spans is 33 feet at low-river stages and 5½ at high-river stages. An overhead power cable crosses the river about 0.8 mile above the highway bridge at Brazoria; clearance is not known.

(59) **San Bernard River** flows into the Gulf 3.5 miles SW from the mouth of Brazos River. San Bernard River is obstructed at the mouth by a shifting sandbar over which the channel depths vary from 3 to 5 feet. From the Intracoastal Waterway, 0.8 mile above the mouth, the channel has been dredged to a point near the West Columbia highway bridge 22 miles above the Intracoastal Waterway. In February 2004, the controlling depth was 3.5 feet (8.8 feet at midchannel) to about 3.75 miles above the mouth; thence in 1994, the midchannel controlling depth was 9.0 feet to the West Columbia highway bridge.

(60) Some critical reaches in the river are caused by narrow widths or sharp bends. Complaints have been

made that tows navigating the river have damaged wharves and the vessels moored to them; operators are advised to reduce speed to avoid wave-action damage. When towing barges in tandem, particular care must be taken to prevent any part of the tow striking the banks, boats, or structures along the banks.

(61) There is a launch ramp and restaurant about 3.5 miles above the junction of the San Bernard River, thence, there is a launch ramp about 8 miles above the junction near Churchill.

(62) Between the waterway and the upstream limits of the improvement, San Bernard River is crossed by three fixed highway bridges with least clearance of 36 feet horizontal and 13 feet vertical and by a railroad swing bridge with a clearance of 19 feet. The swing bridge is equipped with radiotelephone at 409-548-3268. The bridgetender monitors VHF-FM channel 10; call sign KI-2524. (See **117.1 through 117.59 and 117.984**, chapter 2, for drawbridge regulations.) Least clearance of overhead cables is 38 feet.

(63) Cedar Lakes, East Matagorda Bay, Caney Creek, Live Oak Bayou, Old Gulf, Colorado River, and Matagorda are described in chapter 12.

Charts 11316, 11317, 11319

(64) **Matagorda Bay** is a large body of water separated from the Gulf by **Matagorda Peninsula.** Depths in the bay range from 5 to 13 feet, averaging 10 to 12 feet over the greater part. Considerable oil development and fishing are carried on in the bay and its main tributaries Tres Palacios and Lavaca Bays.

(65) **Vessels should approach Matagorda Bay through the prescribed Safety Fairways.** (See **166.100 through 166.200**, chapter 2.)

COLREGS Demarcation Lines

(66) The lines established for Matagorda Bay are described in **80.850**, chapter 2.

(67) **Matagorda Ship Channel** is a 22-mile-long deep-water channel from the Gulf to and through a land cut in Matagorda Peninsula thence through Matagorda and Lavaca Bays to a public terminal at Point Comfort. The entrance to the land cut is protected by jetties. The channel is well marked. The Federal project provides for a depth of 38 feet through the Sea Bar Channel and Jetty Channel, thence 36 feet through the land cut and Matagorda and Lavaca Bays to a turning basin of the same depth at Point Comfort. Caution should be used when transiting near the channel limits due to abandoned structures immediately outside the channel limits that may or may not be visible above the waterline. (See Notice to Mariners and latest editions of charts for controlling depths.)

(68) **Matagorda Ship Channel Approach Lighted Whistle Buoy MSC** (28°12'00"N., 96°05'12"W.), about 18 miles SE of the jetties, marks the entrance to the Safety Fairway.

(69) **Matagorda Ship Channel Entrance Lighted Whistle Buoy MB,** 2.5 miles SE of the jetties, marks the channel approach.

(70) **Matagorda Ship Channel Entrance Light** (28°25'18"N., 96°19'06"W.), 57 feet above the water, is shown from a skeleton tower on a concrete block with a red and white diamond-shaped daymark on the E jetty at the entrance to Matagorda Bay.

(71) A lighted **316°38'** range and lighted buoys mark the entrance channel through the jetties and land cut, and lighted ranges, lights, and buoys mark the bay channel.

Anchorages

(72) **Vessels should anchor off the bar in the Matagorda Fairway** Anchorages on either side of the safety fairways. (See **166.100 through 166.200**, chapter 2.) With N winds or smooth sea, fair anchorage is available in 4 to 12 fathoms.

(73) Good anchorage for small craft may be found on the W side of Pass Cavallo in **Saluria Bayou** in 7 to 10 feet.

(74) The usual storm anchorages for small boats in Matagorda Bay area are: the Harbor of Refuge S of Port Lavaca, in depths of about 12 feet; **Chocolate Bay,** with depths of 3 feet; Lavaca Bay, on the E side to the N of the causeway, with depths of 4 to 5 feet; **Lavaca River** with depths of about 5 feet across the bar; Carancahua Bay with depths of 3 feet across the bar; and Tres Palacios Bay, off Palacios, with depths of 4 to 5 feet. Small craft should not anchor in Matagorda Bay in the vicinity of the land cut through Matagorda Peninsula as strong currents and turbulent water are reported in this area.

(75) **Pass Cavallo,** 108 miles SW of Galveston Entrance, an entrance to Matagorda Bay from the Gulf, is about 0.35 mile wide between **Matagorda Island** and Matagorda Peninsula. The pass is obstructed by a bar that is subject to frequent changes in location and depths. The depths vary from 3 to 8 feet. With a sea or swell running outside, there is virtually a continuous line of breakers across the bar. The pass is subject to swift currents and is not considered navigable. It is used only by a few local vessels that draw less than 5 feet and have thorough local knowledge.

(76) Inside the bar, the channel extends along the E shore to Matagorda Island, passing about 0.5 mile E of Saluria and Big Bayous, and thence off the Port O'Connor jetties into the open waters of the bay.

Unmarked shoals lie along the E side of the pass. There is a passage with a depth of 9 feet or more through these shoals in a NE direction, from off Saluria Bayou. This channel is particularly subject to change.

Tides and currents

(77) The diurnal range of tide in Pass Cavallo is 1.4 feet, 0.5 foot at Port O'Connor, and 0.7 foot at Port Lavaca. The level of the water surface is largely dependent on the winds, and during strong northers may be depressed 2 feet or more. The tidal current in Pass Cavallo is believed to attain a velocity of 2 knots with currents of 5 knots reported. It is reported to be very strong in the land cut through Matagorda Peninsula, especially on the runoff of the ebb after strong S winds. The current in Matagorda Ship Channel attains a reported velocity of about 3 knots and up to 7 knots under severe conditions. Daily predictions of the tidal current may be found in the Tidal Current Tables, Atlantic Coast.

Pilotage, Matagorda Bay

(78) Pilots are available for Matagorda Bay day or night. Ships having a beam greater than 102 feet or are more than 725 feet in length will only be piloted during daylight hours. The pilots board vessels approximately 2 miles seaward of Matagorda Ship Channel Entrance Lighted Whistle Buoy MB (28°23'00"N., 96°17'00"W.) from the MENA, a 45-foot vessel with a black hull and white superstructure with the word PILOT on both sides of the hull and across the front of the deckhouse. The pilot boat is equipped with VHF-FM channels 16 and 12 and monitors channel 16 two hours prior to a vessel's ETA. Pilots can be obtained 24 hours a day by telephone (361-552-9988) or through the ships' agents or the Port Lavaca/Point Comfort Control Station on VHF-FM channel 16 or 7; 24-hour and 4-hour notices of time of arrival are requested.

(79) **Halfmoon Reef** extends about 3 miles off **Palacios Point,** the SW point of the tongue of land extending between the E and N portions of Matagorda Bay. This is a shell reef 100 to 500 yards wide, reported covered about 4 fee at low tide over the greater portion of its length. The reef is marked at its S end by a light.

(80) **Tres Palacios Bay,** about 6 miles N of Palacios Point, is a shallow bay on the NE side at the center of Matagorda Bay. A Federal project provides for a channel 12 feet deep leading from the Intracoastal Waterway through Matagorda Bay and Tres Palacios Bay to three turning basins at the head of the harbor at the town of Palacios. (See Notice to Mariners and latest editions of charts for controlling depths.) Buoys, lights, and daybeacons mark the channel; two breakwaters protect the harbor entrance.

(81) **Palacios,** a fishing and farming community, is on the W side of Tres Palacios Bay. Two elevated water tanks in the town show prominently from the bay.

(82) Palacios has a seafood processing and freezer storage facility, a cotton gin, and a concrete plant. The town has a hospital. A busline, and a motor freight line serve the town. State Route 35, the main coastal highway passes through the town.

(83) The three turning basins at the head of the harbor at Palacios are operated by the Board of Directors of Navigation District No. 1 of Matagorda County through a **harbormaster.** Berthing facilities are available.

(84) A boat basin for small pleasure craft is on the E side of town. The larger of two shipyards at the head of turning basin number one has two marine lifts that can handle vessels up to 100 feet and 150 tons for general repairs. Gasoline, diesel fuel, water, ice, groceries, propane, and marine supplies are available.

(85) A fish haven, known as Gadwall Reef, is off the W side of a maintained jetty about 3.5 miles W of Tres Palacios. The fish haven is bare at low water.

(86) **Carancahua Bay,** 6 miles W of Tres Palacios Bay, is a shallow, unimportant body of water frequented only by small pleasure boats and oil-drilling equipment. In 1982, it was reported that there were depths of 3 to 6 feet inside the bay. It was further reported that numerous wellheads, oyster shell reefs, platforms, and other obstructions, some marked by private lights, occupied the bay making navigation hazardous. Numerous beach houses are on both sides of the bay. State Route 35 highway bridge crossing the bay 7 miles above the entrance has a fixed channel span with a width of 18 feet and a clearance of 13 feet.

(87) **Keller Bay,** an arm on the E shore of Lavaca Bay, is the site of oil exploration and development. Shell is barged through a privately maintained channel to **Olivia,** a small farming community on the E side of the bay. Barges drawing 6 feet are brought in to Olivia.

(88) **Garcitas Creek,** empties into the head of Lavaca Bay. Shell barges drawing 6 feet are brought in to the town of **La Salle**. The creek is used frequently by fishermen and recreational boaters.

(89) **Lavaca Bay,** an arm of Matagorda Bay at its NW corner, has a general depth of 5 to 7 feet with several reefs near the head of the bay.

(90) A Federal project in Lavaca Bay provides for a 12-foot channel leading NW from Matagorda Ship Channel off **Gallinipper Point** for about 3.5 miles to a turning basin at the mouth of **Lynn Bayou** at Port Lavaca; another 12-foot channel about 1.6 miles above Gallinipper Point leading SW from Port Lavaca Channel for about 1.4 miles to N-S and E-W basins at the **Harbor of Refuge** S of Port Lavaca; and a 6-foot channel about 2.3 miles above the entrance to Port Lavaca

Channel which leads N through Lavaca Bay to the entrance to **Lavaca River**, and through the river to **Red Bluff,** on the **Navidad River**, a distance of about 17.5 miles. (See Notice to Mariners and latest editions of charts for controlling depths.)

(91) Port Lavaca Channel is marked by lights, buoys, and daybeacons. Harbor of Refuge Channel is marked by daybeacons and a light. Lavaca Bay Channel leads N to the mouth of Lavaca River and is marked by daybeacons. The mouth of Lavaca River is marked by daybeacon.

(92) State Route 35 highway causeway, crossing Lavaca Bay from **Noble Point** to Point Comfort, has a fixed span over the navigation channel with a clearance of 43 feet. About 0.5 mile of the former highway bridge adjacent to the SW end of the causeway has been retained as a fishing pier. An overhead power cable crossing Lavaca Bay about 500 yards NW of the causeway has a clearance of 69 feet over the channel. State Route 616 highway bridge has a fixed span with a clearance of 15 feet and the Missouri-Pacific railroad bridge has a swing span with a clearance of 12 feet which cross Lavaca River near its junction with the Navidad River in the vicinity of the towns of **Vanderbilt** and **Lolita.** (See **117.1 through 117.59 and 117.969**, chapter 2, for drawbridge regulations.) Several overhead power cables cross the Lavaca River between its mouth and the bridges near its junction with the Navidad River; least clearance is 59 feet.

(93) **Point Comfort,** on the E side of Lavaca Bay, is the site of the ship and barge wharves of a large aluminum company, the Calhoun County Navigation District's general cargo facilities, and an electric powerplant.

(94) About 0.5 mile SW of Point Comfort, a privately marked and dredged channel leads N from Matagorda Ship Channel to the private facilities on the W side of the point. In 1996, the reported controlling depth was 38 feet for about 0.8 mile above the intersection with Matagorda Ship Channel, thence in 1992, the controlling depth was 26 feet for about another 0.2 mile to a basin, thence 8 feet to the head of the channel; thence in January 2001, 12 feet was reported in the basin at the head of the channel.

Quarantine, customs, immigration, and agricultural quarantine

(95) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(96) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(97) Port Lavaca-Point Comfort is a **customs port of entry.**

Towage

(98) A 2,000 hp tug and two 3,000 hp tugs are available.

Wharves

(99) **Port of Port Lavaca/Point Comfort, Liquid Cargo Ship Terminal Berths** (28°38'37"N., 96°33'05"W.): 165-foot S and N face; 1,100 feet of berthing space with dolphins; 36 feet alongside S face; deck height, 20 feet; receipt of ammonia and naphtha; shipment of adiponitrile, caustic soda, methyl-ethyl glycol, and ethylene dichloride; owned by Calhoun County Navigation District and operated by Formosa Plastics Corp. USA and BP Chemicals Corp.

(100) **Alcoa, Point Comfort Operations, Bauxite Pier** (28°38'43"N., 96°33'48"W.): 60 to 80-foot face; 875-foot sides, 875-foot sides, 875 feet of berthing space, 36 feet alongside; deck height, 20 feet; 50 acres open storage; two traveling gantry canes served by belt-conveyor system with 2,000-ton per hour unloading rate; receipt of bauxite, fluorspar, and occasionally limestone; owned and operated by Alcoa, Inc.

(101) **Alcoa, Point Comfort Operations, Bulk Loading Dock** (28°39'07"N., 96°33'47"W.): 50-foot platform; 500 feet of berthing space; 36 feet alongside; deck height, 18 feet; loading tower and spout served by belt-conveyor system with 400-ton per hour loading rate; shipment of alumina; owned and operated by Alcoa, Inc.

Supplies

(102) Some marine supplies and provisions are available at Port Lavaca. Bunker C fuel oil can be obtained by barge from Corpus Christi or Houston on 2 days advance notice. Light diesel oil is available by tank truck.

(103) **Port Lavaca** is a city on the W shore of Lavaca Bay in a fishing, farming, and industrial area. The municipal harbor (28°37.3'N., 96°37.5'W.) is under the jurisdiction of the Port Lavaca Port Commission. The local regulations are administered by the city manager. There are several boat basins along the waterfront S of the municipal harbor; depths of 6 to 14 feet are reported in the basins. These facilities are maintained by the port commission, and local fishing, dredging, and oil companies. Diesel fuel, water, marine supplies, provisions, and ice are available. Engine and above-the-waterline repairs can be made. A hospital is in the city.

(104) The Harbor of Refuge is S of Port Lavaca. The marginal barge wharves of a chemical company and a fertilizer company are along the N side of the harbor.

(105) Port Lavaca-Point Comfort is a **customs port of entry.**

(106) **Port O'Connor** is a small settlement at the SW end of Matagorda Bay N of Pass Cavallo.

(107) The town is approached via the Intracoastal Waterway route between two jetties which extend into the bay and are marked by lights at their outer ends. The channel through the jetties favors the S jetty. Mariners are cautioned to keep in the channel as the entire width between the jetties is not dredged and shoal areas with rocky bottom lie outside the channel. Vessels should make their entrance approach well E of the jetties and through the buoyed Intracoastal Waterway. Along the Matagorda Bay shore, 0.4 mile NW of the jetties, is a fishing pier. Numerous docks and Numerous docks and slips for shrimp boats and pleasure craft are along the N side of the waterway at Port O'Connor. Gasoline, diesel fuel, water, ice, and provisions are available. **Port O'Connor Coast Guard Station** is on the N bank of the waterway about 1 mile W of the town. An improved highway leads to Port Lavaca and Seadrift.

Charts 11313, 11319, 11315

(108) **Espiritu Santo** and San Antonio, Mesquite, and Aransas Bays are a series of shallow bodies of water extending SW along the coast for a distance of 50 miles from Pass Cavallo to Aransas Pass, separated from the Gulf by Matagorda Island and **San Jose Island.** The bays are filled with islands, reefs, and shoals, and are of little commercial importance except as a link in the Intracoastal Waterway.

(109) **Espiritu Santo Bay** has depths up to 8 feet. In the E part of the bay, **Ferry Channel** extends from the waterway S to a fish and wildlife reserve at the former Matagorda Air Force Range on Matagorda Island. The channel is marked by a light and daybeacons. In June 1984, the reported controlling depth was 8 feet. The bay is entered from Matagorda Bay through the Intracoastal Waterway and the channel.

(110) **San Antonio Bay** has depths up to 5 and 6 feet. It is separated from Espiritu Santo Bay by the **First Chain of Islands,** through which are South Pass and Steamboat Pass. **South Pass,** an old unmarked dredged cut, has a depth of about 4 feet. The channel extends between two islands and close to the privately maintained markers on the N side of the S island. **Steamboat Pass,** 1.5 miles to the N, has less than 3 feet of water.

(111) The Intracoastal Waterway crosses San Antonio Bay from the vicinity of **Grass Island** to **False Live Oak Point.** The spoil banks on both sides of the channel have several openings. Small islets are in the spoil bank area.

(112) Numerous reefs, some of which bare at low water, are in and about the bay, particularly in the upper end. They make navigation difficult, and local information is essential.

(113) N of **Swan Point** and **McDowell Point** the delta of Guadalupe River divides the head of San Antonio Bay into **Guadalupe Bay** and **Mission Lake** on the E and **Hynes Bay** on the W. **Goff Bayou** and **Schwing Bayou** flow into Mission Lake.

(114) **Guadalupe River** empties into the N end of San Antonio Bay. A depth of about 2 feet can be carried from the bay into the N fork of the river. Snags and driftwood make navigation almost impossible, but there are navigable depths as far as the San Antonio River, about 10 miles above the mouth.

(115) **Victoria Barge Canal** is a dredged channel that leads from the Intracoastal Waterway NW along the E side of San Antonio Bay, thence through landcuts along the E side of Guadalupe Bay, Mission Lake, and Green Lake, thence in a dredged cut to **Pickering Basin (Port of Victoria)** about 30 miles above the Intracoastal Waterway and about 7 miles below the city of **Victoria.** In December 2001-August 2003, the controlling depth was 6.5 feet (7.1 feet at midchannel) from the Intracoastal Waterway to Pickering Basin with 9.0 feet in the basin. A 330-foot public dock with 9 feet alongside is in the basin; water and electricity are available.

(116) State Route 35 fixed highway bridge with a clearance of 50 feet, the Missouri-Pacific railroad lift bridge with a clearance of 22 feet down and 50 feet up, and a fixed highway bridge with a clearance of 49 feet, cross the channel 15 miles, 25 miles, and 27.6 miles, respectively, above the Intracoastal Waterway. (See **117.1 through 117.59**, chapter 2, for drawbridge regulations.) Least clearance of overhead power and telephone cables crossing the channel is 53 feet.

(117) About 5.3 miles above the Intracoastal Waterway, a dredged channel leads E from Victoria Barge Canal to a turning basin at the town of **Seadrift**. In December 2001, the controlling depth was 5.3 feet (5.8 feet at midchannel) in the channel with 7.7 to 9.0 feet available in the basin..

(118) The facilities in the basin are under the control of the Westside Calhoun County Navigation District. Mooring dolphins are along the N side of the basin, and a wharf is on the S side of the basin. The facilities are used to unload shell from barges, to load and unload barge shipments of general cargo, and for the fueling of vessels. In addition, there are service wharves and seafood processing plants in the basin. Gasoline, diesel fuel, water, ice, and some provisions are available.

(119) **Seadrift,** a small fishing and farming community, has highway connections.

(120) A private channel about 0.3 mile S of the channel to Seadrift, privately marked by stakes, leads to a resort housing development at Swan Point. In July 1999, a

depth of 3.8 feet was reported in the channel with 3.0 feet in the harbor.

(121) About 12 miles above the Intracoastal Waterway, a privately dredged channel, with a reported controlling depth of 10 feet in August 1982, leads to a basin at a large chemical plant at Long Mott.

(122) **Long Mott** is a small town on Mission Lake that has railroad and highway connections.

(123) **Mesquite Bay** lies between **Ayres Reef** and **Third Chain of Islands,** and is of no commercial importance except for fish and oysters. The buildings of a ranch are on Matagorda Island opposite the SE corner of the bay. A small water tank about 35 feet high shows prominently from the Gulf.

(124) A marked channel leads from the Intracoastal Waterway at the E end of Aransas Bay across Carlos Bay into Mesquite Bay.

(125) **Cedar Bayou**, separating Matagorda Island from San Jose Island, leads in a S direction from the SE corner of Mesquite Bay toward the Gulf. A bar has closed the outlet to the Gulf.

Charts 11313, 11314

(126) **Aransas Bay**, 15 miles long and 3 to 4 miles wide, is used extensively as a shrimping ground. The Intracoastal Waterway crosses the bay, and opposite Rockport turns W to and through Redfish Bay; at the turn, the channel of the Intracoastal Waterway Alternate Route continues to Lydia Ann Channel. A privately maintained channel near Blind Pass, at the SE end of the bay, is marked by lights and buoys. The periodic tide throughout the bay has a diurnal range less than 0.5 foot, the variation in water level depends principally on the wind. Many piles along the S side of the Intracoastal Waterway do not show at high water; they are very dangerous, and caution should be used near this edge of the waterway.

(127) **St. Charles Bay,** an arm of Aransas Bay extending N, is the site of considerable hunting and sport fishing, but commercial fishing is prohibited. There are numerous homes in the vicinity of Hail Point on the W side of the bay near the entrance. A depth of 2 to 3 feet is found through the entrance with somewhat greater depths and numerous reefs inside. The bay is used by small craft as a refuge during tropical storms.

(128) A privately maintained channel, with a reported controlling depth of 2 feet, leads from the W end of Goose Island to **Neptune Harbor** and **Goose Island State Park**. A launching ramp is at the State park. A fixed highway bridge between the mainland and Goose Island, is reported to have a 15-foot span and a clearance of 2 feet.

(129) There is a yacht basin near the end of the causeway at **Lamar**. A privately maintained channel leads to the basin. In April 1990, numerous shoals were reported to exist outside the basin entrance. Water, ice, and a launching ramp are available in the basin.

(130) **Copano Bay,** a NW extension of Aransas Bay, is used principally as a center for hunting and sport fishing. No commercial fishing, except oystering, is permitted. Extreme caution is required to navigate the bay because of the numerous unmarked reefs. Depths up to 8 feet are found in the bay with 6 to 7 feet in the narrow sloughs or channels between the reefs. Numerous oil wells and pipelines fill the bay.

(131) Good anchorage for small craft is available in the bight S of **Redfish Point,** inside the bay on the S side at the entrance. Storm anchorages for drafts up to 3 or 4 feet may be had in the S end of the bay in the small bight at the NE corner of **Port Bay.** Slightly greater draft can find good protection in the extreme NE corner of Copano Bay in the bight off Redfish Point. Soft mud bottoms are at these anchorages.

(132) State Route 35 highway causeway across the entrance to Copano Bay has a fixed span with a clearance of 50 feet. Sections of a former bridge, along the W side of the causeway, remain as fishing piers. A launching ramp is at the SW end of the causeway.

(133) **Mission Bay,** on the N shore of Copano Bay, is of no importance; only small skiffs can enter.

(134) **Bayside** is a small resort town on the NW shore of Copano Bay. A large hotel shows prominently from the bay. Highway and telephone communications are available.

(135) **Aransas River,** emptying into the NW end of Copano Bay, is shallow and navigable only for small craft of 1 foot or less. The State Route 136 highway bridge across the mouth has a 41-foot fixed span with a clearance of 15 feet. There is a small marina on the W side at the S end of the bridge. The channel leading to the facility had a reported controlling depth of 4 feet in August 1982, and was privately marked by stakes. Water, ice, open and covered berths with electricity, marine supplies, and a launching ramp are available. The marina is closed during the winter season. Overhead power and telephone cables at the bridge have clearances of 17 feet.

(136) The ruins of a bridge cross Port Bay about 1.5 miles above the entrance. In April 1990, it was reported the cable had been removed. State Route 881 highway bridge crossing Port Bay about 4 miles above the entrance has a 41-foot fixed span with a clearance of 5½ feet; an overhead power cable crosses at the bridge.

(137) There are fish camps along Live Oak Peninsula between Port Bay and Redfish Point where provisions, berths, and lodging are available.

(138) **Fulton,** an incorporated city on the W shore of Aransas Bay, is the site of a commercial fish harbor and yacht basin protected by a dike and breakwater. The harbor is entered from Aransas Bay through a dredged channel marked by lights and daybeacons. In October 1999, the controlling depths were 6.0 feet (7.5 feet at midchannel) in the entrance channel and 7.0 to 8.0 feet in the basin. In 1982, it was reported that when making the harbor local residents bear on a prominent, isolated old mansion which fronts on the beach close W of the harbor; a large water tower about 1 mile W of the mansion should not be used. Berth assignments and ship movements in the harbor are under the direction of a **harbormaster** who maintains an office in Rockport. A no-wake **speed limit** is enforced in the harbor.

(139) The harbor at Fulton is used as a base by numerous shrimp boats and trawlers. Berths with electricity, water, ice and wet storage are available. A marina about 1.0 mile N of the harbor has berths, electricity, water, ice, a launching ramp and wet storage available.

(140) **Key Allegro,** a resort center built on filled-in marshland, is about a mile S of Fulton. **Little Bay** between the key and **Live Oak Peninsula** is shoal. Two private channels have been dredged into Little Bay to the lagoons and a marina on the W side of the key. The N channel had a reported depth of 1 foot in May 2002. A hump-backed highway bridge crossing the channel from the key to the mainland has a 25-foot fixed span with a minimum clearance of 8 feet. The S entrance channel had a reported depth of 5.8 feet in July 2001. Privately maintained lights mark the S channel. The marina has open and covered berths and launching ramps. Gasoline, diesel fuel, water, ice, pump-out station, wet and dry storage, and marine supplies are available. A 5-ton lift is available and engine and electronic repairs can be made. Depths of about 6 feet were reported alongside in June 2002.

(141) A side channel branching off from the S Key Allegro Channel leads W to a boat basin on the long sandspit that extends E from Rockport Harbor. The reported depth in the channel was 5 feet in August 1982. The channel is privately marked by stakes. A launching ramp is available.

(142) **Rockport** is a commercial fishing and resort city on the W shore of Aransas Bay. A spoil bank area extends along the NW side of the Intracoastal Waterway, through which are several openings marked by daybeacons. Natural depths of 10 to 13 feet lead to the light marking the approach to the harbor. A dredged channel leads from Aransas Bay to a basin in the harbor. The basin is about 0.3 mile long and protected by a concrete breakwater. In September 2000, the controlling depths were 9.0 feet in the entrance channel and 6.0 to 9.0 feet in the basin. To enter, pass about 50 yards E of the approach light and head directly toward the light on the seawall at the basin entrance. The channel is marked by lights and daybeacons.

(143) There are excellent facilities in the basin for yachts and other craft. The marine laboratory of the Texas Game and Park Commission is at the N end of the basin. Water, ice, wet storage, marine supplies, and berthing space for more than 100 yachts and commercial vessels are available in the basin. Berth assignments and ship movements are under the direction of a **harbormaster,** who maintains an office at the NE end of the basin. A no-wake **speed limit** is enforced in the harbor.

(144) Rockport has highway connection with Port Lavaca and Corpus Christi and railroad connections to the interior.

(145) **Cove Harbor** and **Palm Harbor,** 2.5 and 4 miles, respectively, S of Rockport, are discussed in chapter 12.

(146) **Lydia Ann Channel** extends S from the S end of Aransas Bay and connects with Aransas Pass. The entrance from Aransas Bay is by a dredged channel, and alternate route of the Intracoastal Waterway. In 1982, depths of about 12 feet were reported in the channel. The stranded wreck of the S. S. JOHN WORTHINGTON, only partially visible, is just E of a privately maintained lighthouse (27°51.9'N., 97°03.4'W.), on the E side of the channel. This ship was torpedoed during World War II, and then towed into Lydia Ann Channel for salvage.

Charts 11309, 11314, 11307

(147) **Aransas Pass**, 154 miles SW of Galveston Entrance and 113 miles N of the mouth of the Rio Grande, is the principal approach from the Gulf to Aransas and Corpus Christi Bays and their tributaries. The pass lies between San Jose Island on the N and Mustang Island on the S. **Harbor Island,** directly opposite the inner end of the pass, separates Aransas Bay from Corpus Christi Bay.

(148) Two jetties extend into the Gulf from San Jose and Mustang Islands. A submerged wreck, covered 24 feet, lies to the S of the channel inside the jetties.

(149) The approach to Aransas Pass is marked by a lighted whistle buoy, 5.5 miles offshore, and a lighted buoy 1.5 miles off the N jetty. The entrance channel is marked by a lighted buoy at the submerged outer end of each jetty, a **301°** lighted range, lighted buoys, and lights.

Prominent features

(150) The water tank at Port Aransas is the first object sighted in approaching Aransas Pass in the daytime. The microwave tower is the first object sighted at

night. Also prominent are a condominium apartment and other buildings at Port Aransas. The privately maintained lighthouse, a 65-foot high red and brown brick tower on Harbor Island, and the buildings at Port Aransas will be sighted as the pass is approached.

(151) The flashing white and green rotating aerolight at the naval air station on Encinal Peninsula on the S side of Corpus Christi Bay is reported visible from the Gulf and from Corpus Christi Channel in the bay.

(152) **Port Aransas Coast Guard Station** (27°50.3'N., 97°03.5'W.) is on the NE end of Mustang Island.

(153) **Vessels should approach Aransas Pass through the prescribed Safety Fairways.** (See **166.100 through 166.200**, chapter 2.) **Note:** The Aransas Pass Safety Fairway, the SE approach to Aransas Pass, consists of partially divided parallel shipping fairways instead of a single fairway. These parallel fairways are not a traffic separation scheme. However, in the interest of vessel traffic safety, the use of the NE lane for inbound **(298°)** traffic and the SW lane for outbound **(118°)** traffic is recommended.

COLREGS Demarcation Lines

(154) The lines established for Aransas Pass are described in **80.850**, chapter 2.

(155) A **safety zone** has been established around loaded liquified petroleum gas (LPG) vessels transiting Corpus Christi Channel between the outer end of Aransas Pass jetties and Port of Corpus Christi Oil Dock No. 10, including La Quinta Channel. (See **165.1 through 165.8, 165.20, 165.23, and 165.808**, chapter 2, for limits and regulations.)

Security Zones

(156) The Captain of the Port (COTP) Houston-Galveston has established a Security Zone in Port of Corpus Christi Inner Harbor from the Inner Harbor Bridge (US Highway 181) to, and including Viola Turning Basin. (See **165.30 through 165.33, and 165.809**, chapter 2, for limits and regulations.) Unauthorized vessels/persons are excluded from these areas without express permission of the COTP.

Channels

(157) The entrance channel through Aransas Pass is protected by jetties. A Federal project provides for an outer bar channel, 47 to 45 feet deep; a jetty channel, 45 feet deep; and an inner basin at Harbor Island with a depth of 45 feet.

(158) The Coast Guard advises vessels to exercise particular caution where the channel intersects the alternate route of the Intracoastal Waterway at Lydia Ann Channel, about 1.6 miles above the entrance jetties, and where Corpus Christi Channel intersects the Intracoastal Waterway main route, about 7.1 miles above Lydia Ann Channel. Situations resulting in collisions, groundings, and close quarters passing have been reported by both shallow and deep-draft vessels. The Coast Guard has requested vessels make a **SECURITE** call on VHF-FM channels 12 and 13 prior to crossing the Intracoastal Waterway, particularly during periods of restricted visibility.

(159) **Corpus Christi Channel** extends from Aransas Pass to Corpus Christi on the W side of Corpus Christi Bay. For about 4 miles, at the E end, it extends through Turtle Cove between Harbor Island on the N and Mustang Island on the S; thence across Corpus Christi Bay to Corpus Christi. The channel is straight except for a 15° bend at about its midway point just S of Ingleside Cove. The Federal project depth is 45 feet to the Viola Turning Basin, 32.5 miles from the outer bar.

(160) A barge assembly basin, on the S side of Corpus Christi Channel, is entered through two channels about 7 and 8 miles W of Port Aransas. In 1970, depths of 14 feet were available in the basin.

(161) **La Quinta Channel** branches N from Corpus Christi Channel, and follows the NE side of Corpus Christi Bay to a turning basin at an alumina plant 4.5 miles above the entrance. Federal project depth is 45 feet in the channel and basin.

(162) (See Notice to Mariners and latest editions of charts for controlling depths for the above deep-draft channels.)

(163) **Jewel Fulton Canal** branches off La Quinta Channel about 2 miles NW of its junction with Corpus Christi Channel. The canal extends about 0.8 mile NE to a turning basin in **Kinney Bayou**. In June 2002, the controlling depth was 16 feet in the channel; thence in November 2000, 8.0 feet in the basin. The entrance channel is marked by a light and daybeacons.

Anchorages

(164) **Vessels should anchor off Aransas Pass in the Aransas Pass Fairway Anchorages**. (See **166.100 through 166.200**, chapter 2.)

(165) Inside Aransas Pass, there is no suitable anchorage for deep-draft vessels. Light-draft vessels up to about a 10-foot draft can anchor in Lydia Ann Channel N of Inner Basin. Also, lighter draft vessels can anchor in Corpus Christi Bay in depths up to 13 feet. Under certain conditions, ships are anchored to short scope in the turning basins.

(166) A **special anchorage** is in Corpus Christi Bay. (See **110.1 and 110.75**, chapter 2, for limits and regulations.)

Tides and currents

(167) The diurnal range of tide at Aransas Pass is 1.4 feet. In Corpus Christi and Redfish Bays the periodic tide is too small to be of any practical importance.

(168) The currents at times have velocities exceeding 2.5 knots in Aransas Pass; they are greatly influenced by winds. Predictions may be obtained from the Tidal Current Tables.

(169) It is reported that the currents outside Aransas Pass are variable. South-bound currents when reinforced by northerly winds have produced a drift that has been reported as high as four knots across the mouth of the jetties.

(170) Winds from any E direction make a rough bar and raise the water inside as much as 2 feet above normal. Winds from any W direction have an opposite tendency. A sudden shift of the wind from S to N makes an especially rough bar for a short time. During summer months, S winds prevail, becoming moderate to fresh in the afternoon.

Weather

(171) Although located on the Gulf, Corpus Christi has an intermediate climate between that of the humid subtropical region to the NE and those of the semiarid region to the W and SW.

(172) The normal rainfall for Corpus Christi is about 30 inches a year. Peak rainfall months are June and September, and March is the driest. The season of tropical storms is from June to November and affects the rainfall during this period, otherwise these months are usually dry. Several months during the years of record have had no rainfall or only a trace while nearly eight inches fell in one 24-hour period in October 1995. Since records began in 1887, snow has fallen on an average of about 1 day every 2 years. The average annual snowfall is less than one inch and the greatest 24-hour snowfall was one inch occurring in January 1967 and again in February 1973.

(173) There is little change in the day-to-day weather in the summer, except for an occasional rain shower or a tropical storm in the area. Maximum temperatures range in the high eighties to low nineties, except for brief periods in the high nineties, occasioned by a shift in the wind direction from the prevailing SE to S and SW. The sea breeze during the afternoon and evening moderates the heat of the summer day. The average annual temperature at Corpus Christi is 72.1ºF with an average high of 81.2ºF and an average low of 62.5ºF. August is the warmest month with an average high of 84.6ºF and January is the coolest with an average high of 56.4ºF. Minimum temperatures are usually in the low seventies. The record maximum temperature in Corpus Christi was 109°F recorded in September 2000. The maximum temperatures usually occur about noon, with afternoons more pleasant than mornings in that they are usually cloudless and windy. In the summer season, the region receives nearly 80 percent of possible sunshine. The coolest reading on record at Corpus Christi is 11°F recorded in 1899. Extreme maximums in excess of 100ºF have occurred in each month, March through September and extreme minimums below freezing have occurred in each month, October through March.

(174) The fall months of September and October are essentially an extension of the summer months. November is a transition to the conditions of the coming winter months, with greater temperature extremes, stronger winds, and the first occurrences of "northers". From late November through February, fog is likely to occur in the vicinity of Aransas Pass and Port Aransas.

(175) Relative humidity, because of the nearness of the Gulf of Mexico, is high throughout the year. However, during the afternoons the humidity usually drops to 50 and 60 percent.

(176) Severe tropical storms average about one every 10 years. Lesser strength storms average about one every 5 years. The city of Corpus Christi has a feature not found in most other coastal cities. A bluff rises 30 to 40 feet above the level of the lowlands areas near the bay. This serves as a natural protection from high water. Protection for the main city is now furnished by seawalls. The chief hurricane months are August and September, although tropical storms have occurred as early as June and as late as October. Since 1950, nine tropical systems have come within 50 miles of Corpus Christi; most notable was hurricane Celia which raked the area with 160 mph gusts (140 knots) in early August 1970. However, most of the storms pass either to the S or E of the city. Tornadoes are of infrequent occurrence in the area. Hail occurs about once a year.

(177) The National Weather Service maintains an office in Corpus Christi where **barometers** may be compared, or they may be compared by telephone. (See appendix for address.)

(178) (See page T–11 for **Corpus Christi climatological table.**)

Pilotage, Corpus Christi Bay

(179) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in foreign trade. Pilotage is optional for coastwise vessels that have on board a pilot licensed by the Federal Government.

(180) Aransas-Corpus Christi Pilots serve Aransas Pass Outer Bar and Jetty Channel, Corpus Christi Ship Channel to Viola Basin, and LaQuinta Channel. The pilots office address is P.0. Box 2767, Corpus Christi, TX

78403; telephone 361-749-5444 or 361-888-6230, FAX 361-749-6933.

(181) The pilots board vessels between the sea buoy, Aransas Pass Entrance Lighted Whistle Buoy AP, and Lighted Buoy 3. The Aransas-Corpus Christi pilots maintain an office and lookout on the S jetty. The pilot boat, ARANSAS PILOT, is a 52-foot aluminum vessel with an orange hull and white superstructure with the word PILOT on each side of the deckhouse. The pilot boat flies the International Code flag "P" by day, and all around white over all around red lights at night. The pilots maintain a 24-hour watch on VHF-FM channel 12, and the pilots carry portable VHF-FM radiotelephones and use channel 12 as working frequency.

(182) Pilot services are available 24 hours a day, and arrangements for pilot services are usually made by above telephone or FAX numbers, through the Corpus Christi marine operator on radiotelephone VHF-FM channels 26 and 28, through the harbormaster (telephone 512-882-1773), through ship's agents, or by radiotelephone on VHF-FM channel 12 to the pilot station or the harbormaster. A 2½-hour advance notice of time of arrival is requested. The harbormaster, pilot station, pilot boat, and all tugs and pilots maintain radio communications on VHF-FM channel 11, 12, 16 and 71 for docking, undocking, and all harbor movements.

Towage

(183) Tugs up to 3,200 hp are available at Corpus Christi and serve all of the Corpus Christi Bay area. The tugs are equipped with VHF–FM radiotelephones and use channels 12, 13, and 16. Divers and salvage equipment are available.

(184) **Quarantine, customs, immigration,** and **agricultural quarantine** officials are stationed in Corpus Christi. (See appendix for addresses.) Vessels subject to such inspections generally make arrangements through ships' agents; officials usually board vessels at their berths.

(185) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(186) There are several hospitals in Corpus Christi.

(187) Corpus Christi is a **customs port of entry.**

Coast Guard

(188) A **marine safety office** is in Corpus Christi. (See appendix for address.) **Corpus Christi Coast Guard Air Station** is at the Naval Air Station, Corpus Christi.

(189) **Port of Corpus Christi** (see also chart 11311) is on the W side of Corpus Christi Bay about 20 miles from the outer end of the jetties at Aransas Pass. The port limits include all of Nueces County, Tex. Corpus Christi Main Harbor includes all of the waterfront facilities along the Industrial Canal, Tule Lake Channel, and Viola Channel, including the turning basins from Corpus Christi Turning Basin to Viola Turning Basin. Harbor Island, Port Aransas, Port Ingleside, and La Quinta are included in the port area.

(190) The principal imports are crude oil, bauxite, chrome, zinc, bulk ores, iron ores, metallurgical coke, copper concentrate, petroleum products. The principal exports include wheat, corn, barley, sorghum, refined petroleum products, aluminum products and ores, petroleum coke, coal, industrial chemicals, machinery, and general cargo. There is considerable local and coastwise movements of petroleum products, sand and gravel, cement, various ores and metals, and industrial chemicals.

Harbor regulations

(191) Port of Corpus Christi Authority, headed by the Port Executive Director, has jurisdiction and control over the Port of Corpus Christi. The **harbormaster** assigns berths and enforces port regulations. VHF-FM channels 12 and 16 (call sign, KKQ-769) are monitored continuously from the harbormaster's office on the third floor at 1305 North Shoreline Boulevard. A safe navigable speed not to exceed 5 knots shall be maintained within the harbor.

Wharves

(192) Corpus Christi has more than 100 piers and wharves. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 25, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.) The alongside depths for the facilities described are reported; for information on the latest depths contact the operator. Water and electrical shore power connections are available at most piers and wharves upon request. Almost all the facilities have highway and railroad connections.

(193) General cargo at the port is usually handled by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility.

(194) Over 162 acres of open storage space (65½ hectares) and 1,497,508 square feet of covered storage (139,100 square meters) are available, and over 900,000 cubic feet (25,490 cubic meters) of cold storage space are available in the port.

(195) **Harbor Island:**

(196) Port of Corpus Christi, Harbor Island Dock No. 2 (27°50'40"N., 97°04'00"W.): 325 feet of berthing space; 16 feet alongside; deck height, 14 feet; mooring for

gambling cruise ship; owned by Port of Corpus Christi and operated by the State of Texas.

(197) Kellogg Brown & Root, Harbor Island Offshore Facility Wharf (27°50'34"N., 97°04'57"W.): 800 feet of berthing space; 20 feet alongside; deck height, 8 feet; one 100-ton crawler crane; one 15-ton hydraulic crane; mooring offshore, oil-well service vessels; handling supplies and equipment; fueling and providing water to smaller vessels; owned and operated by Kellogg Brown & Root, Inc.

(198) **Port Ingleside:**

(199) Koch Pipeline Co., Ingleside Terminal Wharf (27°49'08"N., 97°11'59"W.); 60-foot face; 1,000 feet of berthing space with dolphins and anchors; 40 feet alongside; deck height, 18 feet; receipt and shipment of crude oil; bunkering vessels; owned by Flint Hills Resources, LP, subsidiary of Koch Industries, Inc., and operated by Koch Pipeline Co., LP.

(200) **La Quinta Channel:**

(201) Occidental Chemical Corp., Ingleside Plant, Ship Wharf (27°52'08"N., 97°14'43"W.): 56-foot face, 920 feet of berthing space with dolphins; 40 feet alongside; deck height, 15 feet; shipment of caustic soda, vinyl chloride monomer, and ethylene dichloride; owned and operated by Occidental Chemical Corp.

(202) Sherwin Alumina, Sherwin Plant, Alumina Dock (27°52'44"N., 97°15'38"W.): 400-foot face; 960 feet with mooring dolphins; 37 to 39 feet alongside; deck height, 9 feet; fixed loading tower with loading chute, conveyer system, loading rate 825 tons per hour; owned and operated by Sherwin Alumina, LP.

(203) Sherwin Alumina, Sherwin Plant, Bauxite Dock (27°52'44"N., 97°16'04"W): 60-foot face; W side, 705-foot face: E side, 630-foot face; 45 to 47 feet alongside; deck height, 10 feet; bulk unloaders served by conveyor system with 2,200 ton per hour unloading rate; owned and operated by Sherwin Alumina, LP.

(204) **N side Corpus Christi Turning Basin:**

(205) Port of Corpus Christi Authority, Northside General Cargo Terminal Cargo Dock No. 9 (27°48'52"N., 97°23'47"W.): 660-foot face; 750 feet of berthing space; 36 to 40 feet alongside; deck height, 15 feet; 122,000 square feet covered storage; rail connections; receipt and shipment of conventional general cargo in foreign and domestic trade; mooring harbor tugs; owned and operated by the Port of Corpus Christi Authority.

(206) Port of Corpus Christi Authority, Cargo Dock No. 10 (27°48'54"N., 97°23'53"W.): 665-foot face; 700 feet of berthing space; 36 feet alongside; deck height, 15 feet; 99,520 square feet covered storage; receipt and shipment of refrigerated and frozen general cargo; owned and operated by the Port of Corpus Christi Authority.

(207) Port of Corpus Christi Authority, Oil Dock No. 1 (27°48'53"N., 97°24'05"W.): 64-foot face; 1,000 feet of berthing space with shore moorings; 43 to 44 feet alongside; deck height, 16 feet; receipt and shipment of crude oil, petroleum products and petrochemicals; loading bunkering barges; owned by the Port of Corpus Christi Authority and operated by various companies.

(208) Port of Corpus Christi Authority, Oil Dock No. 2 (27°48'53"N., 97°24'12"W.): 142-foot head of slip; 142 feet of berthing space; 15 to 16 feet alongside; deck height, 9.5 feet; receipt and shipment of crude oil, petroleum products and petrochemicals; loading bunkering barges; owned by the Port of Corpus Christi Authority and operated by various companies.

(209) Port of Corpus Christi Authority, Cargo Dock No. 12 (27°48'53"N., 97°24'27"W.): 200-foot face; 700 feet of berthing space with shore moorings; 30 feet alongside; deck height, 12 feet; 120 acres open storage; mooring vessels for repair; owned by Port of Corpus Christi Authority and operated by Gulf Copper Ship Repair.

(210) **S side of Corpus Christi Turning Basin:**

(211) Port of Corpus Christi Authority, James C. Storm Open Pavilion Dock No. 1 (27°48'43"N., 97°23'48"W.): 320-foot face; 320 feet of berthing space; 32 feet alongside; deck height, 15 feet; mooring vessels; owned and operated by the Port of Corpus Christi Authority.

(212) Port of Corpus Christi Authority Congressman Solomon P. Ortiz International Center (27°48'44"N., 97°23'51"W.): 336-foot face; 336 feet of berthing space; 31 to 33 feet alongside; deck height, 15 feet; mooring cruise vessels and tall ships; owned and operated by the Port of Corpus Christi Authority.

(213) Port of Corpus Christi Authority, Cargo Dock 8 (27°48'43"N., 97°24'13"W.); 865-foot face; 1,060 feet of berthing space with mooring structure; 34 to 39 feet alongside; deck height, 15 feet; 69,200 total square feet of covered storage; cranes to 500 tons; receipt and shipment of conventional and containerized general cargo in foreign and domestic trade; owned and operated by Port of Corpus Christi Port Authority.

(214) Port of Corpus Christi Authority, Cargo Dock Nos. 14 and 15 (27°48'43"N., 97°24'22"W.): 938-foot face; 938 feet of berthing space; 34 to 39 feet alongside; deck height, 15 feet; 173,000 square feet of covered storage; receipt and shipment of conventional general cargo in foreign and domestic trade; owned and operated by Port of Corpus Christi Authority.

(215) Citgo Refining & Chemicals, Port Avenue Terminal Wharf (27°48'43"N., 97°24'38"W.): 73-foot face; 178 feet of berthing space; 40 feet alongside; deck height, 12 feet; shipment of petroleum products; owned and operated by Citgo Refining & Chemicals, Inc.

(216) Flint Hills Resources, Tanker Dock No. 3 (27°48'46"N., 97°24'52"W.): 110-foot face, 900 feet of berthing space with mooring structures; 45 feet alongside; deck height, 14 feet; receipt of crude oil, receipt

and shipment of petroleum products and petrochemicals; bunkering tankers berthed at wharf; owned and operated by Flint Hills Resources, LP, a subsidiary of Koch Industries, Inc.

(217) **N side Industrial Canal:**

(218) ADM/Growmark, Elevator Wharf (27°49'04"N., 97°25'24"W.): 205-foot face, 327 feet of berthing space with dolphins; 45 feet alongside; deck height, 13 feet; conveyors and vessel-loading spouts with loading rate of 80,000 bushels per hour; 5 million-bushel grain elevator; shipment of grain; owned by Port of Corpus Christi Authority and operated by ADM/Growmark, subsidiary of Archer Daniels Midland Co.

(219) **S side Industrial Canal:**

(220) Flint Hills Resources, Dock No. 2 (27°48'50"N., 97°25'03"W.): 121-foot face, 800 feet of berthing space with mooring structures; 38 to 40 feet alongside; deck height, 10 feet; occasional receipt of crude oil; receipt and shipment of petroleum products and petrochemicals; bunkering tankers berthed at wharf; owned and operated by Flint Hills Resources, LP, a subsidiary of Koch Industries Inc., and Citgo Refining & Chemicals, Inc.

(221) Citgo Refining & Chemicals, Corpus Christi Refinery, Ship Dock No. 1 (27°48'58"N., 97°25'22"W.): 111-foot face; 800 feet of berthing space with mooring structures; 40 feet alongside; deck height, 14 feet; receipt and shipment of petroleum products and petrochemicals; loading bunkering barges; owned and operated by Citgo Refining & Chemicals, Inc.

(222) **S side Avery Point Turning Basin:**

(223) Citgo Refining & Chemicals Corpus Christi Refinery Barge Dock No. 7 (27°49'07"N., 97°25'47"W.): 100-foot face; 100 feet of berthing space; 22 feet alongside; deck height, 15 feet; 21,000 square feet covered storage; 2.5 million barrel storage capacity; shipment of petroleum products; owned and operated by Citgo Refining & Chemicals, Inc.

(224) **S side Tule Lake Channel:**

(225) Port of Corpus Christi Authority, Oil Dock No. 4 (27°49'17"N., 97°25'59"W.): 143-foot face, 850 feet of berthing space with mooring structures; 44 to 45 feet alongside; deck height, 16 feet; receipt and shipment of crude oil and chemicals; receipt and shipment of petroleum products and petrochemicals; bunkering vessels; and loading bunkering barges; owned by Port of Corpus Christi Authority and operated by various companies.

(226) Port of Corpus Christi Authority, Oil Dock No. 7 (27°49'20"N., 97°26'08"W.): 143-foot face; 850 feet of berthing space with mooring structures; 44 to 45 feet alongside; deck height, 16 feet; receipt of crude oil; receipt and shipment of petroleum products and petrochemicals; bunkering vessels; and loading bunkering barges; owned by the Port of Corpus Christi Authority and operated by various companies.

(227) Port of Corpus Christi Authority, Oil Dock No. 11 (27°49'22"N., 97°26'18"W.): 143-foot face; 850 feet of berthing space with mooring structures; 43 to 45 feet alongside; deck height, 16 feet; receipt of crude oil; receipt and shipment of petroleum products and petrochemicals; bunkering vessels; and loading bunkering barges; owned by the Port of Corpus Christi Authority and operated by various companies.

(228) Interstate Grain Port Terminal Co., Corpus Christi Elevator Wharf (27°49'01"N., 97°28'12"W.): 460-foot face, 920 feet of berthing space with mooring structures; 37 feet alongside; deck height, 10 feet; grain gallery with conveyors and loading spouts, loading rate 65,000 bushels per hour; 6.33 million-bushel grain elevator and warehouses; shipment of grain; owned and operated by Interstate Grain Port Terminal Co.

(229) Valero Refining Co., Ship Dock No. 2 (27°49'10"N., 97°28'47"W.): 115-foot face; 1,000 feet of berthing space with shore moorings; 45 feet alongside; deck height, 18 feet; receipt and shipment of crude oil and petroleum products; fueling vessels; and loading bunkering barges; owned and operated by Valero Refining Co.

(230) Valero Refining Co., Ship Dock No. 3 (27°49'15"N., 97°28'57"W.): 115-foot face; 1,000 feet of berthing space with shore moorings; 45 feet alongside; deck height, 18 feet; receipt and shipment of LP-gas, crude oil, and petroleum products; fueling vessels; and loading bunkering barges; owned and operated by Valero Refining Co.

(231) **N side Tule Lake Channel:**

(232) Port of Corpus Christi Authority, Bulk Terminal Dock No. 1 (27°49'05"N., 97°27'39"W.); 396-foot face; 835 feet of berthing space with shore moorings; 34 feet alongside; deck height, 12 feet; traveling crane, receiving hopper with unloading rate 600 tons per hour; receipt and occasional shipment of miscellaneous bulk ores, and other dry bulk commodities by vessel and barge; owned and operated by the Port of Corpus Christi Authority.

(233) Port of Corpus Christi Authority, Bulk Terminal, Dock No. 2 (27°49'05"N., 97°27'44"W): 375-foot face; 1,270 feet of berthing space with shore moorings; 44 to 45 feet alongside; deck height, 13 feet; radial shiploader, loading rate 1,500-tons per hour; shipment of coke, coal and miscellaneous dry bulk commodities by vessel and barge; owned and operated by the Port of Corpus Christi Authority.

(234) **S side Viola Turning Basin:**

(235) Port of Corpus Christi Authority, Oil Dock No. 8 (27°50'31"N., 97°31'16"W.): 87-foot face; 1,000 feet of berthing space with shore moorings; 37 feet alongside;

deck height, 16 feet; receipt of crude oil; receipt and shipment of petroleum products; shipment of petrochemicals by tanker; fueling small craft; and bunkering vessels, owned by Port of Corpus Christi Authority and operated by Flint Hills Resources, LP, a subsidiary of Koch Industries.

(236) Port of Corpus Christi Authority, Oil Dock No. 9 (27°50'34"N., 97°31'23"W.); 57-foot face, 320 feet of berthing space; 27 to 30 feet alongside; deck height, 9.5 feet; receipt of crude oil; receipt and shipment of petroleum products; shipment of petrochemicals by tanker; and fueling small craft; owned by Port of Corpus Christi Authority and operated by Flint Hills Resources, LP, a subsidiary of Koch Industries.

(237) Port of Corpus Christi Authority, Oil Dock No. 10 (27°50'35"N., 97°31'29"W.): 57-foot face; 400 feet of berthing space; deck height, 9.5 feet; owned by Port of Corpus Christi Authority and operated by Flint Hills Resources, LP, a subsidiary of Koch Industries, Inc.

Supplies

(238) Water is available at all berths, and bunker fuels are available at the oil wharves and by barge at other berths. General and marine supplies are available; unusual items can be obtained from Galveston or Houston.

Repairs

(239) Corpus Christi has no facilities for making major repairs or for drydocking deep-draft vessels; the nearest such facilities are at Galveston. Several well-equipped firms are available for making above-the-waterline repairs to vessels. Shafts up to 25 feet in length can be produced by a local firm.

(240) Repair facilities are available for medium-draft vessels. The largest floating drydock has a lifting capacity of 3,570 tons, length of 240 feet, width of 82 feet, and 23 feet over the keel blocks. The largest vertical boatlift has a capacity of 150 tons and can handle 125-foot vessels. A marine railway can handle keeled vessels up to 650 tons and flat bottom craft up to 1,000 tons; length of cradle, 140 feet, clear width of cradle at top of keel blocks, 52 feet.

(241) Regulations have been established by the Nueces County Navigation Commission governing the repairing of ships, particularly "hot work". Copies of these regulations can be obtained from the port officials.

Communications

(242) Three trunk railroads, the Missouri-Pacific, Southern Pacific, and Texas-Mexican, serve the port. Numerous motor freight lines operate from the port, and buslines serve the city. Airlines provide transportation from Corpus Christi International Airport NW of the city. Over 100 shipping companies provide water transportation to ports on the Gulf, Atlantic, and Pacific Coasts, and all world ports. Taxi and local bus service is available.

(243) **Port Aransas** is a small commercial fishing and resort town on the N end of **Mustang Island** at the inner end of Aransas Pass. A marked dredged channel leads to a turning basin just inside the pass. In November 2000, the controlling depth was 7.0 feet (8.0 feet at midchannel) in the channel and 8.0 feet in the basin

(244) There are boatyards and a municipal marina in the basin. Lifts can handle craft up to 50 feet for general repairs or storage. Open and covered berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, provisions, pumpout and launching ramps are available. A 1,200-foot fishing pier extends into the Gulf about 0.5 mile S of Aransas Pass. An automobile ferry operates between Port Aransas and Harbor Island. Port Aransas Coast Guard Station is at the NE end of Mustang Island at E end of Corpus Christi Channel.

(245) **Harbor Island** is at the head of Aransas Pass. Large oil-handling plants with berths are on the SE end of the island (see Wharves, Corpus Christi.). A dredged turning basin is E of the berths along the N side of the ship channel. State Route 361 causeway begins at the ferry landing and crosses Morris and Cummings Cut and Redfish Bay, and leads to the town of Aransas Pass on the mainland.

(246) Pilings, some submerged, of a former mooring slip were reported N of Harbor Island on the W side of Lydia Ann Channel.

(247) From the Inner Basin off Harbor Island, a dredged channel leads NW for about 5.2 miles and intersects with the Intracoastal Waterway and turning basin just off the town of **Aransas Pass,** with a connecting channel leading into **Conn Brown Harbor.**

(248) In October 2001, the controlling depth was 10.1 feet in the channel; thence in March 2001, there was 14.0 feet in the turning basin, and the connecting channel to Conn Brown Harbor and in the harbor.

(249) The Intracoastal Waterway crosses the W end of Aransas Channel and extends along the E side of the town, sheltered from Redfish Bay by spoil banks. S of the causeway the canal offers good protection to small boats. The channel and harbor to the N of the causeway have several seafood processing plants. A large shrimp boat fleet operates out of the town.

(250) There are boatyards and marinas in the harbor. The largest marine railway can handle craft up to 120 feet for general repairs or storage. Gasoline, diesel fuel, water, ice, marine supplies, open and covered berths with electricity, and launching ramps are available.

(251) A 5-mph **speed limit** is enforced in the channel and harbor from Harbor Island to the town of Aransas Pass. The **harbormaster** has an office in the harbor at the city dock. The town has both highway and railroad connections to all parts of the State.

(252) **Corpus Christi Bayou,** at the S end of Aransas Bay, provides small craft a shortcut from Aransas Bay via **Morris and Cummings Cut** to Corpus Christi Bay. The bayou entrance is marked by a daybeacon on the S side of the channel and had a reported controlling depth of about 2 feet in January 1982. The channel is crooked and difficult to follow, as only a few piles mark the channel. The controlling depth through Morris and Cummings Cut is about 4 feet. About midway, this cut is crossed by a dredged channel from Aransas Pass to the town of Aransas Pass. In Morris and Cummings Cut just S of the dredged channel, the width is 24 feet through the draw of a bridge from which the bascule span has been removed. About 0.1 mile S of the dredged channel, the fixed span of a highway causeway bridge has a width of 28 feet and a clearance of 8 feet. Overhead power cables crossing at the bridges have a clearance of 28 feet.

(253) A privately maintained and marked channel leads from the S end of Morris and Cummings Cut to a basin at the S end of the town of Aransas Pass; the reported controlling depth in 1990 was about 5 feet.

(254) **Redfish Bay** is shallow; it extends N along the mainland from Corpus Christi Bay to Aransas Bay. The dredged channel of the Intracoastal Waterway is adjacent to the mainland shore, traversing the bay N to S and joining Corpus Christi deep-draft channel at Port Ingleside.

(255) **Corpus Christi Bay** is a large body of water, roughly elliptical in shape, lying to the W of Mustang Island and connected with Aransas Pass by the Corpus Christi Channel. The bay is about 15 miles long in an E and W direction and 11 miles wide at its widest part. About the E end of the bay the depths are 8 to 11 feet, and most of the rest of the bay has depths of 12 to 13 feet.

(256) A **seaplane restricted area** is in Corpus Christi Bay. (See **334.800**, chapter 2, for limits and regulations.)

(257) **Shamrock Cove,** on the SE side of Corpus Christi Bay, affords good anchorage for small boats in depths of 7 to 8 feet, soft mud bottom. Shoals extend about 0.2 mile W and 0.3 mile S of **Shamrock Point.** In 1971, a 2-inch steel pipe, showing at low water, was reported near midentrance in Shamrock Cove, about 0.4 mile ESE of Shamrock Point. In April 1979, a submerged 6-inch steel pipe was also reported about 0.6 mile SSW of Shamrock Point.

(258) In **Port Ingleside,** on the N shore of Corpus Christi Bay about 7.5 miles W of Aransas Pass, is a privately owned oil terminal. There are piers in a basin and a deep-draft wharf N of the Corpus Christi Channel.

(259) Just W of the oil terminal is a **restricted area** (See **334.802,** chapter 2, for limits and regulations.)

(260) A barge assembly basin, with attendant mooring buoys and a controlling depth of 1 foot in May-July 1981, is off the S side of the Corpus Christi Channel opposite the oil piers at Port Ingleside. This basin is intended for the temporary moorings of barges.

(261) A deep-draft channel is along the E side of Corpus Christi Bay, branching off Corpus Christi deep-draft channel about 8.5 miles W of Aransas Pass. The channel leads N through **Ingleside Cove** to the piers of a large aluminum plant at the N side of a turning basin.

(262) **Ingleside on the Bay,** a fishing community on the E shore of Ingleside Cove, has a marina at the S end of the cove that can accommodate boats up to 50 feet. Berths, electricity, water, ice, launching ramp, and wet storage are available. The unmarked channel leading to the facility had a reported controlling depth of about 6 feet in 2002.

(263) **Jewel Fulton Canal** is a dredged channel which leads from La Quinta Channel to a turning basin in **Kinney Bayou.** In June 2002, the controlling depth was 16 feet in the channel; thence in November 2000, 8.0 feet in the basin. The channel is marked by a light and daybeacons. A boatyard in the bayou has a 35-ton mobile hoist and can handle boats to 60 feet for hull and engine repairs.

(264) **Nueces Bay** has depths of only 1 to 2 feet, and is of little importance; it is a tributary of Corpus Christi Bay, partially separated from it by sandspits. **Indian Point** and **Rincon Point,** the NE and SW entrance points, respectively, to Nueces Bay, are connected by U.S. Route 181 highway causeway. **Rincon Canal,** marked by daybeacons and an unlighted **320°** range, leads NW from Corpus Christi Bay to the Rincon Industrial Park complex at the SE end of Nueces Bay inside Rincon Point. The channel connects with a series of spur channels which front the E side of the complex and lead into it. In July 2001, the controlling depth was 12.0 feet in the channel; thence in 1982, a reported depth of 12 feet was in the connecting channels The Industrial Park, in various stages of construction, will serve as a shallow-draft commerce terminal. A fixed highway bridge crosses the main channel and has a clearance of 50 feet. The poles of a former power cable extend across the entrance to Nueces Bay below the causeway, and the piling of a former railroad bridge remain, except for removed sections at both ends.

(265) A privately maintained channel, with reported depths of about 4 feet, leads to a marina at the NE end of the causeway. Covered berths for boats up to 40 feet, gasoline, oil, and marine supplies are available. A

10-ton lift can handle boats up to 40 feet for hull and engine repairs. A public launching ramp is near the marina. The channel is narrow and difficult to follow, and local knowledge is essential. **Nueces River** emptying into the W part of Nueces Bay is navigable for shallow-draft boats for a distance of 9 miles to a dam. The river is of no commercial importance.

Chart 11311

(266) **Corpus Christi Harbor**, on the N side of Corpus Christi, consists of inland basins connected by an industrial canal. The basins and connecting canal are landlocked and well protected.

(267) **Corpus Christi,** (see also chart 11309) on the W side of Corpus Christi Bay and 18 miles from Aransas Pass, is the most important city commercially on the Texas coast SW of Galveston. The principal industries are in seafood processing, agriculture, livestock, meat packing and freezing, petroleum products, petrochemical and industrial chemicals, natural gas, manufacture of plastics, steel products, aluminum, zinc, machinery, oil field equipment, paper products, agricultural fertilizers, cement, gypsum products, textiles, and the shipment of wheat, cotton, corn, barley, sorghum, dry bulk materials, and general cargo.

(268) The city has several hospitals, a large municipal auditorium, a large boat harbor, and a Coast Guard air station.

Bridges

(269) U.S. Route 181 highway bridge over the entrance to Corpus Christi Turning Basin has a fixed span with a clearance of 138 feet over a center width of 300 feet. The combination highway and railroad bridge over the Industrial Canal, about 1.5 miles W of Avery Turning Basin, has a vertical lift span with a clearance of 9 feet down and 138 feet up. The bridgetender monitors VHF-FM Channel 13. (See **117.1 through 117.49**, chapter 2, for drawbridge regulations.) An overhead power cable crosses the canal midpoint between Corpus Christi Turning Basin and Avery Point Turning Basin; clearance 165 feet.

Small-craft facilities

(270) The bay waterfront at Corpus Christi is protected by a breakwater nearly 2 miles long. Depths in most of the area behind the breakwater range from 6 to 10 feet, not including the ship channel crossing the N end. The main entrance is through the ship channel. Depths of 6 to 10 feet can be carried S inside the breakwater to three large wharves of the municipal marina, about 0.7 mile S of the ship channel; boats should pass inshore of the center of this protected waterway. There are four openings in the breakwater S of the ship channel. The northernmost two are very shallow and are not used, with depths of 1 foot to bare, and the third opening was reported to have shoaled about 4 feet in 1982; the southernmost opening, which provides a direct entrance to the marina from the bay, has depths of about 7 feet and is marked on its N and S sides by lights.

(271) There is a marina supervisor who assigns berths. His office is on the center wharf. A municipal patrol and rescue boat operates from the marina. The patrol boat can be contacted through the Corpus Christi police and marine radio. The boat monitors VHF-FM channel 16 when underway and is also equipped with VHF-FM channels 6, 12, and 26.

(272) The marina is opposite the center of the city and has excellent accommodations for yachts and small vessels. Protected berths for more than 500 craft are available in depths of 6 to 11 feet. Gasoline, diesel fuel, water, pumpout and launching ramps are available; a repair yard has a 15-ton mobile hoist and can handle boats up to 40 feet.

(273) A repair yard on the N side of the Tule Lake Channel portion of the harbor channel has an 89-ton vertical lift and a 140-foot marine railway.

(274) The Corpus Christi Yacht Club is at the marina.

(275) A **special anchorage** area is in the area S of the municipal marina. (See **110.1 and 110.75**, chapter 2, for limits and regulations.)

Chart 11300

(276) **Laguna Madre** is a shallow body of water extending S from Corpus Christi Bay for a distance of 100 miles. Depths range from zero to 9 feet with reefs and mudflats throughout. The Intracoastal Waterway traverses Laguna Madre from Corpus Christi Bay to Port Isabel, Tex. (See chapter 12.) **Padre Island,** a low, barren, storm-swept strip of sand beach, separates Laguna Madre from the Gulf. Most of the Island is part of the **Padre Island National Seashore** and subject to the rules and regulations of the U.S. Department of Interior's National Park Service.

(277) A natural fishing reef is 1.5 miles offshore about 15.6 miles N of Port Mansfield jetties. Another natural fishing reef is 4.5 miles offshore about 11.2 miles N of the jetties.

Charts 11304, 11306

(278) **Port Mansfield**, 70 miles S of Corpus Christi Bay, is a commercial fishing and popular sport fishing and

recreational center, and a base for oil exploration in Laguna Madre. A water tank at the town is prominent.

(279) **Vessels should approach Port Mansfield through the Port Mansfield Safety Fairway.** (See **166.100 through 166.200**, chapter 2.)

COLREGS Demarcation Lines

(280) The lines established for Port Mansfield are described in **80.850**, chapter 2.

(281) An 8.6-mile dredged channel leads from the Gulf, from a point 78 miles S of Aransas Pass and 31 miles N of Brazos Santiago Pass, through a jettied entrance and a land cut across Padre Island, and thence across Laguna Madre to a turning basin at Port Mansfield. A shrimp-boat basin and a small-craft basin extend S from the SW and SE corners of the turning basin, respectively. In 2001-March 2003, the controlling depth was 7.8 feet (8.1 feet at midchannel) in the channel to the basins, thence 14.0 feet in the turning basin and 12.0 feet in the shrimp boat basin. The entrance to the dredged channel is marked by a lighted whistle buoy 0.8 mile offshore, a lighted bell buoy off the end of the N jetty, in ruins, and a lighted buoy at the end of the S jetty in ruins. The channel is marked by lights and daybeacons.

Anchorages

(282) Vessels may anchor off the entrance to Port Mansfield on either side of the safety fairway.

(283) Port Mansfield, under the jurisdiction of the Willacy County Navigation District, has a port director; a **harbormaster** assigns berths. There are berthing facilities, open storage space, and a transit shed with covered storage space. The basins have been bulkheaded, and vessels up to 128 feet can be berthed at finger piers in the shrimp-boat basin. There are about 200 berths in the small-craft basin.

(284) There are four marinas in the shrimp-boat basin that provide gasoline, diesel fuel, ice, water, and limited marine supplies.

(285) A **speed limit** of 4 knots is enforced in the harbor. An improved highway connects with the nearest railroad shipping point at **San Perlita**, 14 miles distant, and with **Raymondville**, the nearest town of any size, 28 miles distant. Raymondville has a hospital, telegraph communications, and rail and highway connections.

Charts 11301, 11303

(286) **Arroyo Colorado** enters Laguna Madre through **Arroyo Colorado Cutoff,** a dredged channel, 90 miles S from Corpus Christi, that leads from the Intracoastal Waterway through Arroyo Colorado Cutoff and Arroyo Colorado to a turning basin at Port Harlingen, 22 miles from the mouth. In December 1999-January 2000, the controlling depth was 10.8 feet through the channel with 12 feet in the basin.

(287) A barge assembly basin with attendant mooring buoys and depths of about 14 feet is on the N side of Arroyo Colorado Cutoff about 1.7 miles W of the Intracoastal Waterway. This basin is intended for the temporary mooring of barges.

(288) **Arroyo City** is a small village on the S bank about 6.5 miles W of the Intracoastal Waterway. There are fish camps at the village.

(289) An overhead power cable with a reported clearance of 75 feet is about 1 mile N of Rio Hondo. In 1982, the cable was reported to have been removed. In August 1990, an overhead power cable with a clearance of 73 feet was reported about 0.8 mile N of Rio Hondo in about 26°14'53"N., 097°35'02"W.

(290) **Rio Hondo** is a small town on the Arroyo Colorado, about 20 miles above its mouth. There are privately operated wharves for the unloading of petroleum products and chemicals, and limited berthing facilities for pleasure craft. Water is available at a small pier. Ice by truck and provisions are available. There are railroad and highway connections to the N part of the state.

(291) State Route 106 highway bridge at Rio Hondo has a vertical lift span with a clearance of 27 feet down and 73 feet up. (See 117.1 through 117.59 and 117.951, chapter 2, for drawbridge regulations.) Overhead power and telephone cables close S of the bridge have clearances of 63 feet.

(292) **Port Harlingen**, under the jurisdiction of the Arroyo Colorado Navigation District known as the Port Commission, is E of Harlingen and about 2 miles above Rio Hondo. A Port Director is in charge of operations and enforces the regulations established by the Port Commission. A **speed limit** of 8 knots in the channel and 4 knots in the turning basin is enforced. The Port Director assigns berths. There are two reinforced concrete wharves 650 feet and 100 feet long, three oil unloading piers, and aggregates and fertilizer wharf. A transit shed on the largest wharf has 12,000 square feet of covered storage, with a rail siding at a loading platform in the rear of the shed. All the wharves had a reported depth of 12 feet alongside in September 1982. Forklifts, crawler cranes, a grain elevator, and a compressed gas and oil storage facility are available. Water is available at the large wharf. Gasoline and diesel fuel are available by truck. The principal imports are petroleum products, steel products, and chemicals. The principal exports are grain, chemicals, and crude petroleum. There are railroad and highway connections to **Harlingen** and the interior. At Harlingen and **San**

Benito there are hospitals, a grain elevator, railroad and bus transportation and communication facilities.

Charts 11301, 11302

(293) **Brazos Santiago Pass (Brazos Santiago)**, the approach to Port Isabel and Port Brownsville, is a narrow pass from the Gulf to the lower end of Laguna Madre, between the S end of Padre Island and the N end of **Brazos Island.** It lies 236 miles SSW from Galveston entrance, 106 miles S from Aransas Pass, and 6 miles N from the mouth of the Rio Grande.

Prominent features

(294) In approaching Brazos Santiago Pass on a clear day, the radiobeacon antenna at **South Padre Island Coast Guard Station** and the water tank and Port Isabel Light are the first objects sighted. Soon thereafter the mariner will pickup Brazos Santiago Light and the Coast Guard station inside the entrance on the N side. The light on top of the radiobeacon antenna of the Coast Guard station is prominent at night. On clear nights it is reported to be visible 20 or more miles offshore. The large hotels and condominiums on Padre Island N of the entrance are prominent.

(295) **Port Isabel Light** (26°04'36"N., 97°12'24'W.), 91 feet above the water, is shown from the white conical brick tower; the light is maintained by the State.

(296) **Vessels should approach Brazos Santiago Pass through the Brazos Santiago Pass Safety Fairway or the Coastwise Safety Fairway.** (See **166.100 through 166.200**, chapter 2.)

COLREGS Demarcation Lines

(297) The lines established for Brazos Santiago are described in **80.850**, chapter 2.

Channels

(298) The pass has been improved by the construction of two rubble mound jetties extending nearly 1 mile into the Gulf and by dredging a channel between them from deep water in the Gulf. Federal project depths are 42 feet through Brazos Santiago Pass and across Laguna Madre to the junction of the channels leading to Port Brownsville and Port Isabel, 36 feet to Port Isabel turning basin, and 42 feet from the junction to the **Brownsville Turning Basin.** (See Notice to Mariners and latest editions of charts for controlling depths.)

(299) The entrance is marked by a lighted whistle buoy about 2 miles E of the jetties, a lighted **269°30'** entrance range, a lighted bell buoy off the submerged part of the N jetty, and a lighted gong buoy off the end of the S jetty. The channels are marked by lighted ranges, lights, a daybeacon, and lighted buoys.

(300) In the 16-mile channel to Brownsville Turning Basin, **Boca Chica Cutoff Passing Basin** is 7 miles and **Goose Island Passing Basin** 11.3 miles above the outer end of the entrance jetties.

(301) Private interests have dredged a ship basin at the S end of Padre Island just inside Brazos Santiago Pass entrance. The basin had shoaled to a reported depth of 9 feet in September 1982. There is a large marina in the basin where gasoline, diesel fuel, water, ice, open berths, dry stack storage, some marine supplies, and surface launching ramps are available.

Anchorages

(302) **Vessels should anchor in the Brazos Santiago Pass Fairway Anchorages on either side of the safety fairway**. (See **166.100 through 166.200**, chapter 2.)

(303) Directly off the entrance to Brazos Santiago Pass, the bottom is soft and affords fair anchorage with good holding ground; farther N and S the bottom is harder. After entering the pass, ships must proceed to the wharves. Once inside Brazos Santiago Pass, there is no satisfactory anchorage for deep-draft vessels.

Tides and currents

(304) The diurnal range of tide is 1.4 feet at Brazos Santiago Pass and Port Isabel. Tidal currents of 6 knots were reported in the vicinity of Brazos Santiago Pass and Port Isabel which may cause strong cross currents on the Intracoastal Waterway at about Mile 665.1W, especially with a flood tide and strong SE winds. Caution is advised for large vessels transiting between Port Isabel and Long Island.

Dangers

(305) An unmarked dangerous wreck is 4.5 miles N of Brazos Santiago Pass Entrance Lighted Whistle Buoy BS, and a fish haven is 1.3 miles N of the buoy.

Weather

(306) The climate of Brownsville is partly manmade. The prevailing winds of the area are from the Gulf of Mexico, but do not produce a truly marine climate. The region could be classified as semiarid because of the lack of rainfall, the result of the low elevation of the area which fails to give the air from the Gulf sufficient lift to cause condensation and of the considerable subsidence of the winds aloft due to the presence of mountains starting about 100 miles to the W. The manmade, and most important, climatic factor of this region is the irrigation that has changed the entire lower Rio Grande Valley into a semitropical area.

(307) The normal annual rainfall of about 26 inches is poorly distributed, with maxima in June, September, and October. Most of the precipitation comes in the form of thunderstorm activity, and often a single thunderstorm will account for the entire month's rainfall. Some extreme rainfalls have occurred when hurricanes were in the vicinity. However, the frequency of hurricanes in this area is very small, and the general path is a N and S one just off the coast in the Gulf. Since 1950 only eight tropical systems have approached Brownsville. Perhaps the most noteworthy were Beulah in September 1967 and Allen in August 1980. Beulah made a direct hit at Brownsville with an estimated wind of 109 knots observed at the airport. Allen provided a 68-knot gust at the airport. The greatest 24-hour rainfall at Brownsville occurred during Beulah. Over 12 inches was documented on September 20, 1967.

(308) Temperatures in summer and fall are not extremely high, but are fairly constant in the lower nineties during the daytime, and in the middle seventies at night. The average annual temperature at Brownsville is 74.1°F with an average high of 82.8°F and an average low of 65.0°F. August is the warmest month with an average temperature of 84.7°F and January is the coolest with an average temperature of 60.5°F. The prevailing onshore winds from the Gulf moderate the temperatures. The highest temperature recorded at Brownsville was 106°F recorded in March 1984. Each month March through August has recorded temperatures in excess of 100°F while each month, November through March, has recorded temperatures at or below freezing. The lowest temperature on record at Brownsville is 16°F recorded in December 1989.

(309) Winter temperatures are mild, with the normal daily minimum for January, the coldest month, being 51.0°F. Frequently an entire winter will pass without a temperature as low as the freezing point occurring.

(310) Snow seldom occurs in Brownsville, however, local newspaper records reveal that 6 inches of snow blanketed the area in 1895.

(311) Glaze is rare in Brownsville, but, during a cold wave in 1951, ice accretion was 1 to 1½ inches for the most severe glaze of record.

(312) The National Weather Service maintains an office in Brownsville where **barometers** may be compared, or they may be compared by telephone. (See appendix for address.) (See page T–12 for **Brownsville climatological table.**)

Pilotage, Brownsville

(313) Pilotage is compulsory for all foreign vessels and U.S. vessels under register in foreign trade. Pilotage is optional for coastwise vessels that have on board a pilot licensed by the Federal Government.

(314) Brazos Santiago Pilots Association serves Port Brownsville and Port Isablel, Texas. The pilots office address is Route 3, Box 7, Bayview, Texas 78566; telephone 956-233-9550, 956-546-6103.

(315) The pilots board vessels within 1 mile of the sea buoy. The Brazos Santiago Pilots maintain a station on Padre Island near the Port Isabel Coast Guard Station. The pilot boat V is 52 feet long with a green hull and white deckhouse with the word PILOT on the house. The pilot boat VI is 32 feet long with an orange hull and silver deckhouse. The standard Rules of the Road day and night signals are shown on the pilot boats. The pilot boats monitor VHF-FM channel 16 and work on channels 12 and 16. The pilot station works on channels 12 and 16.

(316) When boarding, pilots request that vessels maintain a speed of 6 knots and have the pilot ladder rigged 1½ meters above the water.

(317) Pilot services are available 24 hours a day weather permitting. Arrangements for Brazos Santiago Pilots can also be made through the pilot station by telephone or Fax message, telephone 956-761-7018, 956-831-8278, Fax 956-831-3068, and through the ships' agents. A minimum 4-hour notice of time of arrival is requested.

Quarantine, customs, immigration, and agricultural quarantine

(318) (See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

(319) **Quarantine** is enforced in accordance with regulations of the U.S. Public Health Service. (See Public Health Service, chapter 1.)

(320) There are two hospitals in Brownsville.

(321) Brownsville is a **customs port of entry.**

Towage

(322) Two tugs of 1,600 and 1,800 hp are available at Brownsville for docking and undocking vessels, coastwise towing, or for salvage work.

Harbor regulations

(323) The Port Commission of the Brownsville Navigation District has jurisdiction and control over the Brownsville Ship Channel and turning basin and all wharves and transit sheds owned or operated by it. The Port Commission establishes rules and regulations governing the port. The Port Director is in charge of operations, and the **harbormaster** assigns berths and enforces the regulations. A **speed limit** of 8 knots in Brownsville Ship Channel and 4 knots in the turning basin is enforced.

(324) **Port Brownsville,** about 14.5 miles from the inner end of Brazos Santiago Pass, is the port for the city of Brownsville. Exports include cotton, cotton products, lead, agricultural implements, zinc, sulfate, ores, chemicals, petroleum products, and citrus fruit. Imports are fruit, steel products, ores, and general cargo. Offshore oil rigs are constructed and repaired in Port Brownsville.

(325) **Brownsville,** about 5 miles WSW of Port Brownsville, is a fast growing metropolis and the largest city in the rich agricultural section on the N side of the lower Rio Grande Valley that extends 100 miles W from the river mouth. Noted as a resort city, it is also a gateway to Matamoros, Mexico, on the opposite side of the Rio Grande.

Wharves

(326) The port of Brownsville has more than 40 piers and wharves. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 26, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.) The alongside depths for the facilities described are reported; for information on the latest depths contact the operator. All the facilities described are owned and operated by the Brownsville Navigation District of Cameron County unless otherwise stated. All the facilities have highway, railroad, and water connections. Almost all have electrical shore power connections.

(327) General cargo at the port is usually handled by ship's tackle; special handling equipment, if available, is mentioned in the description of the particular facility. Two 150-ton floating cranes are available.

(328) About 52 acres of open storage space, over 1 million square feet of covered storage, and over 2 million cubic feet of cold storage space are available in the port.

(329) **N side of Brownsville Ship Channel:**

(330) **Brownsville Navigation District, Oil Dock No. 3** (25°57'35"N., 97°22'45"W.): 120-foot face; 325 feet of berthing space; 35 feet alongside; deck height, 14.8 feet; storage tanks, 899,300-barrel capacity; receipt and shipment of petroleum products; owned by Brownsville Navigation District and operated by various operators.

(331) **Brownsville Navigation District, Oil Dock No. 2** (25°57'22"N., 97°23'24"W.): 110-foot face; 350 feet of berthing space; 32 feet alongside; deck height, 14.8 feet; storage tanks, 1.344-million-gallon capacity; receipt and shipment of petroleum products, solvent, liquid wax, latex, and vegetable oil; owned by Brownsville Navigation District and operated by Transmontaigne Terminaling Co.

(332) **Brownsville Navigation District, Oil Dock No. 1** (25°57'19"N., 97°23'31"W.): 110-foot face; 325 feet of berthing space; 32 feet alongside; deck height, 14.8 feet; receipt and shipment of petroleum products; hexane and other solvents; owned by Brownsville Navigation District and operated by Transmontaigne Terminaling Co.

(333) **N side of Turning Basin:**

(334) **Brownsville Navigation District, Docks Nos. 7 and 8** (25°57'14"N., 97°23'49"W.): 1,000-foot face; 1,000 feet of berthing space; 29 feet alongside; deck height, 12 feet; 99,500 square feet covered storage; receipt and shipment of steel and general cargo in foreign and domestic trades; owned and operated by Brownsville Navigation District.

(335) **Brownsville Navigation District, Docks Nos. 1, 2, and 4** (25°57'07"N., 97°24'08"W.): 1,250-foot face; 1,250 feet of berthing space; 32 feet alongside; deck height, 12 feet; 128,000 square feet covered storage; receipt of general cargo, ores, and bulk materials; owned and operated by Brownsville Navigation District.

(336) **W end of Turning Basin:**

(337) **Brownsville Navigation District, Dock No. 3** (25°57'59"N., 97°24'04"W.): 450-foot face; 450 feet of berthing space; 32 feet alongside; deck height, 12 feet; 40,000 square feet of open storage; receipt and shipment of steel products and ores by vessel and barge; owned and operated by Brownsville Navigation District.

(338) **S side of Turning Basin:**

(339) **Brownsville Navigation District, Docks Nos. 10 and 11** (25°57'03"N., 97°23'53"W.): W side, 650-foot face; 650 feet of berthing space; 21 feet alongside; N side, 600-foot face, 600 feet of berthing space, 28 feet alongside; deck height, 12 feet; 297,000 square feet open storage; receipt and shipment of dry bulk commodities including ores and metals, and occasionally machinery and heavy-lift items; receipt and shipment of steel products by barge; owned and operated by Brownsville Navigation District.

(340) **Brownsville Navigation District, Docks Nos. 12 and 13** (25°57'08"N., 97°23'40"W.): 1,120-foot face; 1,250 feet of berthing space; 28 to 29 feet alongside; deck height, 12 feet; 203,800 square feet coverage storage; 15 acres open storage; receipt and shipment of steel, miscellaneous ores, and general cargo in foreign and domestic trade; owned and operated by Brownsville Navigation District.

(341) **S side of Brownsville Ship Channel:**

(342) **Port of Brownsville, B.C. Dock (25°57'19"N., 97°23'10"W.):** 400-foot face; 400 feet of berthing space; 39 to 42 feet alongside; deck height, 12 feet; two traveling grain loading towers with conveyer and loading spout, loading rate 24,000 bushels per hour each tower; 3-million-bushel grain elevator; shipment of grain; and receipt of stone; owned by Brownsville

Navigation District and operated by Port Elevator-Brownsville, LC; and Global Stone, LC.

(343) **Brownsville Navigation District, Liquid Cargo Dock** (27°57'34"N., 97°22'24"W.): 60-foot face; 450 feet of berthing space; 34 feet alongside; deck height, 14 feet; pipelines to storage tanks, 2.76-million-gallon capacity; receipt and shipment of petroleum products and liquid wax; owned by Brownsville Navigation District and operated by Citgo Petroleum Corp. and Transmontaigne Terminaling Co.

Supplies

(344) All manner of marine supplies and provisions are available at the port. Freshwater is available at most of the wharves. Gasoline, diesel fuel, and kerosene are available at the oil wharves. Bunker fuels can be delivered by barge from Corpus Christi by special arrangements.

Repairs

(345) Port of Brownsville has no facilities for making major repairs or for drydocking deep-draft vessels; the nearest such facilities are at Galveston. Several firms are available for making above-the-waterline repairs to vessels. Shafts up to 30 feet long can be produced by a local firm. The largest marine railway can handle vessels up to 200 tons.

Small-craft facilities

(346) **Brownsville Fishing Harbor** is on the N side of the channel 3.6 miles below the head of the turning basin at Port Brownsville. In March 2002, the channel leading into Brownsville Fishing Harbor had a controlling depth of 14.0 feet, thence 15.0 feet in the connecting channel with 15.0 feet in the basins. Berthing facilities are usually leased to fishing companies and facilities for private yachts are very limited. There are seafood processing plants, marine supply outlets, and marine engine repair facilities in the fishing harbor. Two shipyards have marine ways, the larger capable of handling vessels up to 100 feet for general repairs. Gasoline, diesel fuel, water, ice, launching ramps, open and covered berths, and marine supplies are available. There is bus and taxi service from the basin to Brownsville. Most of the public facilities for yachts are at Port Isabel.

Communications

(347) Brownsville is connected with points in both the United States and Mexico by three trunkline railroads; the Missouri Pacific, the Southern Pacific, and the National Railways of Mexico. Switching service within the port is done by the Brownsville and Rio Grande International Railroad. Several barge lines offer service at the port. Numerous motor freight lines operate out of the port and Brownsville. Steamship agencies represent numerous lines that offer service to all ports of the world. Airlines operate from the Brownsville-South Padre Island International Airport about 4 miles E of the city, with daily scheduled flights to all parts of the United States. There is local taxi and bus service, and interstate bus service to all points.

(348) **Port Isabel,** about 2.5 miles W from Brazos Santiago Pass, is an important point for the shipping of petroleum products by barge and the receipt of barge shipments of sand and gravel. It has a large shrimp boat fleet, and the town is widely patronized as a resort for sport fishing and recreation.

Channels

(349) A marked, dredged channel leads from the Intracoastal Waterway, along the N side of the city, to the Port Isabel small-boat basin. In June 2000, the controlling depths were 7.0 feet from the Intracoastal Waterway to the harbor entrance, thence 6.5 feet in the harbor channel, with depths of 6.0 feet in the basin.

(350) A narrow dredged channel leads NW from the Intracoastal Waterway close SW of the pontoon bridge and leads around the N side of a small island marked at each end by a daybeacon. The channel connects with **Port Isabel Side Channel,** another dredged channel that extends W from the Intracoastal Waterway about 0.3 mile SW of the pontoon bridge and leads N to connect with side channels used principally by fishing vessels. In April 1999, the controlling depth was 10.0 feet in the channel around the island and in the Port Isabel Side Channel.

(351) The deep-draft Port Isabel Channel departs the Laguna Madre Channel about 2.8 miles above the jetties and leads N for 1.2 miles to the turning basin at Port Isabel. A Federal project provides 42 feet through Laguna Madre Channel and 36 feet through Port Isabel Channel and turning basin. (See Notice to Mariners and latest editions of charts for controlling depths.) The Intracoastal Waterway is described in chapter 12.

(352) A causeway crossing the Intracoastal Waterway between Port Isabel and Padre Island has a fixed span with a clearance of 73 feet. The fixed span of the former causeway crossing the S end of Laguna Madre between Long Island and Padre Island has been removed; a 38-foot navigation opening remains.

Wharves

(353) There are over 25 piers and wharves at Port Isabel. Most are of shallow draft and are used mainly by the seafood industry and for marine services and repairs. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 26, published and sold by the U.S. Army Corps

of Engineers. (See appendix for address.) The deep-draft facilities on the turning basin are owned by the Port Isabel-San Benito Navigation District and are managed by a **port director,** who assigns berths and controls the movement of vessels. A **speed limit** of 4 knots in the harbor and 8 knots in the ship channel is enforced.

(354) The Port Isabel Turning Basin General Cargo Wharf, on the W side of the turning basin, has a 550-foot face with 30 feet reported alongside. About 50,000 square feet of covered storage, 72,000 square feet of open storage space, and storage tanks with 192,000-barrel capacity are available. The wharf is used for the receipt and shipment of general cargo, the receipt of sand and gravel, and the shipment of crude oil. The wharf has highway, freshwater, shore power, and pipeline connections.

(355) The port has lay berth facilities for vessels to 200 feet long and 24-foot draft. An additional 600-foot cargo dock with 24 feet alongside is available and is currently used by the offshore drilling industry.

Supplies

(356) Port Isabel has no waterfront facilities for bunkering deep-draft vessels; fuel can be supplied to vessels berthed in the turning basin by tank barges from Corpus Christi. Gasoline, diesel fuel, and marine lubricants are available to fishing boats and other small vessels.

Repairs

(357) Port Isabel has no facilities for making major repairs or for drydocking deep-draft vessels; the nearest such facilities are at Galveston. Several firms are available for making above- and below-the-waterline repairs to smaller vessels. The largest marine railway can handle vessels up to 140 feet and 800 tons for general repairs.

Small-craft facilities

(358) There are several marinas at Port Isabel. (See the small-craft facilities tabulation on chart 11302 for services and supplies available.)

Communications

(359) Port Isabel has highway connections, and the Cameron County Municipal Airport is about 10 miles NW of the city..

(360) **Del Mar Beach,** on Brazos Island, is a swimming and fishing resort.

(361) The **Rio Grande** empties into the Gulf of Mexico 6 miles S of Brazos Santiago Pass. The International Boundary and Water Commission states (December 28, 1953) that the river forms the International boundary between the United States and Mexico for 1,241 statute miles; further, that the total length of the boundary is 1,935 statute miles from the Gulf of Mexico to the Pacific Ocean. No survey of the river has been made recently, but access to the river over the entrance bar is limited to skiffs and small boats; inside, the channel is changeable. The International Boundary Commission has several dams on the Rio Grande to prevent freshwater from wasting into the Gulf.

(362) The E coast of Mexico is described in Pub. No. 144, Sailing Directions (Enroute), Caribbean Sea, published by the National Geospatial-Intelligence Agency.