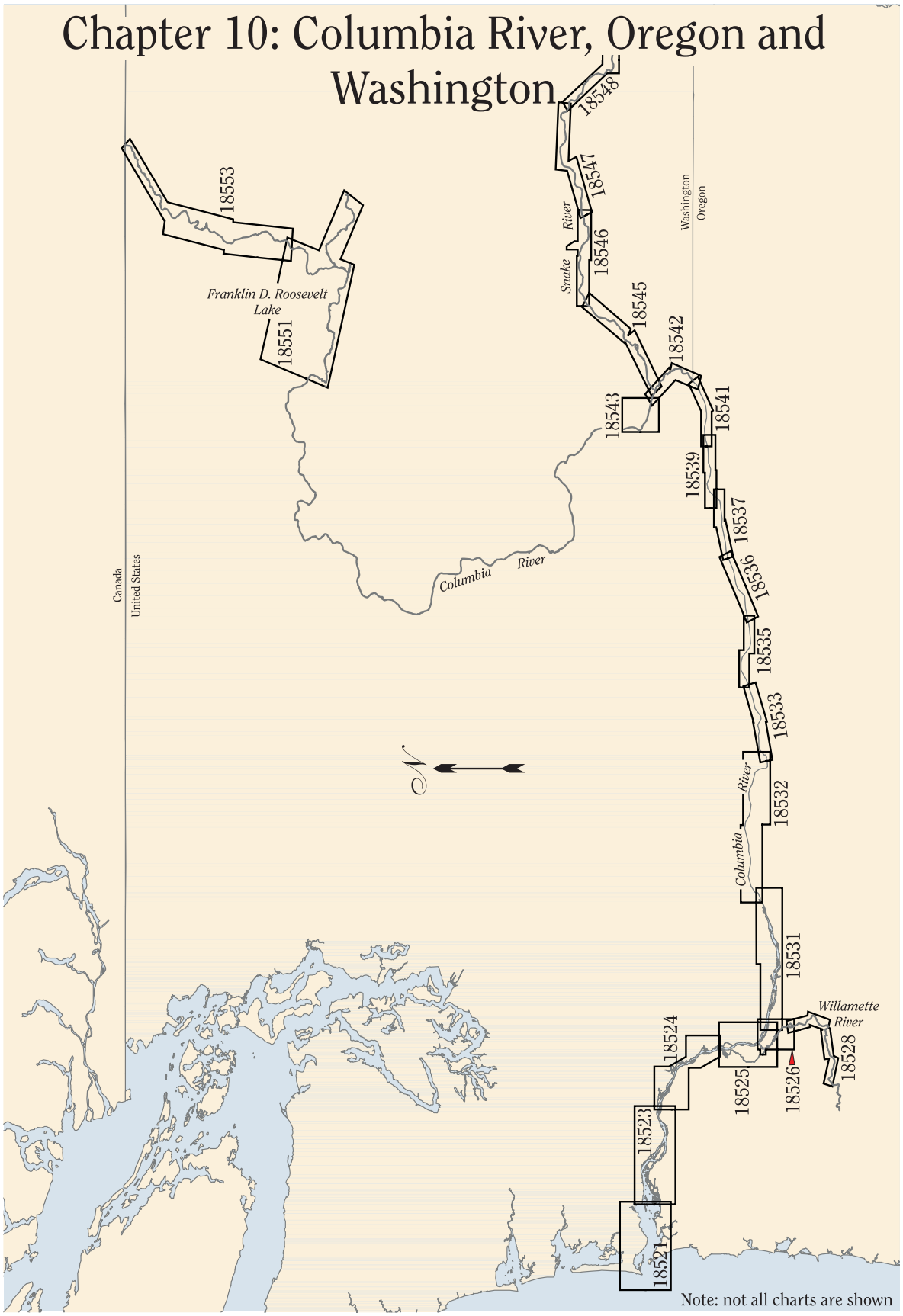
Chapter 10: Columbia River, Oregon and Washington
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Note: not all charts are shown

Columbia River, Oregon and Washington

(1) This chapter describes the Columbia River from its mouth at the Pacific Ocean to the head of navigation above Richland, Wash. Also described are its two major tributaries, the Willamette River in Oregon and the Snake River in Washington and Idaho. The deep-draft ports of Astoria, Longview, Portland, and Vancouver are described as well as many smaller ports.

(2) **Note:** The nautical charts covering the Columbia, Willamette, and Snake Rivers show statute mile designations. However, the **distances** given in the text for these waterways are the **nautical miles** above their respective mouths with the statute mile equivalents shown in parentheses. Unless otherwise indicated, all other distances are given in nautical miles.

(3) **Mile 0.0,** on the Columbia River, is at the junction of the Main Channel Range and a line joining the outer ends of the jetties. The distance to the mouth of the Columbia River from a position 0.5 mile W of the Columbia River Approach Lighted Whistle Buoy CR is 5.8 (6.6) miles.

(4) Conversion tables, nautical miles to statute miles, and statute miles to nautical miles are on page T–34. Mileage conversion scales are also shown on the nautical charts.

COLREGS Demarcation Lines

(5) The lines established for the Columbia River are described in **80.1365**, chapter 2.

Vessel Arrival Reports

(6) The **Washington State Department of Ecology** requires that all tank vessels, and certain cargo and passenger vessels, submit an Advanced Notice of Entry (ANE) Report at least 24 hours prior to entering Washington waters.

(7) A tank vessel is defined as any vessel that carries, or is certified to carry, oil in bulk as cargo or cargo residue. A cargo vessel is any self-propelled vessel in commerce that is 300 gross tons or more. A passenger vessel is any vessel 300 gross tons or more with a fuel capacity of at least 6,000 gallons that carries passengers for compensation.

Vessels required to submit an ANE Report must provide the following information:

(8) a. Vessel name, flag, call sign, and IMO (Lloyd's) number or official number.

(9) b. Last port of call.

(10) c. Current position, time, course, and speed.

(11) d. Length and freshwater draft of vessel.

(12) e. Name and ETA to port of destination.

(13) f. Agent name, if any.

(14) g. Cargo; dangerous or pollutant cargo by name, UN number, or IMDG Code number of certain dangerous cargoes as defined in **33 CFR 160.203**. (The vessel must also report the items required in **33 CFR 160.211 (a)(1) through (a)(8) and (b)** when applicable.)

(15) h. Any hazardous conditions, defects, or deficiencies in charts, publications, hull, steering gear, propulsion machinery, navigation equipment, anchors or cables, or required radio communications equipment.

(16) i. On scene weather, if severe.

(17) j. Identify the vessel's Oil Spill Contingency Plan, the vessel's official number, owner or operator's full address, and bunkering activities while in Washington, if any.

(18) The Washington State Department of Ecology also requires owners and operators of vessels to submit Safety Reports when a vessel experiences an unusual circumstance. A Safety Report is required for any of the following conditions:

(19) a. Any abnormality or malfunction of any steering, propulsion, or safety system, or navigation systems required by federal or international law or regulation;

(20) b. A breach of hull or the integrity of a cargo of bunker tank that causes or that may reasonably be expected to cause an oil spill or loss of stability;

(21) c. Damage from fire or explosion;

(22) d. An incomplete engineering or deck complement under United States law or regulation under the requirements of the vessel's country of registry; or

(23) e. Any condition that could adversely affect the safety or a vessel, bridge, structure, shore area, or the environment.

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(24) A Safety Report must be submitted with an Advance Notice of Entry, or, if the condition occurs after submittal of an ANE the Department must be notified immediately by phone or facsimile of the condition. To inquire or submit vessel information, vessel owners or operators may contact the Washington State Department of Ecology by calling 24 hours, 503-790-4868 (Columbia River and Grays Harbor) or 360-956-8378 (Strait of Juan de Fuca and Puget Sound). Facsimile Safety Reports should be sent to 1-800-664-9184 or 360-407-7288. Cargo, passenger, fishing and tank vessels are subject to boarding by Washington State Department of Ecology inspectors when in port. Tank vessels are required to have a Tank Vessel Oil Spill Prevention Plan on file with Ecology or must obtain a waiver prior to entering Washington State waters. Washington State also has safe bunkering procedures that must be followed during fuel transfers. For more information contact Ecology by calling 24 hours, 503-790-4868 (Columbia River and Grays Harbor) or 360-956-8378 (Strait of Juan de Fuca and Puget Sound). **To report an oil spill call 1-800-258-5990.**

(25) **Caution.**–The volcanic eruptions of Mount Saint Helens in mid-1980 caused extensive flooding with resulting heavy siltation in the lower Columbia River. Large amounts of mud, logs, and other debris entered Columbia River from Cowlitz River, just E of Longview at Mile 59 (68). In late 1980, dredging was done in the aforementioned area, however, mariners are advised to use caution in the Columbia River and its tributaries. Self-propelled hopper dredges, dredge barges and pipeline dredges may be encountered throughout the transit from sea to Bonneville Dam. Mariners should contact these vessels on VHF-FM channel 13 to make passing arrangements, and navigate with due caution through these areas.

(26) Rice Island, Miller Sands, Jim Crow Sands and Cottonwood Islands are used for dredging disposal sites. Elevations of these islands constantly change, as well as the overall shape and dimensions.

Charts 18003, 18007

(27) **Columbia River** rises in British Columbia, Canada, through which it flows for some 370 (425) miles before entering the continental United States in NE Washington. Thence it flows S to its junction with Snake River, from which it curves W and forms the boundary between the States of Washington and Oregon for the remainder of its course to the Pacific Ocean. Its entrance is 548 miles N of San Francisco and 145 miles S of the Strait of Juan de Fuca. The length of the river is 647 (745) miles in the United States. Between the Cascade Mountains, the river flows through a canyon averaging about 5 miles wide between high cliffs on each side; of this width, the river occupies about 1 mile, the rest being marsh, low islands, and lowlands. Near the mouth, the river becomes wider, and in some places is 5 miles across.

(28) Columbia and Willamette Rivers are navigable by deep-draft vessels to Vancouver, Wash., and Portland, Oreg. Barges navigate the Columbia River to Pasco and Kennewick, Wash., 286 (329) miles above the mouth.

(29) Navigation on the tributary Snake River, which joins the Columbia at Pasco, is possible to Lewiston, Idaho. The hydro-electric powerplants at the dams on the Columbia provide the major supply of electricity for the entire Northwest.

(30) The commerce, both foreign and domestic, is extensive. The exports are principally logs, lumber, and forest products, grain, flour, chemicals, fruit, fish, general and containerized cargo, and general merchandise; the imports are coal, petroleum products, bulk salt, bulk cement, alumina, manufactured, and general and containerized cargo.

(31) There are numerous settlements and landings, but Astoria, Oreg.; Longview, Wash.; Vancouver, Wash.; and Portland, Oreg. are the principal shipping points. The distances above the mouth of the Columbia River to these ports are, respectively, 12 (14) miles, 58 (66) miles, 92 (106) miles, and 97 (112) miles; Portland is on the Willamette River 9 (10.5) miles above its junction with the Columbia. A U.S. or Interstate Highway closely follows the S side of the Columbia River from Astoria to Portland to Pasco, Wash., and a Washington State Highway extends along or near the N bank from Skamokawa to Richland, Wash.

Prominent features

(32) **Columbia River Approach Lighted Whistle Buoy CR** (46°11'05"N., 124°11'03"W.), about 5.3 miles SW of the entrance to Columbia River, is equipped with a racon.

(33) **Mount Saint Helens,** nearly 8,500 feet high with a truncated-cone shape, is about 75 miles E of the entrance to the river. On a clear day it is visible when looking up the valley from seaward. **Mount Hood** and **Mount Adams** are lofty snow-covered peaks, which are also visible from parts of Columbia River on a clear day.

(34) In 1980, several volcanic eruptions occurred from Mount Saint Helens. Mount Saint Helens' eruptions were the first in the continental United States since the volcanic eruption of Mount Lassen in northern California in 1915; both volcanoes are part of the Cascade Range.

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Chart 18521

(35) **Clatsop Spit**, on the S side of the entrance, is a low sand beach, extending about 2.5 miles NW from Point Adams. There is a tendency for the shoal N of the spit to build up to the NW because of spring freshets and NW storms; vessels are cautioned to keep informed about conditions at the spit.

(36) **Point Adams,** just inside Clatsop Spit, is a low sandy point covered with spruce and undergrowth to the edge of the sand beach and low dunes. The point usually shows well from seaward, particularly if it is hazy inside.

(37) **Cape Disappointment,** the rugged N point at the Columbia River entrance, is the first major headland along the 20 miles of sand beach N from Tillamook Head. It comprises a group of rounding hills covering an area 2.5 miles long and 1 mile wide, divided by a narrow valley extending NNW. The seaward faces of these hills are precipitous cliffs with jagged, rocky points and small strips of sand beach. **Cape Disappointment Light** (46°16'33"N., 124°03'08"W.), 220 feet above the water, is shown from a 53-foot white conical tower with white horizontal band at top and bottom, and black horizontal band in the middle, on the S point of the cape. **Cape Disappointment Coast Guard Station** is at Fort Canby on the E side of the cape.

(38) From the S, Cape Disappointment shows as three low knobs, separated by low flat ridges. North Head Light shows on the W slope of the W knob. From the W, the cape is not prominent, but it stands out clearly when there is fog, haze, or smoke inside the cape. From NW, the cape appears as a flat island with a slight depression in the center and a timbered knob at each end. From this direction, a low, flat hill with gently sloping sides between the cape and high ridges E appears as an island from a distance.

(39) **McKenzie Head,** 0.8 mile NW of Cape Disappointment Light, is 190 feet high and nearly round. On its seaward face it is covered with grass and fern; bare of trees. On its E face it is heavily wooded with spruce.

(40) **North Head,** the extreme W point of the cape, is 270 feet high, with a very jagged, precipitous cliff, backed by a narrow grassy strip; the higher ground behind it is covered with trees. **North Head Light** (46°17'56"N., 124°04'41"W.), 194 feet above the water, is shown from a 65-foot white conical tower on the W point.

(41) The entrance to Columbia River is marked by two jetties. The S jetty extends 2.7 miles seaward from the NW end of Clatsop Spit; the westernmost mile of the jetty is submerged. The N jetty extends 800 yards seaward from the shoreline on the N side of the entrance. Lighted ranges, lights, buoys, and daybeacons mark the channels.

Channels

(42) Federal project depths in the Columbia River are 48 feet over the bar, thence 40 feet to the Broadway Bridge at Portland, Oreg.; 40 feet from the confluence of the Willamette and Columbia Rivers through the lower turning basin at Vancouver; and thence 35 feet through the upper turning basin at Vancouver. (See Notice to Mariners and latest editions of charts for controlling depths.) Additional information can be obtained from the Corps of Engineers, Portland, Oreg. (See appendix for address.)

(43) Above Vancouver the Federal project depth is 27 feet for about 75 (86) miles to The Dalles, thence 14 feet for about 87 (100) miles to McNary Dam. The Federal project also provides for a 15-foot barge channel which extends SE from the S side of the upper turning basin at Vancouver and connects with the 27-foot channel about 1 mile upriver. An alternate barge channel, just S of and running parallel to the barge channel, extends SE to the 27-foot channel. In October 1999, the controlling depth in the alternate barge channel was 17 feet. Controlling depths throughout the river channels and basins may be considerably less than project depths. The depths over the lower sills of the locks at The Dalles, John Day, and McNary Dams may be the controlling depth for this stretch of the river; the least sill depth (at McNary Dam) will usually exceed 12 feet at normal pool level. In the pool above McNary Dam to Pasco and Kennewick, depths range from 14 to 115 feet. Navigation on the Snake River is possible to Lewiston, Idaho. (See Notice to Mariners and latest editions of charts for controlling depths.) Additional information can be obtained from the Corps of Engineers, Portland, Oreg. and Walla Walla, Wash. (See appendix for addresses.)

Depths

(44) Minimum depths are given at mean lower low water from the entrance of the Columbia River to Harrington Point, thence at Columbia River Datum to Bonneville Dam on the Columbia River, and Willamette Falls Locks at Oregon City on the Willamette River. **Columbia River Datum** is the mean lower low water during lowest river stages. The staff gage at the Columbia River Pilots' Office, at the foot of 14th Street at Astoria, Oreg., is set with zero at mean lower low water. The staff gages on the bars from Harrington Point to Portland, Oreg., are set with zero at Columbia River Datum. Above the Willamette Falls Locks, at Oregon City, depths of the Willamette River are at **Willamette River Datum.** Above Bonneville Dam depths of the Columbia River are referred to the normal pool level of the various dams on the Columbia River.

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Anchorages

(45) **General anchorages** are in the Columbia River. (See **110.1 and 110.228,** chapter 2, for limits and regulations.)

Bridges and cables

(46) Clearances of bridges and cables over Columbia River and its tributaries are at **mean lower low water** below Harrington Point and at **Columbia River Datum** between Harrington Point and Bonneville Dam. Above Bonneville Dam the clearances are referred to the **normal pool level** of the various dams on the Columbia River. On the Willamette River above the Willamette Falls Locks, at Oregon City, clearances are referred to the datum of **Newburg Pool.** Minimum clearance of cable crossing the main channel of the Columbia and Willamette Rivers to Portland and Vancouver is 216 feet.

Caution regarding aids to navigation

(47) During the seasonal high-water conditions, aids to navigation may be destroyed or rendered unreliable. Mariners are warned to exercise caution in navigating the river and to obtain the latest information regarding aids to navigation by local inquiry and through local Notice to Mariners, available upon request to the Commander, 13th Coast Guard District, Seattle, (see appendix for address). Every effort is made to restore the aids to operating condition as soon as possible.

Weather, Columbia River, Oregon and Washington

(48) The maritime climate near the Columbia River's mouth slowly turns continental as you head upstream. Temperatures become warmer in summer and colder in winter. Daily temperatures vary more. Rain and fog are less frequent, but the chance of snow is greater. In the Columbia River Gorge, winds are deflected and channeled by topography.

(49) Average winter daytime temperatures vary from the upper forties (8.9° to 9.4°C) near the mouth to the upper thirties (3.3° to 3.9°C) near the Snake River junction. At night, this range is from the mid-thirties (0.6° to 2.8°C) to the mid-twenties (-5.0° to -2.8°C). Cold spells occur with an outbreak of frigid Canadian air. Extreme temperatures range from the low teens (-11.7° to -11.1°C) near the coast to below zero upriver (-18.3°C). Snow, of a significant amount, falls on 2 to 5 days each year, and is most likely upriver. Occasionally, an ice storm or "silver thaw" will occur; this happens most often between the Gorge and Vancouver. While winds are strongest in late fall and winter, they seldom reach gale force along the Columbia. Extremes of 75 knots have occurred; strongest winds are usually out of the south or southwest. Wind flow is generally from the east through southeast in winter, and wind speeds reach 17 knots or more about 5 to 10 percent of the time. However, locally at Troutdale, winds blow at 17 knots or more up to 30 percent of the time. Fog drops winter visibilities below 0.5 mile (0.9 km) on about 3 to 6 days per month.

(50) Spring temperatures rise slowly near the mouth of the Columbia, compared to the rise upriver. By April, daytime temperatures upriver average in the midsixties (17.2° to 19.4°C), while those near the mouth are in the midfifties (11.7° to 13.9°C). Average low temperatures are near 40°F (4.4°C) everywhere. Rain and fog become less frequent than they were in winter. Gales are rare and winds of 17 knots or more blow less than 5 percent of the time except locally around The Dalles, where winds of 17 knots or more occur 18 to 25 percent of the time from April through August. By April, winds are generally out of the W through NW. Flooding on the Columbia is most likely to occur from April through June, when snow melt at its headwater is most rapid. While flooding is kept under control, to a great extent, by multi-purpose dams, heavy rains during the melting season can trigger floods.

(51) Summer winds remain W through NW and generally light. Near the mouth of the river, these maritime winds have a cooling effect. They keep average daytime temperatures below 70°F (21.1°C) at Astoria and below 80°F (26.7°C) at Portland. This effect diminishes upstream, and E of the Cascades daytime temperatures average close to 90°F (32.2°C). Lows at night fall into the low fifties near the coast and upper fifties (14.4° to 15.0°C) inland. Rain falls on only a few days per month, usually in the form of showers or thunderstorms. Toward late summer, fog becomes a hazard near the mouth. At Astoria, visibilities fall below 0.5 mile (0.9 km) on about 4 days in August.

(52) Fog spreads upstream to Portland and Troutdale by September. During the fall, fog reduces visibilities to less than 0.5 mile (0.9 km) on 4 to 8 days per month, W of the Columbia River Gorge. The difference in fog E and W of the Gorge does not extend to temperatures. The temperature range is smallest in fall. In October, daytime high temperatures range from the low sixties (16.1° to 16.7°C) near the mouth to the midsixties (17.2° to 19.4°C) upriver, while average low temperatures vary from the midforties (6.1° to 8.3°C) near the coast to the low forties inland (5.0° to 5.6°C. By October, winds begin to blow more out of the E through SE and become stronger. While gales are infrequent, winds of 17 knots or more occur 4 to 10 percent of the time. Rain falls on about 5 to 15 days per month W of the Cascades and 2 to 6 days per month to the E.

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Routes, Columbia River approach

(53) The lights at the entrance and at Willapa Bay 28 miles N, are distinguishing marks for determining a vessel's position and subsequent shaping of her course.

(54) In thick weather, great caution is essential on the approach from any direction. The currents are variable and uncertain. Velocities of 3 to 3.5 knots have been observed between Blunts Reef and Swiftsure Bank, and velocities considerably in excess of those amounts have been reported. Under such conditions, vessels should keep outside the 30-fathom curve until Columbia River Approach Lighted Whistle Buoy CR has been made. Care should be taken not to mistake the low sand beach N of Cape Disappointment for that S of Point Adams. Nearly all the vessels which have gone ashore attempting the entrance have been wrecked N of the mouth, in the vicinity of Peacock Spit.

(55) In clear weather, vessels should have no difficulty in entering the river as the aids to navigation are numerous. In thick weather, however, when aids cannot be seen, strangers should not attempt to enter without a pilot.

(56) Local vessels entering in thick weather and with a rising tide, as a rule, do not attempt to pass beyond Desdemona Sands Light, because of the difficulty under such circumstances of avoiding vessels anchored in the narrow channel above the light. Strangers should not attempt to navigate the river at night.

(57) Dredges will usually be found at work in the channels; these dredges should be passed with caution and reduced speed. (See **162.225,** chapter 2, for navigation regulations.)

Weather, Cape Disappointment

(58) An estimate of bar conditions, visibility, and weather may be obtained by radio from the Coast Guard station at Cape Disappointment.

Tides

(59) Mean ranges of tides on the Columbia River range from 6.6 feet at Tongue Point, E of Astoria, to 3.3 feet at Longview, Wash., to 1.3 feet at Vancouver, Wash. (See Tide Tables for mean and diurnal ranges at selected points along the Columbia River.)

Currents

(60) The currents in the Columbia River and approaches are described in the Tidal Current Tables.

(61) **Caution.**–The Columbia River bar is reported to be very dangerous because of sudden and unpredictable changes in the currents often accompanied by breakers. It is reported that ebb currents on the N side of the bar attain velocities of 6 to 8 knots, and that strong NW winds sometimes cause currents that set N or against the wind in the area outside the jetties.

(62) In the entrance the currents are variable, and at times reach a velocity of over 5 knots on the ebb; on the flood they seldom exceed a velocity of 4 knots. The current velocity is 3.5 knots, but this tidal current is always modified both as to velocity and time of slack water by the river discharge. On the flood there is a dangerous set toward Clatsop Spit, its direction being approximately ESE; on the ebb the current sets along the line of buoys. Heavy breakers have been reported as far inside the entrance as Buoy 20, N of Clatsop Spit.

(63) (See the Tidal Current Tables for daily predictions.)

Freshets

(64) The annual high-water freshet stage on the Columbia occurs in the latter part of May, but on Willamette River the peak-flow period usually begins mid-December and continues through February, according to measurements taken by the U.S. Geological Survey over the past 70 years. Thus, the Willamette is low or nearly so at the time of the peak flow on the Columbia in late May. This causes the Willamette to apparently change direction under the influence of the stronger flow or "backup" from the Columbia, which change is apparent at least as far up the Willamette as the city of Portland.

(65) On Columbia River, the freshet flow causes some shoaling in the dredged cuts, but redredging is done to maintain project depths.

(66) Since logging is one of the main industries of the region, free floating logs and submerged deadheads or sinkers are a constant source of danger in the Columbia and Willamette Rivers. The danger is increased during spring freshets. **Deadheads** or **sinkers** are logs which have become adrift from rafts or booms. One end of the sinker settles to the bottom while the other end floats just awash, rising and falling with the tide.

Ice

(67) Ice forms occasionally in both the Willamette and Columbia Rivers, but it is seldom heavy enough to affect navigation seriously.

Pilotage, Columbia River and Bar

(68) Pilotage across the Columbia River bar and up or down the river is compulsory for U.S. vessels enrolled or sailing under Registry and all foreign vessels, except foreign recreational or fishing vessels not more than 100 feet in length or 250 gross tons international.

(69) Columbia River Pilots and Columbia River Bar Pilots serve Columbia River and its tributaries, from the entrance over the bar to the head of navigation. Larger

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ports served are Astoria and Portland, OR; Vancouver, Kalama, and Longview, WA.

(70) Pilotage is provided by the Columbia River Bar Pilots for the river entrance and by the Columbia River Pilots upriver from Astoria. The Columbia River Pilots office address is: 13225 N. Lombard, Portland, Oregon 97203; telephone 503-289-9922; Fax 503-289-9955. The Columbia River Bar Pilots office address is: 103 14th Street, Astoria, Oregon 97103; telephone 503-325-2641; Fax 503-325-5630.

(71) All vessels requesting the service of the Columbia River Bar Pilots are requested to give notification of their time of arrival directly to Columbia River Bar Pilots, Astoria (not through agent) at least 12 hours in advance by telephone to the pilot office in Astoria or by wire through radio station WLO, Mobile Radio, Mobile, Alabama (cable BARPILOT ASTO: TWX 9104668014; marisat 0259104668014). The Columbia River Bar Pilots office is capable of communicating by VHF radio with vessels offshore at distances greater than 60 miles. If the arrival time changes due to weather or other causes, Columbia River Bar Pilots are to be notified at the earliest, no later than 4 hours before the original ETA expires. Failure to communicate in a timely manner directly to the Columbia River Bar Pilots may result in delay. Marine exchange, agents and river pilots are advised of information received by the Columbia River Bar Pilots. When incoming from sea without the service of a Columbia River Bar Pilot, vessels or agents must give notice to the Columbia River Pilots between the hours of 0800 and 1600, and at least 12 hours prior to estimated time of arrival at Astoria. The call may be placed to the Columbia River Bar Pilot office, the Portland office, or by radio to COLRIP Astoria, Oregon. When ordering a Columbia River Bar Pilot, the following information is required:

(72) 1. Complete name and type of vessel.

(73) 2. The date and time of vessel ETA at the Pilot Station.

(74) 3. Maximum fresh water draft. If vessel is not even keel, provide fore and aft fresh water drafts.

(75) 4. Any pertinent spacial information or instructions about the vessels and its arrival.

(76) Embarking and disembarking Columbia River Bar Pilots is accomplished by helicopter or boat. Boat operations remain unchanged except as required in individual circumstances. Any changes will be given to vessels by VHF radio. The helicopter will deliver the pilot either by winching or landing on deck. Operations will be in accordance with ICAO regulations and with the International Chamber of Shipping's Guide to Helicopter/Ship Operations rules.

HELICOPTER TRANSFER PROCEDURES

General:

(77) Vessel configuration, sea state and wind force will determine if a hoist or landing will conducted. To provide the highest degree of safety for boarding, the Master may be requested to alter course or speed of the vessel, if safe to do so. The objective is to provide **minimum roll of the vessel** at the time of transfer.

Communication:

(78) 1. Arriving vessels call the **"Columbia River Bar Pilots"** for instructions before reaching 15 miles from the **'CR' Buoy** on VHF-FM channel 16/9.

(79) 2. Arriving vessels will be instructed to report again at 15 miles distance from the **'CR' Buoy** on channel 9 with course and speed.

(80) 3. Pilot helicopter **"SEAHAWK"** will then be dispatched to your vessel with the Marine Pilot.

(81) 4. Remain on VHF-FM channel 9 for helicopter operations until the marine pilot is safely transferred and the helicopter has departed the area.

Masters-Confirm the following:

(82) 1. Check that no wires or aerials are above the helicopter maneuvering zone.

(83) 2. Check that no loose objects are in or near the helicopter maneuvering zone.

(84) 3. At night, the helicopter maneuvering zone should be illuminated with all available deck lighting, but not in such a way to blind the helicopter crew. Deck lights must remain ON until the helicopter has departed the area.

(85) 4. Assisting crewmen should wear eye protective goggles.

(86) 5. The trail line, when used, must **NOT** be fastened to the vessel.

General Transfer Operations Instructions:

(87) 1. A clear area 5 meters in diameter with no obstructions higher than 0.08 meter.

(88) 2. A maneuvering zone concentric with previous area, which may extend over the vessel's side of 20 meters with no obstructions higher than 3 meters.

(89) **NOTE**: With the Master's agreement, the helicopter pilot may decide to conduct the transfer hoist outside of the designated area.

(90) 3. Vessel's course altered to prove **minimum roll of the vessel**.

(91) 4. Provide two crewmen to assist with transfer.

Trail/Tag line hoist operation:

(92) 1. The vessel crew tending the trail line must insure that the line is not tied to the vessel and does not become fouled with the vessel.

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(93) 2. The vessel crew tending the trail line shall use it to guide the Marine Pilot to the intended hoist area using only enough force to stabilize and keep the Pilot form swinging into hazards.

Land on Deck operations:

(94) 1. All vessel crew assisting with transfer remain clear of designated helicopter maneuvering zone. No vessel crew should ever approach the helicopter unless directed. Never pass in back or in front of the helicopter.

(95) The Columbia River Bar Pilots maintain one of two pilot boats on call at all times, the CHINOOK or the COLUMBIA, and maintain a continuous watch on VHF-FM channels 16, 13, and 9. Contact the Columbia River Bar Pilot office on channel 16 and then switch to channel 9 for boarding instructions. The pilot boats and pilot office working frequencies are VHF-FM channels 13, 16, and 9. The working frequencies of the helicopter are VHF-FM channels 16 and 9. The radio call for the Columbia River Bar Pilot office is KOK-360.

(96) The pilot boat COLUMBIA is 82 feet long and has a white hull and a white and orange superstructure with the word PILOT prominently displayed on the side of the house.

(97) The pilot boat CHINOOK is 72 feet long and has a yellow hull and yellow super structure with the word PILOT prominently displayed on the side of the house.

(98) The pilot helicopter SEAHAWK is 42.7 feet long with a rotor span of 36 feet and has a black and white body with the word PILOT prominently displayed on the side.

(99) To assist the Columbia River Bar Pilot in boarding, vessels are requested to contact the Columbia River Bar Pilot office one hour prior to arrival for boarding instructions. When CHINOOK is used, speed of the vessel should be 12 to 14 knots and the pilot ladder should be rigged 2 meters above the waterline; when the COLUMBIA is used, speed of the vessel should be 10 knots and the pilot ladder should be rigged 3 meters above the waterline on the side designated by the pilot boat, and over the draft marks clear of all discharges and obstructions; it should be well lighted at night. Manropes should not be rigged on inbound vessels.

(100) When transferring pilots off Astoria, the pilot ladder should be located at midship. The pilot ladder should be rigged 1 meter above the waterline. Maximum speed of the vessel should be 9 knots. Inbound vessels with drafts of 36 feet or greater are requested to arrive at Astoria 2 hours prior to Astoria high tide in order to take advantage of tidal conditions. Outbound vessels with drafts of up to 36 feet but less than 38 feet can generally sail at any time, but occasionally sailing times must be delayed to avoid transiting the river during extremely low tides. Outbound vessels with drafts of 38 feet or greater must have sailing times set to take advantage of optimum tidal conditions. Masters of vessels arriving during a bar closure are advised to stand offshore at least 10 miles west of the Columbia River Approach Lighted Whistle Buoy CR and await instructions from the Columbia River Bar Pilots. Using the open roadstead in the vicinity of the Columbia River entrance as an anchorage is dangerous in any weather. The Columbia River Bar Pilots do not recommend anchoring there under any circumstances.

(101) The Columbia River Bar Pilots boat boarding area is 1 mile E of the Columbia River Approach Lighted Whistle Buoy CR. The Columbia River Bar Pilot will generally board, if using the helicopter, prior to the vessel being within 4 miles of the CR entrance buoy. The Columbia River Bar Pilotage ground extends from the open sea, at least 10 miles beyond the outermost buoy, to Tongue Point, E of Astoria. The Columbia River Pilotage ground extends from the lowermost dock of the wharf at the port of Astoria to the head of navigation on the Columbia or Willamette Rivers and their tributaries.

(102) Columbia River Pilots have no pilot station boat. A pilot launch service is used to make the transfer from a bar pilot to a river pilot off Astoria. The launch is named the “Arrow II”, and is 53 feet long. It has a dark green hull, white superstructure, and has the word “PILOT” prominently displayed on a sign board forward of the house. The launch monitors and works VHF-FM channels 13, 16, and 9 when underway. The whistle signal for a bar pilot is one long, two short, and one long blasts; the whistle signal for a river pilot is one long and three short blasts.

(103) A fixed amber light is maintained by the Columbia Bar Pilots atop the pilot office at Astoria. When this light is exhibited it will inform outward bound vessels that desire a bar pilot that the bar is not passable and that the vessel should anchor.

(104) **Baker Bay** is a shoal open bight, E of Cape Disappointment, formed by the cape and the recession of the land N. **Sand Island**, low and flat, fronts the bay on the SW side. In 1997 a dangerous wreck was reported 800 yards WNW of Sand Island Lower Dike Light 1 in about 46°15'46"N., 124°00'57"W.

(105) A dredged channel leads N from the Columbia River along the W side of Sand Island thence to the Port of Ilwaco mooring basin about 3 miles above the entrance. The entrance is between two detached jetties marked at the channel ends by lights. The channel is marked by lights and daybeacons. The entrance usually has swells and is subject to continual change; the

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channel should be navigated only at high water with local knowledge. (See Notice to Mariners and the latest edition of the chart for controlling depths.) The rest of Baker Bay is covered with shoals and abandoned fish traps.

(106) **Ilwaco** is the base for a large commercial and sport fishing fleet. Berths with electricity, gasoline, diesel fuel, ice, water, and other supplies are available. The largest marine railway can handle vessels up to 75 feet long for all types of repairs. Lifts up to 50 tons are also available. Wet winter boat storage is available at this port. Machine and carpentry shops are at this boatyard. The **Port of Ilwaco** administers the docks and facilities of the port. For information about the channel or facilities, contact the port manager or harbormaster at 360-642-3143 or on VHF-FM channel 16.

(107) **Desdemona Sands,** marked by a light near the W end, is a shoal area extending SE for about 8 (9.2) miles from just inside the entrance to Columbia River. Desdemona Sands has the main river channel to the S and a secondary channel to the N.

(108) A boat basin is at **Hammond**. Its entrance is marked by a light and a daybeacon on the E and W jetties, respectively. In April 2000, the controlling depth was 6 feet in the basin channel with shoaling to lesser depths at the S end. Berths with electricity, for about 140 craft, gasoline, diesel fuel, water, ice, marine supplies, and a launching ramp are available at the basin. Wet winter storage and minor repairs are available in the basin.

(109) A packing plant wharf is about 0.5 mile SE of the boat basin at Hammond.

(110) **Warrenton**, on the **Skipanon Waterway** at Mile 9.5 (11), is the base of a large sport fishing fleet. About 1 mile above the entrance to the waterway is a basin with a marina on the S side. Berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, and a launching ramp are available. A marine railway that can handle boats up to 80 feet long is at the marina for hull repairs.

(111) In June 2002, the controlling depths were 13 feet (16 feet at midchannel) in the entrance channel to the basin, thence depths of 4 to 8 feet in the N half and 8 to 15 feet in the S half of the basin, and thence 6 feet at midchannel to the head of the project at the railroad bridge; this part of **Skipanon River** is used for logging operations. The channel to the turning basin is marked by a **198°30'** lighted range; lights mark the channel entrance.

(112) Above the waterfront area, the river is crossed by a fixed highway bridge with a clearance of 17 feet. A power cable upstream from the bridge has a reported clearance of 25 feet.

(113) **Scarboro Hill,** 820 feet high, is on the Washington side about 7 (8) miles E of Cape Disappointment. It is a long, gradually rising ridge, covered with grass, fern, and some trees. A number of conspicuous light-colored buildings of the historical Fort Columbia State Park may be seen near the base of the hill.

(114) A dredged marked channel leads from Columbia River near the E end of Baker Bay to a basin at **Chinook,** on the Washington side. In June 2002, the controlling depth was 6 feet in the left half of the channel to the basin; thence in September 1986, depths of 6 feet were reported available in the basin. Berths with electricity, gasoline, diesel fuel, water, ice, a launching ramp, and some marine supplies are available at the basin. A packing company wharf is at the basin. A 6-ton hoist is available for engine repair work. Wet winter storage is available in the basin.

(115) **Smith Point,** at Mile 11.3 (13.0) on the Oregon side, is the W termination of a high, wooded ridge; it is the first prominent point on the S bank SE of Point Adams. The ridge culminates in **Coxcomb Hill,** 595 feet high, behind Astoria. The Astoria Column on the top of the hill is prominent.

(116) **Youngs Bay** is a shoal body of water just W of Smith Point. It receives the waters of **Youngs River** and **Lewis and Clark River.** The docks of a marine repair yard are 0.5 mile above the Old Route 101 highway bridge crossing the Lewis and Clark River. The yard can handle vessels up to 350 tons for hull and engine repairs. Traffic on the two rivers is confined chiefly to tugs handling log rafts just above the highway bridges. Small tugs operate to the town of **Olney** on Youngs River at high tide.

(117) In December 1992, depths of about 5 feet could be taken to the mouth of Lewis and Clark River with shoaling to bare across the river entrance.

(118) In December 1992, the controlling depth was 5 feet in the improved channel through Youngs Bay to the bascule highway bridge at the entrance to Youngs River; deeper water can be found inside.

(119) Youngs Bay is crossed by U.S. Route 26/101 vertical-lift highway bridge with clearances of 39 feet down and 74 feet up, about 0.3 mile above the mouth. The bridgetender monitors VHF-FM channel 16 and works on channel 13, call sign WHG-914. The highway bascule bridge, 2.1 miles above the bay entrance at the entrance to Youngs River, has a clearance of 24 feet. (See **117.1 through 117.59 and 117.899**, chapter 2, for drawbridge regulations.) The least clearance of overhead cables across Youngs River to about 4 miles above the mouth is 103 feet.

(120) Over Lewis and Clark River, 0.8 miles above the mouth, is a highway bascule bridge with a clearance of 25 feet. The power cable at the bridge and the two about 1.8 miles above the mouth have a least clearance of 64 feet. The highway bridge, 4.8 miles above the mouth, has a fixed span 18 feet wide with clearance of 10 feet. (See **117.1 through 117.59 and 117.899**, chapter 2,

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for drawbridge regulations.) Clearances and depths on Youngs River and Lewis and Clark River are at **mean lower low water.**

(121) **Point Ellice,** on the Washington side 11 (12.7) miles inside the entrance, is the termination of a spur from the mountain ridge back of Scarboro Hill. The point is rounding and rocky, but not high. Two high hillocks lie behind the point. In this area there are many abandoned fish traps and pile structures that extend into the river.

(122) **Astoria,** at Mile 12 (14) on the Oregon side, extends from Youngs Bay to Tongue Point. It is the principal city on the Columbia River below Longview, Wash. It has connections with the interior by both rail and highway.

Anchorages

(123) **General anchorages** are N and W of Tongue Point. (See **110.1 and 110.228**, chapter 2, for limits and regulations.) Harbor regulations prohibit vessels from anchoring more than 1 hour within an area bounded on the S by the Astoria waterfront and on the N by the main channel buoys.

(124) The fixed highway bridge between Astoria and Point Ellice has a clearance of 205 feet at the center over the main channel and 48 feet over the N channel. A racon is on the bridge support pier just N of the main ship channel.

Tides

(125) The mean range of tide at Astoria is 6.6 feet, and the diurnal range of tide is 8.4 feet. A range of about 12 feet may occur at the time of maximum tides. (See the Tide Tables for daily predictions at Astoria (Tongue Point).)

Currents

(126) Above Astoria the current velocity is 1 to 3 knots except during the freshet period when the ebb is considerably increased although not enough to affect navigation seriously.

Weather, Astoria and vicinity

(127) Astoria's perennially verdant landscape is hemmed by rather low mountains on the N, E, and S. On the W it is open to the Pacific Ocean over 4 miles (7 km) or more of low green dunelands and the last 10 miles (19 km) of the Columbia River.

(128) The average temperature in Astoria is 51°F (10.6°C). The average maximum is 58°F (14.4°C) while the average minimum is 44°F (6.7°C). Ninety degree-plus readings have been recorded only during the June through September period and the all-time high is 100°F (37.8°C) recorded in July 1961. Temperatures less than 40°F (4.4°C) have been recorded in every month and only June through September have escaped below-freezing temperatures. The extreme minimum is 6°F (-14.4°C) recorded in December of 1972 and 1990.

(129) The average precipitation for Astoria is just over 67 inches (1702 mm). December is the wettest month averaging 10.50 inches (267 mm) while July is the driest month averaging only 1.10 inches (27.94 mm). An average of 240 days each year record precipitation. Snowfall is unusual. The average annual snowfall total is only 4.3 inches (109.2 mm) but every month except June through September has recorded at least a trace. An average of 191 days each year has fog and it is somewhat evenly distributed throughout the year. May is the most fog-free month while October records the most foggy days.

(130) Weather hazards occasionally occur. Storms may sink or wreck ships. Even in fair weather, wind and wave may combine to produce a type of breaker known as the "widow-maker" and swamp a boat. Heavy rains inundate lowlands, and high tides aggravated by gales may push seawater across highways and up beaches. Rains may cause earthslides, mostly in highway cuts. Storms may fell trees or break power and phone lines. Lightning strikes are rare. Showers of small hail may briefly whiten the ground during many of the months. Occasionally in winter there may be rather brief periods of freezing temperatures, with snow or ice.

(131) The climate of Astoria is generally characterized by summers with cool breezes and waters, moderate temperatures and periods of fog. Heat waves are uncommon and usually brief. Winters often bring dampness, increased precipitation, storms, winds and cloudness with brief periods of freezing temperatures, snow and ice. (See page T-7 for Astoria **climatological table**.)

Pilotage, Astoria

(132) See Pilotage, Columbia River and Bar, indexed as such, earlier this chapter.

Towage

(133) Tugs to 3,600 hp are available at Astoria with 12 hours notice. Arrangements for tugs are usually made in advance by ships' agents. Barges of various size and application are available with prior arrangement.

(134) Astoria is a **customs port of entry.**

Quarantine, customs, immigration, and agricultural quarantine

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

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

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Coast Guard

(137) Two Coast Guard cutters are stationed at Astoria. Astoria Coast Guard Air Station is at Clatsop County Airport.

Harbor regulations

(138) Harbor regulations are prescribed by the Port of Astoria Board of Commissioners. The direct operation of the port is controlled by a port manager who is appointed by the Board.

Wharves

(139) The Port of Astoria is a municipal corporation embracing all of Clatsop County, as a port district, and on the Columbia River extends from the mouth of the river to Westport, about 38 (44) miles above the mouth. The port owns a substantial part of the waterfront at Smith Point, and operates a well-equipped modern terminal with three piers. The port offices are at the head of Pier 2. For the latest information about depths alongside the piers, contact port authorities at 503-325-4521. Water, telephone, and electrical shore power connections are available at most of the berths. General cargo at the port is usually handled to and from vessels by ships' tackle or mobile crane service to 250 tons is available. Cargo on the wharves is handled by port-owned equipment. Additional equipment and stevedoring services are available from the Jones-Oregon Co. and the Stevedoring Services of America, which have offices and equipment sheds at Pier 2. Mobile crane service to 30 tons and derrick barge crane service to 110 tons is available from Bergerson Construction Co. (telephone 503-325-7130). For a complete description of the port facilities refer to Port Series No. 33, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.)

(140) Pier 1 (46°11'22"N., 123°51'27"W.): face, 620-foot berthing space; W side, 1,110-foot berthing space; 31 to 34 feet alongside; 10 acres of open storage; receipt, shipment, and storage of logs and other bulk cargo; operated by the Port of Astoria.

(141) Pier 2 (46°11'20"N., 123°51'36"W.): face, 415-foot berthing space, W side, 1,300-foot berthing space, E side, 1,250-foot berthing space; 70,000 square feet, sprinkler protected, covered storage; pipelines on pier for bunkering vessels and transferring petroleum products to storage tanks, total capacity 101,000 barrels; shipment of forest and paper products and general cargo; receipt and shipment of petroleum products; operated by Port of Astoria and McCall Oil Co.

(142) Pier 3 (46°11'16"N., 123°51'45"W.): E side, 1,3000-foot berthing space; 150,000 square feet, sprinkler protected, covered storage, about 24 acres of open storage; barge storage and storage of large products; ship moorage not available; operated by Port of Astoria.

Supplies

(143) Most marine supplies and services are available at Astoria. Facilities for bunkering ocean-going vessels are maintained at Pier 2, about 0.3 mile E of the bridge. Bunkering is available at anchorage, arrangements can be made at least 12 hours in advance through the ships agent or Brix Maritime on VHF-FM Channel 10. Fishing vessels are fueled at Carmichael-Columbia Oil Inc. wharf, about 0.5 mile E of the bridge.

Repairs

(144) The largest marine railway in the Astoria area can handle vessels to 400 tons. Complete hull, engine, and electronic repairs can be made. Complete salvage equipment is available in Astoria.

Small-craft facilities

(145) Two mooring basins for small craft and fishing vessels are maintained by the Port of Astoria. The West Basin, 0.3 (0.3) mile W of the S end of the Astoria Bridge, has 15 feet reported through the entrance and depths of about 5 feet at the floats. The entrance to the basin is marked by private lights. Berths with electricity, gasoline, diesel fuel, water, ice, and some marine supplies are available. All types of repairs can be made at several private firms on the basin. A 10–ton hoist at a packing company just W of the basin can handle small craft in emergencies. The East Basin, 2 (2.3) miles E of the Astoria Bridge, has berths and a launching ramp; however, no services are available. Reported depths of 15 feet through the entrance and 10 feet at the floats are available. West Basin has wet winter storage, and East Basin has wet and dry winter storage.

Communications

(146) U.S. Highway 101 extends N and S from Astoria, and U.S. Highway 30 extends inland to Portland, Oreg. Astoria is served by the Burlington Northern Railroad. The Clatsop County Airport, S of Youngs Bay, is served by a charter airline that handles passengers and freight.

(147) **Tongue Point,** at Mile 16 (18) on the Oregon side, is a bold, rocky peninsula, 308 feet high, covered with trees and connected with the S bank by a low, narrow neck; it projects into the river for 0.8 mile. A buoy depot of the Coast Guard is on the W side of the peninsula near its inner end. On the E side are the concrete piers of the former naval base.

(148) **Cathlamet Bay** is E of Tongue Point and S of the main ship channel. There are many islands which are covered with tule in the summer, but in the winter they

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are almost indiscernible. The **John Day Channel** extends between Tongue Point and **John Day Point.** At the junction with the **John Day River,** just N of the point, the name changes to **South Channel,** which follows the shore closely to and around **Settler Point** to **Svensen.**These channels are marked by buoys and daybeacons. The power cables across John Day River have a least clearance of 30 feet at mean lower low water. (See **117.1 through 117.59 and 117.881**, chapter 2, for drawbridge regulations for the railroad bridge across John Day River.) Many houseboats are moored along John Day River. The E part of Cathlamet Bay (chart 18523) is used mostly for logging operations and log storage.

(149) **Grays Bay** on the Washington side extends from **Grays Point** to **Harrington Point** N of the Main Ship Channel. In the NE section of the bay are extensive mud flats. In 1978, a submerged rock was reported in about 46°17'16"N., 123°43'34"W.; caution is advised. **Deep River** flows into the N part of the bay. The channel is marked and follows the shore from Grays Point around **Portugese Point** and **Rocky Point.** This river is used only by small pleasure craft and sport fishermen and for logging operations. Depths of about 6 feet are available for about 2 miles above the mouth, above which it is shoal and probably good for no more than 2 feet.

(150) **Grays River,** entered just E of Deep River, is another small stream used only by pleasure craft. Depths are not more than 2 feet, and much of the stream is blocked by snags and sunken logs.

Chart 18523

(151) Between **Harrington Point,** Mile 20.5 (23.6), and **Crims Island,** Mile 47.5 (54.6), Columbia River main channel follows the N bank to **Three Tree Point,** thence swings around the bend, holding to the NE shore as far as **Hunting Islands,** where it swings along the S shore until off the SE end of **Puget Island;** thence it follows the N bank from **Cape Horn** past **Abernathy Point** and N of Crims Island and **Gull Island.**

Currents

(152) In this section the current velocity is about 1 knot. Because of the river flow, which combines with the current, the upstream flow is weak or nonexistent and the downstream flow attains velocities of 2 to 3 knots.

Local magnetic disturbance

(153) Differences of as much as 3° from the normal variation have been observed along this section of the river.

(154) **Steamboat Slough,** NE of **Price Island** at Mile 29.3 (33.7) on the Washington side, and **Elochoman Slough,** on the E side of Hunting Islands at Mile 31.3 (36), are used by fishing boats, tugs, and for log storage. Gasoline and diesel fuel are available at **Skamokawa** just above the NW end of Steamboat Slough. A small marine railway, owned by a private packing firm, can be used if prior arrangements are made. In November 2000, the controlling depth was 1 foot along the SE edge of the entrance channel (shoaling to bare across the remainder of the entrance) and in the channel bend off Skamokawa.

(155) At Mile 35 (39.9), a power cable with a least clearance of 221 feet crosses the main channel to Puget Island. The tower on the E side of the channel on Puget Island is prominent.

(156) **Cathlamet Channel** joins the main channel at Mile 32.3 (37.2) on the Washington side. It is used by fishing boats, tugs, log rafts, and barges, and for some log storage above the city of **Cathlamet.** A dredged section of Cathlamet Channel leads SE from the main river channel to a fixed highway bridge at Cathlamet. In November 1981, the controlling depth was 10 feet. A mooring basin is at Cathlamet; berths with electricity, gasoline, diesel fuel, water, ice, wet and dry winter boat storage, a pumpout station, a launching ramp, and marine supplies are available. A fixed highway bridge crosses the channel from Cathlamet to Puget Island; the clearance is 75 feet for the N span. A power cable, 0.5 mile above the bridge, has a clearance of 97 feet.

(157) Three wharves, owned and operated by Fort James, are at **Wauna,** on the Oregon side at Mile 36.2 (41.7). The wharves are in line and together provide a total of 3,000 feet of continuous berthing space. Depths alongside are 20 to 50 feet and deck heights are 11 to 15 feet. A clamshell bucket unloads wood chips into a receiving hopper served by a conveyor system. Wood chips, sawdust, and fuel oil are received, and paper products are shipped.

(158) **Westport Slough,** at Mile 37.4 (43) on the Oregon side, leads to a ferry dock at the village of **Westport.** A lumbermill wharf, in ruins, is just E of the ferry slip. In 1989, the midchannel depth was 13 feet to the ferry dock. The ferry operates between Westport and the ferry landing 0.5 mile N of **Pancake Point** on Puget Island, and carries passengers and automobiles. Above Westport the slough was used for log storage; decaying and submerged piling may present hazards to vessels operating close to shore. About 7 feet can be carried to **Kerry,** 2.4 miles above the mouth. Overhead power cables 0.8 and 1 mile above the mouth of the slough have clearances of 74 and 76 feet, respectively.

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(159) **Wallace Slough,** at Mile 41 (47) S of Wallace Island, is used by fishing boats and house floats. A depth of 4 to 5 feet can be carried through the slough.

(160) **Beaver Slough** enters Wallace Slough near the SE end of Wallace Island. The slough is used by fishing boats and house floats. A fixed bridge with a 30–foot span and clearance of 8 feet crosses the W arm of the slough near its mouth. An overhead power cable with a clearance of 68 feet crosses the slough about 2 miles above the mouth.

(161) **Clatskanie River** is a tributary of Beaver Slough. A railroad swing bridge, about 0.6 mile above the mouth, has a clearance of 16 feet through the E draw. (See **117.1 through 117.59 and 117.865**, chapter 2, for drawbridge regulations.) There is a wharf at Clatskanie. Gasoline, diesel fuel, and water are available in cans from the town; mariners supplies, ice, and a launching ramp are also available. Several sawmills once operated along the river. Logs were stored throughout the area, and remnants of piling and related structures may present hazards close to shore. In November 1998, depths of about 2 feet could be carried through Beaver Slough to the mouth of Clatskanie River; thence 2 feet could be carried in the river to the town of Clatskanie; local knowledge is advised. Numerous shoals and snags have been reported in Beaver Slough and Clatskanie River.

(162) **Port Westward,** a former Army ammunition terminal, is the site of a general cargo terminal. The main wharf, just W of the entrance to Bradbury Slough, is 1,200 feet long, has 40 feet reported alongside and a deck height of 20 feet, and can be used for shipment and receipt of general cargo.

(163) **Bradbury Slough,** at Mile 46.6 (53.6) SW of Crims Island, has depths of 9 feet as far as the upper end where it shoals to 3 feet. There once was extensive log storage along the Crims Island shore. Remnants of pilings and log storage related structures may present hazards close to shore.

Chart 18524

(164) Between Crims Island and Saint Helens, Mile 75 (86), the main channel starts its SE swing, passing S of **Fisher Island** and **Hump Island,** and N of **Walker Island** and **Lord Island;** thence, under the Longview fixed bridge, thence W of **Cottonwood Island,** E of **Sandy Island,** and W of **Martin Island** and **Burke Island.** Numerous jetties along this stretch are usually marked by lights or daybeacons.

Currents

(165) In this section, the average velocity on the ebb is 2.0 knots. Flood currents can be experienced at low river levels after spring freshet and until the fall rainy season.

Local magnetic disturbance

(166) Differences of as much as 8° from the normal variation have been observed along this section of the Columbia River.

(167) **Coal Creek Slough,** at Mile 48.9 (56.3) on the Washington side, empties into the river at **Stella.** The slough is used for moorage of small craft. It was also used for log storage, and piling and related structures present hazards close to shore. A partially submerged landing craft is reported upstream of the entrance. Depths over the bar are 3 to 4 feet, but deeper water extends nearly 3 miles above the entrance. Power cables over the deeper part of the slough have a least clearance of 65 feet.

(168) **Fisher Island Slough,** N of Fisher Island, is used as the Longview Yacht Basin, by small fishing vessels, and as log-storage grounds. A depth of 7 feet may be carried through the channel. Remnants of log storage grounds may still be found throughout the transit.

(169) Power cables over the main channel at Mile 54.2 (62.4), at Lord Island, have a least clearance of 216 feet.

(170) The channel between Walker Island and the Oregon shore is used for log-raft storage. The shoal area, N of **Dibblee Point,** limits the maximum depth which may be carried through the entire channel to about 7 feet. The power cables S of Lord Island have a least clearance of 115 feet.

(171) The **Lewis and Clark Bridge,** at Mile 57.3 (66.0) between Longview and Rainier, has a fixed span with a clearance of 187 feet. The bridge piers are marked by buoys and fog signals.

(172) **Longview,** at Mile 57.3 (66) on the Washington side is a major river port. Papermills, lumbermills, and an aluminum plant are in the city. The lumbermills here are said to be the world's largest. Waterborne commerce includes lumber and wood products, flour, alumina and aluminum ingots, and general cargo.

Prominent features

(173) The Lewis and Clark Bridge with its high towers is easily the most prominent feature in approaching Longview from either up or down the river. Upon closer approach, the many stacks and tanks of the mills can be identified; most are charted.

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Anchorages

(174) Deep-draft vessels may anchor NW of Lewis and Clark Bridge between the main ship channel and the smaller channel N of the main channel. A secondary anchorage, SE of the bridge and just S of the main ship channel, may also be used. Depths in these anchorages range from 30 to 38 feet. Care should be exercised not to obstruct the dredged channels.

Tides and currents

(175) The mean range of tide at Longview is 3.3 feet. Average current velocity, on the ebb, at Longview is 2.0 knots.

Pilotage, Longview

(176) See Pilotage, Columbia River and Bar, indexed as such, early this chapter.

Towage

(177) Tugs to 3,600 hp are available at Longview.

(178) Longview is a **customs port of entry.**

Quarantine, customs, immigration, and agricultural quarantine

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

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

Harbor regulations

(181) The Port of Longview is a municipal corporation governed by a board of commissioners and administered by a port manager.

Wharves

(182) The deep-draft facilities at Longview include the four wharves and nine berths operated by the Port of Longview, and the privately owned and operated facilities of two large paper companies and an aluminum plant. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 33, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.) Depths alongside the port-owned wharves are reported to be maintained at 40 feet; for information on the latest depths contact the port authorities or private operators. All the facilities described have direct highway connections and plant trackage with direct railroad connections. The port-owned properties have a total covered storage area of 1 million square feet and open storage area of 75 acres. Water and electrical shore power connections are available at the port wharves and some of the private facilities. Special handling equipment, if available, is mentioned in the description of the particular facility.

Port-operated facilities:

(183) Berths 1, 2, 3, and 4: just E of the Lews and Clark Bridge; 2,355-foot berthing space; deck height, 40 feet. Berth 1, the westernmost berth has a 60-ton traveling gantry crane. Berth 3 has one loading conveyor with loading rate of 1,800 metric tons per hour and there are warehouses with 637,000 square feet of covered storage; about 30 acres of open storage; receipt and shipment of general cargo; receipt of dry bulk materials; shipment of miscellaneous dry bulk materials including urea and soda ash.

(184) Berth 5: just E of Berth 4; 720-foot berthing space with dolphins; 40 feet alongside; deck height, 20 feet; shipment of petroleum coke.

(185) Berths 6 and 7: just E of Berth 5; 1,500-foot berthing space; 40 feet alongside; deck height, 29 feet; 67,000 square feet of covered storage; 45 acres of open storage; one 33-ton container handling crane; receipt and shipment of general and containerized cargo, and logs. Berth 8, and extension of Berths 6 & 7, is a 600-foot general purpose dock intended for logs and general cargo, and 5 acres of open storage.

Private facilities:

(186) Reynolds Metals Co. Alumina Dock (46°08'08"N., 123°00'03"W.): 700 feet of berthing space with dolphins; 38 feet alongside; deck height, 15 feet; receiving hopper to belt conveyor system leads to storage tanks with 64,000-ton capacity; receipt of alumina; owned and operated by Reynolds Metals Co.

(187) Weyerhaeuser Co. Longview Plant Salt Dock (46°07'44"N., 122°59'20"W.): 1,160-foot berthing space with dolphins; 32 feet alongside; deck height, 26 feet; receipt and shipment of liquid chemicals; owned and operated by Weyerhaeuser Co.

(188) Weyerhaeuser Co. Longview Plant Woodpulp Export Dock (46°07'34"N., 122°58'55"W.): 1,185-foot berthing space with dolphins; 35 feet alongside; deck height, 26 feet; 93,000 square feet of covered storage; 250,000 square feet of open storage; shipment of lumber, paper products, and woodpulp; owned and operated by Weyerhaeuser Co.

(189) Weyerhaeuser Co. Longview Plant Wood Chip Berth (46°06'52"N., 122°58'08"W.): 960-foot berthing space with dolphins; 35 feet alongside; deck height, 29 feet; served by a pneumatic chip loader; 12 acres of open storage; shipment of wood chips; owned and operated by Weyerhaeuser Co.

(190) Weyerhaeuser Co. Longview Plant Log Export Wharf (46°06'33"N., 122°57'35"W.): 1,320-foot berthing space with dolphins; 35 feet alongside; deck height,

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21 feet; 20 acres of open storage; shipment of logs; owned and operated by Weyerhaeuser Co.

(191) **Note**: The four Weyerhaeuser facilities NW of the Lewis and Clark Bridge are reached by a side channel. In November 1982, the controlling depth was 28 feet. The channel is marked by a **115°** lighted private range.

Supplies

(192) Provisions and some marine supplies and services are available. Fuel oil and water are available at the wharves.

Repairs

(193) There are no facilities for major repairs to large oceangoing vessels in Longview; the nearest such facilities are in Portland. Some above-the-waterline repairs can be made, and there are several machine shops in the city. The Port of Longview has cranes to 65-ton capacity which can be used to lift private craft if prior arrangements are made.

Communications

(194) Longview is served by Interstate Highway 5 and U.S. Highway 30, and by three transcontinental railroads.

(195) **Cowlitz River** flows into Columbia River at Mile 59 (68), just E of Longview. The mouth of the river is heavily silted as a result of the volcanic eruptions of Mount Saint Helens in mid 1980. Large amounts of mud, logs, and other debris entered Columbia River from Cowlitz River. In late 1980, dredging was done in the area but the federal project is no longer maintained by the Army Corp of Engineers. Mariners are advised to use extreme caution and seek local knowledge prior to entering Cowlitz River. The tide varies from 4 feet at the mouth to zero at **Ostrander,** 7.8 miles above the mouth. At Kelso a stage of 20 feet is reached during ordinary freshets and a stage of 25 feet at extreme floods.

(196) Minimum clearance of the drawbridges across Cowlitz River between the mouth and Ostrander is 25 feet; minimum clearance for fixed bridges is 63 feet. Several overhead power and television cables cross the river between the entrance and Ostrander; least clearance is 67 feet. (See **117.1 through 117.59 and 117.1037**, chapter 2, for drawbridge regulations.) In May 2000, a fixed highway bridge with a design clearance of 10 feet was under construction at mile 5.5 at Kelso; upon completion, it will replace the existing vertical lift bridge.

(197) At **Kelso** there are several private wharves including a sand and gravel wharf, a public landing, and several small craft floats, at one of which gasoline is available.

(198) **Rainier** is on the Oregon side opposite Longview. The town of Rainier operates a small-craft basin; berths, gasoline, water, ice, a launching ramp, a pumpout station, wet winter boat storage, and marine supplies are available. Diesel fuel may be obtained at the tugboat moorage just E of the city basin. In November 1998, a side channel leading to the waterfront facilities had a controlling depth of 24 feet.

(199) **Carrolls Channel,** between Cottonwood Island and the Washington shore of Columbia River, is used for log storage and fishing boats. About 13 feet can be carried through the channel.

(200) Two State fish hatcheries are on **Kalama River** at Mile 63.5 (73.1). **Kalama,** on the E bank about 3 (3.5) miles above Cottonwood Island, is the site of two lumber mills. A chemical plant on the N side of the town has an offshore wharf with 680 feet of berthing space and depths of 40 to 50 feet alongside; the wharf is used for the receipt of chemicals. The Port of Kalama owns a 4-million-bushel grain elevator 1.5 miles S of town. The elevator has a wharf with 840 feet of berthing space with dolphins. Depths are 42 to 45 feet reported alongside, and the deck height is 25 feet. Loading spouts load vessels at a rate of 56,000 bushels per hour. One large ship and one or more barges may load at the same time. Private lights mark each end of the wharf. A grain company 1.5 miles N of town has a wharf 1,080 feet long. This facility is well lighted and conspicious from the river. A marina and mooring basin are at Kalama. Berths with electricity, gasoline, diesel fuel, water, a launching ramp, a pumpout station, and wet and dry winter boat storage are available at the marina.

(201) The 500-foot-tall cooling tower of the **Trojan Nuclear Power Plant** is on the S side of the river opposite the mouth of the Kalama River. This tower is conspicuous for many miles both up and down the river.

(202) The channel circling the W side of **Sandy Island** is used by tugs hauling log rafts and barges; the controlling depth is about 7 feet.

(203) **Martin Slough,** between Martin Island and Burke Island and the Washington shore, formerly a booming and log storage area, as was **Burke Slough** between Burke Island and the Washington shore. Mariners are cautioned that submerged piling and hazardous structures may exist throughout the area close to shore.

(204) **Columbia City** is a municipality at Mile 73 (84) on the Oregon side. The main channel follows along the waterfront.

(205) At the S end of **Deer Island Slough,** about 1.5 miles N of Columbia City, is the pier of a chemical plant.

(206) **Saint Helens,** at Mile 75 (86) opposite the mouth of Lewis River, is the site of a pulp and paper mill.

(207) Berths with electricity, gasoline, water, ice, and some marine supplies are available at the marina at

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Saint Helens. Engine repairs can be made. There are a large number of houseboats and boathouses in the vicinity of the marina. A launching ramp and wet winter boat storage are available at the marina.

(208) A dredged channel with a reported controlling depth of 6 feet in September 1986 leads to a marina in **Scappoose Bay**, SW of Saint Helens. This marina, owned by the Port of Saint Helens, has berths with electricity, gasoline, water, and ice available. Some supplies, a launching ramp, and wet winter storage are at the marina.

(209) **Lewis River** enters Columbia River at **Austin Point,** Mile 75.7 (87.0), on the Washington side. Depths are about 3 feet over the mouth, but just below the first bridge a bar reduces the depth to less than 1 foot. Some recreational traffic moves up to **Woodland,** 5.7 miles above the mouth, at high water. The railroad swing bridge 1.8 miles above the mouth remains in the closed position and has a clearance of 28 feet. (See **117.1053**, chapter 2, for drawbridge regulations.) The other bridges, all fixed, have clearances of 34 feet or more.

(210) From Saint Helens, Columbia River follows a S course to the mouth of the Willamette River, Mile 88 (101.2), and then turns SE to Vancouver, Mile 92 (106).

(211) **Multnomah Channel** is a 19-mile waterway separated from the Columbia River near Saint Helens and from the Willamette River near Portland by **Sauvie Island.** Depths are 20 feet or more at the entrances, but decrease to 6 feet inside. A power cable about midway through the channel has a clearance of 100 feet. A small-boat landing is 1 mile S from the power cable. Covered berths, with electricity, gasoline, diesel fuel, water, ice, a launching ramp, and marine supplies are available. Minor hull and engine repairs can be made. Wet winter boat storage is at the landing. A fixed highway bridge near the S end has a clearance of 78 feet.

(212) **Warrior Rock,** the point on the E side of **Warrior Point** at the N end of Sauvie Island, is marked by a light. In thick fog vessels seldom attempt to pass the light; they anchor either above or below the point until the weather clears.

Local magnetic disturbance

(213) Differences of as much as 6° from the normal variation have been reported between Warrior Rock and the light off **Duck Club,** 1.5 miles S.

(214) **Lake River,** the outlet for **Vancouver Lake,** flows N for 9.5 miles to its junction with Columbia River at the N end of **Bachelor Island,** Mile 76 (88). The reported controlling depth was 6 feet in July 1973 to the small-craft harbor at **Ridgefield,** 2.5 miles above the mouth. A marina is at Ridgefield; berths, water, ice, a launching ramp, and some marine supplies are available. The town of Ridgefield operates a public small-craft dock and launching ramp just S of the marina. Wet winter boat storage is at the marina.

(215) A marina, in the channel behind the elongated island W of Shillapoo Lake, has berths, with electricity, gasoline, water, ice, a launching ramp, and marine supplies. A 2½-ton hoist is available for launching small craft. Reported depths of 5 feet can be carried through the channel and to the river N of the marina, however, the channel S of the marina is closed by shoals.

Charts 18526, 18527

(216) At Mile 88 (101.2), Columbia River is joined by **Willamette River,** its largest tributary below the Cascade Mountains. The Willamette drains a large territory and is important as the site of the city of Portland, 9 (10.4) miles above its mouth.

(217) The Federal project depth in Willamette River is 40 feet to the Broadway Bridge in Portland, thence, maintained by the Port of Portland, 30 feet between Broadway Bridge and Ross Island. (See Notice to Mariners and latest editions of charts for controlling depths on the Willamette River to the Broadway Bridge.) Additional information can be obtained from the Corps of Engineers, Portland, Oreg. (See appendix for address.) Contact the Port of Portland for the controlling depths of the section of the channel maintained by the port.

(218) (See **162.225,** chapter 2, for navigation regulations on Willamette River.)

(219) From the entrance of the Willamette River to the Willamette Falls Locks at Oregon City, overhead clearances and depths are at **Columbia River Datum.** Above the Willamette Falls Locks depths of the Willamette River are at **Willamette River Datum** and clearances are at the datum of **Newburg Pool.**

(220) **Kelley Point Junction Light** (45°39.2'N., 122°45.8'W.), 21 feet above the water, is shown from a pile structure with a red and green triangular daymark on the end of the dike extending from **Kelley Point** on the E side of the entrance to the river.

(221) **Columbia Slough,** a narrow back channel roughly parallel to Columbia River, empties into the Willamette about 0.4 (0.5) mile above its mouth. Least depth in the slough is usually less than 2 feet. A dam has been constructed across the slough about 7.3 miles above the mouth.

(222) The fixed bridges over the slough have a least clearance of 27 feet. The least clearance of the overhead power and telephone cables is 42 feet.

(223) In the vicinity of **Post Office Bar Range,** 2 (2.4) miles above the mouth of Willamette River, deep-draft vessels favor the W side of the river, while smaller

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WILLAMETTE RIVER (PORTLAND)

vessels and tows usually hug the E side because of lesser current. Overhead power cables with a least clearance of 230 feet cross the river 0.3 mile above the junction with Multnomah Channel. The twin towers supporting the cables are the most conspicuous features in this area.

(224) **Portland,** on Willamette River about 9 (10.4) miles from its mouth, is the principal city of the Columbia River system and one of the major ports on the Pacific coast. The port has over 25 deep-draft piers and wharves on both sides of the Willamette River between its junction with the Columbia and Ross Island. In addition there are extensive facilities for small vessels and barges S of Hawthorne Bridge and at North Portland Harbor, S of Hayden Island. It has extensive commerce, both foreign and domestic, and is the port of call for many lines of coastwise, intercoastal, and transpacific steamships. Principal foreign exports are grain, tallow, fish and shellfish, fruits, textile products and apparel, paper, wood pulp, lumber and other forest products, chemicals, fertilizer, and metal ores. The principal imports are fish and shellfish, metal ores, salt, fruit and vegetables, pulp, lumber and other forest products, chemicals, iron and steel, automobiles, and machinery. The coastwise trade consists mainly of petroleum products, lumber, chemicals, iron and steel, and cement.

(225) The **Port of Portland,** created by the State in 1891, is controlled by a Port Commission and administered by an executive director. The port owns four marine terminals, Port of Portland Ship Repair Yard, and dredges the channel between Broadway and Ross Island Bridges; it also assists the Corps of Engineers with other dredging in the Willamette and Columbia Rivers. The port also operates an international airport and three general aviation airports. A 30-inch hydraulic pipeline dredge is owned by the port. In addition to dredging the port waterfront and river channel, the port conducts hydrographic surveys periodically along all port-owned piers and wharves.

Anchorages

(226) The anchorages generally used are Vancouver Lower and Upper Anchorages. Vancouver Lower Anchorage is in the Columbia River just SE of the confluence of the Columbia and Willamette Rivers and to the SW of the dredged channel. Vancouver Upper Anchorage is in the Columbia River just NW of the Burlington Northern railroad bridge and to the SW of the Vancouver Lower Turning Basin. The Vancouver Upper Anchorage has two anchor buoys for use by panamax bulk carriers and other maritime interests. Anchorage in the Willamette River at Portland is available in

emergencies or inclement weather only. A **special anchorage** in the Columbia River is between Sand Island and Government Island (chart 18531) about 6.5 miles above the railroad bridge. (See 110.1 and 110.128, chapter 2, for limits and regulations.)

Bridges

(227) The minimum clearance of the drawbridges is 26 feet at the Glisan Street (Steel Bridge) vertical-lift highway and railroad bridge, 10.4 (12.0) miles above the mouth; the raised clearance of both decks of the bridge is 161 feet, and of the lower deck alone, 71 feet up. The minimum fixed-span clearance is 120 feet for the central 100 feet at the Ross Island highway bridge. (See **117.1 through 117.59 and 117.897**, chapter 2, for drawbridge regulations.) The Marquam fixed highway bridge, midway between the Hawthorne and Ross Island bridges, has a clearance of 120 feet for a center 220-foot width.

(228) The bridgetender of the Burlington Northern Railroad bridge at **Doane Point** monitors VHF-FM channel 16 and works on channel 13; call sign, KQ-9050.

(229) The bridgetender of the Broadway bridge monitors VHF-FM channels 16 and 13, and answers on channel 13; call sign, KLU-724.

(230) The bridgetender of the Glisan Street (Steel Bridge) monitors VHF-FM channel 16 and works on channel 13; call sign, KQU-534.

(231) The bridgetender of the Burnside bridge monitors VHF-FM channels 16 and 13, and works on channel 13; call sign KTD-520.

(232) The bridgetender of the Hawthorne bridge monitors VHF-FM channels 16 and 13, and works on channel 13; call sign, KTD-521. The river is crossed near the N end of Ross Island by a power cable with clearances of 123 feet over the main channel and 83 feet over the E channel. About 0.4 mile S, over the E channel, are cables with least clearance of 75 feet.

(233) A 127°33'–307°33' **measured nautical mile** course is on the Willamette River W of Swan Island.

Tides

(234) The mean range of tide at Portland is 1.8 feet, and the diurnal range of tide is 2.4 feet.

Weather, Portland and vicinity

(235) The coast range provides limited shielding from the maritime influence of the Pacific Ocean. The Cascade Range provides a steep high slope for the lifting moisture-laden westerly winds which produces heavy rainfall in the western Cascade piedmont region. They also form the barrier for the Columbia River basin region and dry continental air masses. Airflow is usually NW in Portland in spring and summer and SE in fall and winter, interrupted occasionally by outbreaks of dry continental air E through Cascade passes and across ridge tops. When such an outbreak occurs, extreme high or low temperatures are usually experienced in the Portland area.

(236) Portland has a very definite winter rainfall climate. About 88 percent of the annual total occurs in October through May, nine percent in June and September, while only 3 percent comes in July and August. The average annual precipitation is 37.33 inches (948.2 mm). December is the wettest month and July, the driest. Precipitation is mostly rain; on the average only 17 days each year have snow. Snowfall is seldom more than a couple of inches, and it generally lasts only a few days. The annual average is only seven inches (178 mm) with January having the most. Snowfall has fallen in every month from November through May. The greatest measured snowfall in 24-hours was just under 11 inches (279 mm) recorded in January 1971.

(237) Each season is clearly marked. Winter is mild, cloudy, and wet with southeast surface winds predominating. Summer is marked by mild temperature, with prevailing northwest winds and very little precipitation. Fall and spring are transitional in nature, with frequent periods of ground fog. An average of 18 days during October record foggy conditions while only three days during July can expect fog. At all times, incursions of marine-tempered air are a frequent moderating influence. Outbreaks of continental air from east of the Cascade Mountains flow through the Columbia Gorge at near sea level and spread into the Portland area associated with the movement of Pacific storms offshore on a northeast storm track. In winter this brings the coldest weather and the extremes of low temperature are registered in the cold airmass. Freezing rain and ice glaze often are transitional effects. In summer the hot, dry, continental air brings the highest temperatures. Extreme temperatures below zero are very infrequent. The absolute lowest ever reached is 3°F below zero (-19.4°C) recorded in February 1950. Extreme temperatures above 100°F (37.8°C) have occurred during each month from May through September; the absolute highest temperature is 107°F (41.6°C) recorded in July 1942, July 1965 and August 1981. Temperatures 90°F (32.2°C) or higher are reached every year, but seldom persist for more than 2 or 3 days before the warm spell is broken by a flow of cool, moist air from the ocean. The average annual temperature for Portland is 53.9°F (12.1°C). The average maximum is 63°F (17.2°C) while the average minimum is 45°F (7.2°C).

(238) Destructive storms are infrequent in the Portland area. Surface winds seldom exceed gale force, and only once in the period of record have winds reached higher

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than 65 knots; October 1967. Thunderstorms are infrequent occurring, on average, only seven days each year. Tornadoes with the funnel cloud reaching the ground have yet to be observed. There are rare occurrences of heavy rain even though winter rains may persist for days at a time.

Ice

(239) Ice forms occasionally, but it is seldom heavy enough to affect navigation seriously, although navigation by small craft may be difficult.

(240) (See page T–6 for **Portland climatological table.**)

Pilotage, Portland

(241) See Pilotage, Columbia River and Bar, indexed as such, earlier this chapter.

Towage

(242) Dock assist tugs to 3,600 hp are available in Portland. No lighterage is necessary, but occasionally lumber is transferred by barge from lumbermills to vessels.

(243) Portland is a **customs port of entry.**

Quarantine, customs, immigration, and agricultural quarantine

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

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

Coast Guard

(246) A **marine safety office** and a **vessel documentation office** are in the Swan Island Industrial Park at Portland. (See appendix for addresses.)

Harbor regulations

(247) The regulations are enforced by the City of Portland **harbormaster** and Multnomah County Sheriff River Patrol; copies of the regulations (Title 19) may be obtained on the Internet at http://www.bpcnet.com/codes/portland.htm, or for a nominal fee, by contacting the City Auditors Office at 1221 SW 4th Avenue, Room 140, Portland, OR 97204. The harbormaster may be contacted by phone 503-823-3767 or by writing Portland Fire Bureau, Attn: Harbormaster, 55 SW Ash Street, Portland, OR 97204.

Wharves

(248) The Port of Portland operates four modern marine terminals. The largest bulk commodities terminals in the harbor are Terminals 4 and 5. The largest general cargo terminal in the harbor is Terminal 2, and the container facility is Terminal 6. In addition to the port-owned piers and wharves there are many privately owned deepwater facilities and many barge wharves in the harbor. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 34, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.) The alongside depths are reported depths. (For information on the latest depths contact the port authorities or the private operators.) All the Port of Portland operated facilities have rail trackage, water, and electrical shore power connections, as well as many of the privately operated facilities. All wharves have highway connections. Floating and shore-based mobile cranes of up to 75-ton capacity are available, but most general cargo is handled by ship's tackle. Special handling equipment, if available, is mentioned in the description of the particular facility.

Port-owned facilities:

(249) **Municipal Terminal 4:**

(250) Pier 1 (45°36'18"N., 122°46'31"W.): Berth 401, W face, 950-foot berthing space with dolphins; 40 feet alongside; Berth 405, S side W to E, is a grain facility marine leg with 550 feet total berthing space; 35 feet alongside; deck height, 35 feet; grain elevator with a capacity of over 8 million bushels, grain gallery with two loading spouts with loading rate of 2,500 tons per hour; shipment and receipt of grain; operated by Cargill, Inc.

(251) Pier 2 (45°36'14"N., 122°46'29"W.): N side, Berth 408, W to E, 750 feet of berthing space; 35 feet alongside; deck height, 33 feet; 107,000 square feet covered storage, 8 acres open storage; pipelines extend from the wharf to tank farm; shipment and receipt of general cargo and liquid fertilizer; operated by Port of Portland and IRM.

(252) Pier 4 (45°36'06"N., 122°46'26"W.): Berths 410 and 411, W to E, 1,140-foot total berthing space; 40 feet alongside; deck height, 33 feet; 58,600 square feet covered storage, 7 acres open storage; dedicated storage for soda ash and shipment via fixed bulk outloader at 1,500 tons per hour; operated by Kinder-Morgan, Inc.

(253) Steel Handling Wharf (45°35'50"N., 122°46'23"W.): Berths 414 and 415; 944 feet long, 1,344-foot berthing space with dolphins; 40 feet alongside; deck height, 25 feet; 180,000 square feet covered storage; 39 acres open storage; receipt of steel products; operated by Toyota America.

(254) Automobile Unloading Dock (45°35'34"N., 122°46'10"W.): Berth 416, 1,064 feet of berthing space with dolphins and floats; 73 acres of open storage area; receipt of automobiles; operated by Toyota America.

(255) **Municipal Terminal 2:**

(256) Berth 203 (45°33'01"N., 122°41'11"W.): 400-foot berthing space; deck height, 20 feet; depth along side,

20 feet; general cargo dock; one 36 ton whirley crane; 39,000 sq. ft. of covered storage; operated by Stevedoring Services of America.

(257) Berths 204, 205, 206 (45°32'51"N., 122°41'49"W.): 2,295-foot total berthing space; 40 feet alongside; deck height, 26 feet; one 50-ton and one 40-ton container handling crane; 170,000 square feet covered storage; 27 acres open storage; shipment and receipt of general cargo; operated by Stevedoring Services of America.

(258) **Municipal Terminal 6**:

(259) Berths 603, 604, 605 (45°38'24"N., 122°44'45"W.): 2,850 feet of berthing space; 40 feet alongside; deck height, 26 feet; five panamax, and two post-panamax container cranes; numerous 45-ton straddle carriers; 261,000 square feet covered storage; 122 acres paved open storage; 54 acre on-dock intermodal rail terminal, double stack rail car capacity for 84 cars; shipment of general and containerized cargo; operated by the Port of Portland.

(260) Berth 601 Automobile Terminal (45°38'09"N., 122°45'30"W.): 950-foot berthing space; floating auto dock ballasted to 12 feet; deck height, 35 feet alongside; 75-acre storage yard and processing area; operated by Hyundai Motor America.

(261) Berth 607 Automobile Terminal about 1 mile SE of Berth 601, 914-foot berthing space floating auto dock ballasted to 12 feet; deck height, 35 feet alongside, 115 acre storage yard and processing area; operated by Honda Motor America.

Private facilities:

(262) Columbia Grain Terminal Dock (45°38'34"N., 122°46'16"W.): about 900 feet of berthing space with dolphins; 40 feet alongside; deck height, 25 feet; three vessel loading spouts with a rate of 1,800 tons per hour; grain elevator with a 4-million-bushel capacity; receipt and shipment of grain; operated by Columbia Grain, Inc.

(263) Portland Bulk Terminal 5, Berth 503 (45°38'21"N., 122°46'37"W.): 830-foot berthing space; deck height, 25 feet; 40 feet alongside; bulk cargo facility with a 4,000-ton-per-hour shiploader; 110 acre mineral bulk export facility with 100,000 tons of covered storage on site; export of potash and other compatible bulk cargo; operated by Portland Bulk Terminals.

(264) Union Chemical Portland Dock (45°37'45"N., 122°47'12"W.): offshore wharf, 1,164 feet of berthing space with dolphins and platforms; 35 feet alongside; deck height, 35 feet; conveyor system with a rate of 600 tons per hour; covered storage for 70,000 tons of urea; storage tank with 50,000-ton capacity; receipt of bulk urea; receipt and shipment of anhydrous ammonia; shipment of caustic soda and sulfuric acid; owned and operated by Union Chemical, a division of Union Oil Co. of California.

(265) Ash Grove Cement Co. Dock (45°37'23"N., 122°47'11"W.): 230 feet of berthing space with dolphins; 25 feet alongside; deck height, 30 feet; one 90-ton revolving, pedestal crane; conveyor system with a rate of 700 tons per hour; silos with 1,400-ton storage capacity for finished products; open storage for 60,000 tons; receipt of limestone; owned and operated by Ash Cement Co.

(266) Time Oil Wharf (45°36'55"N., 122°47'07"W.): T-wharf, 870-foot berthing space with dolphins; 34 feet alongside; deck height, 26 feet; storage tanks with a 800,000-barrel capacity; shipment and receipt of petroleum products; owned and operated by Time Oil Co.

(267) Premier Edible Oils (Palmco) Dock (45°36'48"N., 122°47'01"W.): 670 feet of berthing space with dolphins; 42 feet alongside; deck height, 32 feet; storage tanks with 20,000-ton capacity; receipt of crude palm, coconut, and palm kernel oil; owned by Schnitzer Steel Products Co., and operated by Premier Edible Oils, Inc.

(268) International Terminal Dock (45°36'40"N., 122°46'22"W.): 1,600 feet of berthing space; 25 to 35 feet alongside; deck height, 25 feet; diesel cranes to 100 tons; shipment of scrap metal; receipt of steel products; owned and operated by Schnitzer Steel Products Co.

(269) Linnton Wood Chip Dock (45°36'44"N., 122° 47'22"W.): 1,200-foot berthing space with dolphins; 35 feet alongside; deck height, 28½ feet; chips loaded by pneumatic loader, loading rate 1,200 tons per hour; open storage for over 21 tons of wood chips; owned and operated by Georgia-Pacific Co.

(270) Trumbull Asphalt Wharf (45°36'43"N., 122°47'37"W.): 900-foot berthing space with dolphins; 31 feet alongside; deck height, 30 feet; storage tanks with a 160,000-barrel capacity; receipt and shipment of asphalt; owned and operated by Trumbull Asphalt, a division of Owens Corning Fiberglass Corp.

(271) GATX-Linnton Wharf (45°36'16"N., 122°47'05"W.): 650-foot berthing space with dolphins; 32 feet alongside; deck height, 28 feet; storage tanks with 490,000-barrel capacity; shipment and receipt of petroleum products, bunkering vessels; owned and operated by GATX.

(272) Atlantic Richfield Co. Wharf (45°35'39"N., 122°46'36"W.): 600-foot berthing space with dolphins; 35 feet alongside; deck height, 32 feet; storage tanks with 497,000-barrel capacity; receipt and shipment of petroleum products, bunkering vessels; owned and operated by Atlantic Richfield Co.

(273) Mobil Oil Corp. Wharf: joins Atlantic Richfield Wharf to the SE; 590-foot berthing space with dolphins; 30 feet alongside; deck height, 30 feet; storage tanks with 675,000-barrel capacity; shipment and

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receipt of petroleum products, bunkering vessels; owned and operated by Mobil Oil Corp.

(274) Pacific Northern Oil Corp. Wharf (45°34'51"N., 122°45'29"W.): 750-foot berthing space; 26 feet alongside; deck height, 26 feet; storage tanks with 270,000-barrel capacity; owned by Northwest Natural Gas Co. and operated by Pacific Northern Oil Corp.

(275) Elf-Atochem Chemical, Oil and Salt Wharves (45°34'17"N., 122°44'26"W.): 2,210 foot berthing space; 30 feet alongside; deck height, 30 feet; hopper and conveyor belt carry salt from wharf to chemical plant in rear at a rate of 2,000 tons per hour; receipt of salt and fuel oil for plant consumption, shipment of chlorine, chlorine gas, and liquid caustic soda; owned and operated by Elf-Atochem Chemical Corp.

(276) GATX-Wilbridge Pier (45°34'03"N., 122°44'16"W.): 504-foot-foot berthing space each side; 35 feet alongside; deck height, 32 feet; storage tanks with over 1¼-million-barrel capacity; shipment and receipt of petroleum products, bunkering vessels; owned and operated by GATX.

(277) Chevron U.S.A., Wilbridge Plant Pier (45°34'01"N., 122°44'13"W.): 656-foot berthing space each side; 36 feet alongside; deck height, 32 feet; storage tanks with 2½-million-barrel shipment and receipt of petroleum products, bunkering vessels; owned and operated by Chevron U.S.A., Inc.

(278) Tosco Refining Co. Pier (45°34'00"N., 122°44'08"W.): 576-foot berthing space; 34 to 37 feet alongside; deck height, 32 feet; storage tanks with 760,000-barrel capacity; shipment and receipt of petroleum products, bunkering vessels; owned and operated by Tosco Refining Co.

(279) McCall Oil and Chemical Corp., Terminal Wharf (45°33'55"N., 122° 43'45"W.): 1,000 feet of berthing space; 37 feet alongside; deck height, 30 feet; pipeline extends to storage tanks with 930,000-barrel capacity; receipt of petroleum products; owned and operated by McCall Oil and Chemical Corp.

(280) Texaco Oil Wharf (45°33'25"N., 122°43'13"W.): 670-foot berthing space with dolphins; 31 feet alongside; deck height, 29 feet; storage tanks with 513,000-barrel capacity; shipment and receipt of petroleum products; owned and operated by Texaco, Inc. FMC Corp., Berthing and Outfitting Dock (45°33'17"N., 122°42'53"W.): 1,275 feet of berthing space with dolphins; 34 feet alongside; deck height, 32 feet; one 45-ton and one 40-ton traveling gantry cranes; mooring vessels for outfitting and repair; owned and operated by FMC Corp., Marine and Rail Equipment Division.

(281) Goldendale Aluminum Dock (45°33'04"N., 122°41'37"W.): 103 feet dock length with catwalks to dolphins totaling 624 feet, and with shoreside moorings can berth ships over 700 feet in length; 35 feet alongside; deck height, 30 feet; pneumatic unloading tower, unloading rate 140 tons per hour; receipt of alumina; owned and operated by Goldendale Aluminum Inc.

(282) Lone Star Cement Wharf (45°32'12"N., 122°40'39"W.): 415-foot berthing space with dolphins; 34 feet alongside; deck height, 30 feet; two cement receiving pipelines extend from wharf to storage silos in rear, capacity 31,000 tons; each pipeline can handle 225 tons per hour; receipt of bulk cement; owned and operated by Lone Star Northwest, Inc.

(283) Cargill-Irving Grain Wharf (45°32'08"N., 122°40'28"W.): 355-foot dock length with 516 feet with catwalks to dolphins, and mooring dolphins upstream and downstream to accommodate ships over 700 feet in length; 35 feet alongside; deck height, 30 feet; 935,000-bushel grain elevator with five loading spouts, combined loading rate 24,900 bushels per hour; marine leg with unloading rate of 9,900 bushels per hour; receipt and shipment of grain; owned and operated by Cargill Corp.

(284) Centennial Mills Wharf (45°32'04"N., 122°40'44"W.): 690-foot berthing space; 35 feet alongside; deck height, 33 feet; grain elevator with 563,000-bushel capacity; shipment of bagged flour; owned and operated by Centennial Mills, a Univar Co.

(285) Louis Dreyfus Wharves (45°31'45"N., 122°40'04"W.): 586-foot berthing space; 30 to 42 feet alongside; deck height, 31 feet; 2-million-bushel grain elevator; gallery has six loading spouts and one marine leg; combined loading rate 50,000 bushels per hour, combined unloading rate 33,000 bushels per hour; receipt and shipment of grain; owned and operated by Louis Dreyfus Corp.

Supplies

(286) Marine supplies of all kinds are available in Portland. Bunker fuel, diesel oil, and lubricants are available. Most large vessels are bunkered at their berths by barge. Water is available at most of the berths.

Repairs

(287) Portland is a major ship repair center on the Pacific coast. Portland Ship Repair Yard, on Swan Island on the E side of Willamette River, is the major repair facility at the Port of Portland. The yard is operated by the port and used by private marine contractors on a tariff basis. There are three floating drydocks here, including the largest on the Pacific coast. This floating drydock has an overall length of 982 feet, length of 902 feet over the keel blocks, clear width of 185 feet, a depth of 35 feet over the keel blocks, and a lifting capacity of 87,000 tons; a 20-ton whirley crane is mounted on a wingwall.

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Complete repair facilities and services are available at the yard, including steam, compressed air, AC and DC power, and fourteen whirley cranes from 45 to 120 tons, running on three separate craneways. The yard has 6,000 feet of ship repair berths to a maximum alongside draft of 40 feet, and 3,000 feet of layup berths for idle vessels. There is a 120,000-barrel ballast treatment plant for the offloading of oily slops.

(288) Another repair facility, with two marine ways and a floating drydock, is on the E bank of the Willamette River just N of the St. Johns Bridge. The marine ways have a capacity of up to 1,500 tons, and the drydock has a length of 494 feet and a width of 81 feet with a capacity of 5,500 tons. A whirley crane with a capacity of 25 tons is accessible to the drydock, the marine ways, and nearby moorage. The yard provides complete hull, engine or electronic repairs for tugboats, fishing vessels, barges and small ships.

(289) One well-equipped firm specializes in marine salvage in Portland. It has a 203-foot 3,600-hp converted LSM, equipped with 50-ton winches. Several firms undertake minor salvage work.

Communications

(290) Portland is served by several major railroads and airlines. Portland International Airport is about 2 miles N of the city. Many barge lines provide service up the Columbia River to Richland, Wash., 214 (246) miles from Portland; barge service is also available on the Willamette River to Salem, Oreg., 73.6 (84.7) miles above the mouth, and on the Snake River to Lewiston, Idaho, 324 (373) miles from Portland.

Small-craft facilities

(291) Most of the small-craft facilities, including practically all of the moorage, is in North Portland Harbor and along the S bank of the Columbia River between Interstate 5 highway bridge and the W end of Government Island. Complete facilities are available. Berths with electricity, gasoline, diesel fuel, water, ice, marine supplies, launching ramps, pumpout stations, and wet and dry winter boat storage can be obtained at many marinas. Hull, engine, and electronic repairs can be made. Drydocks to 70 tons, 55 feet long, and 16 feet wide are available in North Portland Harbor.

Chart 18528

(292) Navigation of Willamette River above Portland is hazardous due to the rocks, shoaling bars, and strong currents. Local knowledge and midchannel courses are recommended. Present chart coverage extends only to Newberg, 43.4 (50) miles above the mouth. Many of the daybeacons in the Willamette River are seasonal. The navigational aids above Newberg are not maintained. Navigation should be with local knowledge only. The Portland Coast Guard should be contacted for the latest information concerning navigation of Willamette River above Salem.

(293) Below the falls at Oregon City, ordinary fluctuation of stage of water is 15 feet and extreme fluctuation due to flood conditions is 30 to 50 feet. Above Oregon City, ordinary fluctuation is 12 to 20 feet and extreme is 20 to 27 feet.

(294) Depths and clearances of bridges and cables are at **Columbia River Datum** below the Willamette Falls Locks. Above the Willamette Falls Locks depths of the Willamette River are at **Willamette River Datum** and clearances are at the datum of **Newberg Pool.**

(295) The minimum clearances of the overhead power cables crossing the river from Portland to Newberg are: 77 feet to Willamette Falls Canal; 72 feet over Willamette Falls Canal; and 75 feet to Newberg.

(296) Between Portland and Willamette Falls most of the terminals are privately owned mill wharves and oil-receiving facilities. Above the falls are small privately owned wharves or natural landings.

(297) A public launching ramp is on the W side of the river at a park about 13.5 (15.7) miles above the entrance.

(298) Sellwood fixed highway bridge, 14.5 (16.7) miles about the mouth, has a clearance of 72 feet. A public mooring is on the E side of the river at a park just N of the bridge. A repair facility is directly across the river from the park; gasoline, water, and a launching ramp are available. A lift to 7 tons are available for all types of repairs to light- draft boats.

(299) A launching ramp is at **Milwaukie**, 16.2 (18.6) miles above the mouth. Minor engine and hull repairs can be made on light-draft boats. Dry winter boat storage is available.

(300) A fixed railroad bridge, 17.4 (20) miles above the mouth, has a clearance of 74 feet.

(301) The Crown Zellerbach Co. wharf, on the W bank of the river 0.3 (0.3) miles above the railroad bridge, is about 840 feet long with reported depths of 30 feet or more alongside; each end of the offshore wharf is marked by a privately maintained light. A loading tower and conveyor system on the wharf loads wood chips on barges.

(302) The channel passes E of **Hog (Rocky) Island,** 1.6 (1.8) miles above the railroad bridge. **Copeleys Rock,** 150 yards E of the S end of the island, is covered 10 feet and should be avoided.

(303) **Oregon City,** on the E bank 22.6 (26) miles above the mouth, is connected with **West Linn** by two fixed highway bridges; one, about 0.2 (0.2) mile below the

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Willamette Falls canal locks, has a vertical clearance of 74 feet. The second, 0.6 (0.7) miles below the N end of the locks, has a clearance of 76 feet.

(304) A marina, on the E bank just above the lower highway bridge, has about 350 berths, electricity, gasoline, water, ice, provisions, wet winter storage, a launching ramp, and marine supplies. Engine repairs can be made.

(305) A large papermill is on each bank of the river at Willamette Falls Canal.

(306) **Willamette Falls Canal,** on the W bank 22.8 (26.2) miles above the mouth, has four locks with a total lift of 50 feet; usable lock dimensions are 175 feet long, 37 feet wide, and 5 feet deep over the miter sills at low water. A bascule highway bridge across the canal has a vertical clearance of 27 feet closed. The least clearance of the power cables and pipeline that cross the canal is 67 feet. (See **207.680**, chapter 2, for regulations concerning administration and navigation of the canal and locks.) Upbound vessels may expect a delay at the approach to the locks and through the locks during weekdays because of the downbound traffic from the papermills. The lock is equipped with a radiotelephone. The lockmaster can be contacted on VHF-FM channel 14; call sign WUJ–363.

(307) A warehouse and other buildings of a papermill are on the W bank alongside the canal locks. An 850-foot timber wharf is on the E side of the canal.

(308) A marina, on the E bank opposite **Willamette** and 24.3 (27.9) miles above the mouth, has about 50 berths, with electricity, gasoline, diesel fuel, and water available. This marina has an elevator lift that can handle craft to 5 tons or 30 feet for hull and engine repairs.

(309) From the entrance to **Tualatin River,** 24.8 (28.5) miles above the mouth, for over 4 miles, Willamette River is shallow and winding; buoys and unlighted ranges mark the channel.

(310) Small craft can tie up at **Shanks Landing,** 28.8 (33.1) miles above the mouth.

(311) **Walnut Eddy** is on the E bank 29.4 (33.8) miles above the mouth.

Cable ferry

(312) The Canby ferry crosses the river about 1.1 (1.3) miles above Walnut Eddy. The ferry carries passengers and vehicles, and operates from 0600 to 2200 daily except during periods of high water. When the ferry is underway, the cable is suspended below the water surface at varying depths. When the ferry is docked, the cable is dropped to the bottom. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(313) Near **Wilsonville,** 33.7 (38.8) miles above the mouth, there are twin fixed highway bridges and a fixed railroad bridge, with clearances of 74 feet and 76 feet, respectively. A marina, on the S bank under the railroad bridge, has about 115 berths, with electricity, gasoline, water, ice, and marine supplies. The marina has a launching ramp and can make hull and engine repairs. Marine towing service for small craft is also available at this marina.

(314) A quarry is on the N side of the river about 300 yards W of the railroad bridge. Mariners are advised to exercise caution because barges and tugs may be operating in the area.

(315) Near **Butteville,** 37.3 (43.0) miles above the mouth, there is a small-craft marina with about 35 berths, electricity, gasoline, water, ice, a launching ramp, and some marine supplies available. Minor engine repairs can be made. The fixed highway bridge, 42.1 (48.4) miles above the mouth, has a clearance of 68 feet at the main span. At **Newberg,** 43.4 (50.0) miles above the mouth, there is a fixed highway bridge with a clearance of 88 feet. An overhead power cable with a clearance of 55 feet, crosses the river 44.9 (51.7) miles above the mouth.

(316) From Newberg to Corvallis, Willamette River is more tortuous and turning, and can be difficult for the small craft; the stretch contains numerous gravel bars, pools and snags. Mariners should exercise due caution for shallow water transits. The tributary **Yamhill River** empties into Willamette River about 3 miles above Newberg. Depths in Yamhill River of about 3 feet are reported to Dayton, 4 miles above its mouth.

Cable ferry

(317) The Wheatland ferry crosses Willamette River about 63 (72.5) miles above the mouth. The ferry carries passengers and vehicles, and operates between 0600 and 2145 daily except when the river level exceeds 16 feet. Warning signs and warning lights mark the crossing. The ferry is guided by two cables. The upper cable, 80 feet above the river level, controls the ferry during normal conditions. The low water cable, near the bottom at all times, controls the ferry when the river level drops below 12 feet. The low water cable is dropped to the bottom when the ferry is not operating. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(318) **Salem,** capital of the State of Oregon, is 74.4 (85.6) miles above the mouth. Several moorings and floats for log-rafts and small craft are here; berths, gasoline, diesel fuel, water, ice, launching ramps, and marine supplies are available at several small marinas. Hull engine, and electronic repairs can be made in Salem.

(319) A power cable at the N city limits of Salem has a clearance of 86 feet. Minimum clearance of the bridges

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is 64 feet at the fixed highway bridges, and 42 feet down and 87 feet up at the railroad lift bridge. The railroad lift bridge is maintained in the closed position. (See **117.897**, chapter 2, for bridge regulations.)

(320) At **Independence,** 83 (95.5) miles above the mouth, there is a small-craft launching ramp, but no facilities.

(321) The town of **Buena Vista** is 92 (106) miles above the mouth of the river.

Cable ferry

(322) A cable ferry crosses the river near Buena Vista. The self-propelled ferry carries passengers and vehicles, and operates from 0700 to 2100 daily except Saturdays, Sundays, and holidays. Both when the ferry is underway and when docked the guide cables are suspended approximately 80 feet above the water. When underway, the ferry shows the required navigation lights. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(323) The river is crossed at **Albany,** 104 (119.8) miles above the mouth, by three bridges: a railroad swing bridge with a clearance of 40 feet, a fixed highway bridge with a clearance of 55 feet, and a fixed highway bridge with a clearance of 60 feet in the center of the N span and 58 feet in the center of the S span. The railroad swing bridge is maintained in the closed position. (See **117.1 through 117.59 and 117.897**, chapter 2, for drawbridge regulations.)

(324) **Corvallis,** 114.6 (131.9) miles above the mouth, is the limit of the Federal project of the river. Navigation above Corvallis is dangerous and should not be attempted.

(325) There are small-craft finger piers, ramps, and marginal facilities at Corvallis; gasoline and water are available. A highway bridge has a swing span with a clearance of 35 feet. (See **117.1 through 117.59 and 117.897**, chapter 2, for drawbridge regulations.)

Chart 18526

(326) The main channel of the Columbia River favors the Washington shore, N of **Hayden Island** and **Tomahawk Island,** from **Mathews Point** to Ryan Point. Overhead clearances are at **Columbia River Datum.** Overhead power cables with a least clearance of 220 feet cross at Mile 90.6 (104.2). Two bridges cross the main channel between Vancouver and Hayden Island. The Burlington Northern Railroad swing bridge at Mile 91.8 (105.7) has a clearance of 39 feet. The bridgetender monitors VHF-FM channels 13 and 16 and works on channel 13; call sign KQ-9049. The interstate 5 highway bridge, Mile 92.5 (106.5) has twin lift spans with clearances of 39 feet down and 178 feet up, twin fixed spans with a clearance of 46 feet (58 feet at the center) crossing the barge channel S of the main channel, and twin fixed spans with a clearance of 72 feet crossing the alternate barge channel S of the barge channel. The bridgetender monitors VHF-FM channels 13 and 16 and works on channel 13; call sign, KBM Interstate. (See **117.1 through 117.59 and 117.869**, chapter 2, for drawbridge regulations.)

(327) **North Portland Harbor** is that portion of the river channel between the Oregon shore and Hayden Island. The lower or W entrance is at Mile 89.0 (102.5); the upper or E entrance is at Mile 94.5 (108.8).

(328) A Federal project provides for a 40-foot turning basin at the W entrance to North Portland Harbor, a 40-foot channel for about 1.3 miles above the W entrance, and thence a 20-foot channel to the project limit about 2 miles farther upstream. The Federal project for the E entrance to North Portland Harbor provides for a channel 10 feet deep from the main channel in Columbia River SW to just S of the E end of Tomahawk Island. In March 2000, the midchannel controlling depth was 5 feet from the junction with Columbia River to the project limit. A **241°** lighted range marks the channel for about 0.6 mile from the junction with Columbia River. Two bridges cross North Portland Harbor. The railroad bridge, 2.6 miles E of the W entrance, has a swing span with a clearance of 39 feet. (See **117.1 through 117.59 and 117.887**, chapter 2, for drawbridge regulations.) A fixed highway bridge (Interstate 5) about 0.8 mile E has a clearance of 35 feet.

(329) **Vancouver** is on the Washington side of the Columbia River at Mile 92 (106). The port is a water outlet for a large lumber-producing section in SW Washington, as well as a distributing point for a fair share of the grain produced in the interior of Washington and Oregon. Bulk bentonite clay, paper, petroleum products, fertilizer, and general merchandise are also shipped. Steel, wood products, chemicals, and automobiles are the major imported items at Vancouver.

(330) The Port of Vancouver is controlled by a board of three commissioners and a general manager.

Anchorages

(331) Anchorages for Vancouver are the same as those used for Portland. (Refer to that section under the discussion of the Port of Portland.)

Pilotage, Vancouver

(332) See Pilotage, Columbia River and Bar, indexed as such, earlier this chapter.

Towage

(333) Tugs to 3,600 hp are available at Vancouver.

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Quarantine, customs, immigration, and agricultural quarantine

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

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

Wharves

(336) The Port of Vancouver owns and operates one deep-draft terminal; a grain terminal and oil wharf, owned by the port, is managed by private companies. There are several private facilities which, with two exceptions, handle barge traffic only. Only the deep-draft facilities are described. For a complete description of the port facilities refer to Port Series No. 33, 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 port authorities or the private operators. Water and electrical shore power connections are available at most of the wharves. All the facilities described have direct highway connections and plant trackage with direct railroad connections. Cranes to 80-ton capacity are available at the port facilities. Special handling equipment, if available, is mentioned in the description of the particular facility.

Port-operated facilities:

(337) Port of Vancouver Terminal No. 2, Berths 8-9 (45°38'18"N.,122°42'32"W.): 1,080-foot berthing space with dolphins; 40 feet alongside; deck height, 30 feet; 252,000 square feet covered storage; 34 acres of open storage; one 80-ton mobile crane; receipt and shipment of conventional and containerized general cargo, including lumber and steel.

(338) Port of Vancouver Dry Bulk Materials Loading Wharf, Berth 7 (45°38'13"N., 122°42'20"W.): 960-foot berthing space with dolphins; 40 feet alongside; deck height, 34 feet; one traveling loading tower with a loading rate of 600 tons per hour; shipment of dry bulk materials; mooring vessels for repair.

(339) Port of Vancouver Terminal 2, Berths 1-4 (45° 37'58"N., 122°41'51"W.): 2,035-foot berthing space with dolphins; 40 feet alongside; deck height, 30 feet; roll on/roll off ramp, 15 feet; 89,000 square feet covered storage; 15 acres open storage; one 50-ton traveling gantry crane, one 80-ton mobile crane, and one 40-ton multi-purpose crane; receipt and shipment of conventional and containerized general cargo, dry bulk commodities, roll on/roll off cargo, and automobiles.

Privately operated facilities:

(340) Port of Vancouver Oil Terminal Dock (45°38'06"N., 122°42'06"W.): 550-foot berthing space with dolphins; 32 feet alongside; deck height, 30 feet; storage tanks with 700,000-barrel capacity; receipt and shipment of petroleum products; receipt of liquid fertilizer; owned by the Port of Vancouver, operated by ST Services, CENEX, and Tesoro Alaska Petroleum.

(341) Alcoa Aluminum Wharf (45º38'45"N., 122º43'58"W.): 840-foot berthing space with dolphins; 40 feet alongside; deck height, 30 feet; storage tanks with 77,000-metric-ton capacity; alumina is unloaded at this wharf with a clamshell bucket at a rate of 800 long tons per hour and transferred to storage tanks by a 48-inch conveyor belt; owned and operated by Vanalco Inc.

(342) Vancouver Grain Elevator Wharf (45°37'47"N., 122°41'31"W.): 713-foot berthing space; 40 feet alongside; deck height, 34½ feet; grain elevator with a capacity of 5 million bushels; grain gallery with a telescopic spout has a loading rate of 80,000 bushels per hour; one marine leg used for unloading barges and deep-draft vessels, unloading rate of 40,000 bushels per hour; shipment and receipt of grain; owned by the Port of Vancouver, operated by United Grain Corp/United Harvest LLC.

(343) Ideal Cement Pier (45°37'33"N., 122°41'06"W.): 650-foot berthing space with dolphins; 35 feet alongside; deck height, 22 feet; petroleum storage tanks with 70,000-barrel capacity; receipt of petroleum products; owned by Ideal Cement Co. and operated by P.R.I. Northwest, Inc.

(344) Boise Cascade Corp. Dock (45°37'25"N., 122°40'48"W.): floating offshore wharf; 275 feet of berthing space with floats and dolphins; 25 feet alongside; deck height, 1 foot; pipeline for unloading woodpulp has an 800-ton-per-hour rate; fuel oil storage tank with 4,500-barrel capacity; receipt of woodpulp and fuel oil for plant consumption; owned and operated by Boise Cascade Corp.

Supplies

(345) Complete marine supplies and services are available from Portland. Fuel oil must be delivered by barge. Small-craft supplies are available in North Portland Harbor and at other places on the Columbia River E of Vancouver.

Repairs

(346) Complete repairs for large and small vessels are available at Portland. Vancouver has no facilities for repair work on large oceangoing vessels. Small-craft repairs on craft up to 70 tons or 55 feet can be made in

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North Portland Harbor; there are no repair facilities on the N side of the river at Vancouver.

Communications

(347) Vancouver is served by Interstate Highway 5 and by several State routes. Three major railroads have connections to the city. Portland International Airport is on the S side of the river about 3.5 miles ESE of Vancouver.

Chart 18531

(348) From Vancouver to Bonneville, Mile 126 (145), Columbia River passes through the impressive **Columbia River Gorge,** flanked on each side by railroads and highways. Commerce on the river in this section consists mostly of pleasure craft and barges.

(349) There are more than 35 dike dolphins along this portion, some are marked with lights at their ends. All the dikes are completely covered at higher stages, but bare about 6 feet at datum level.

(350) **Ryan Point,** 1.4 miles ESE of the Interstate 5 highway bridge, is the site of a former shipyard and is now an industrial park. A public launching ramp is at the park.

(351) There are many full service marinas, yacht clubs, and moored houseboats along the Oregon shore from Interstate 5 highway bridge to the W end of Government Island.

(352) At Mile 97.9 (112.7), the river is crossed by a fixed highway bridge with a clearance of 136 feet (144 feet for the center 300 feet) over the channel.

Anchorage

(353) A **special anchorage** is between **Tri-Club Island** and **Government Island**. (See **110.1 and 110.128**, chapter 2, for limits and regulations.)

(354) **Camas,** at Mile 104.3 (120.0) on the Washington side, has a large papermill which maintains its own wharf on **Camas Slough,** N of **Lady Island.** About 8 feet can be taken from the Columbia River through the W entrance to the papermill wharf near the E end of the slough; the channel is marked by lights, a buoy, and a lighted range. The E entrance to the slough is foul and bares at low water. Most of the traffic in the slough is for the papermill, which barges its products to Portland for reshipment. At high flood stages a current of as much as 5 knots prevails in the slough.

(355) Two fixed highway bridges cross Camas Slough from the mainland to Lady Island; the W one has a clearance of 69 feet, and the E one has a clearance of 37 feet.

(356) A125°-305° **measured nautical mile** has been established at Mile 105, on Hayden Island. The course is about 0.8 mile below the Burlington Northern Railroad Bridge at Vancouver. Each range marker is painted white with black stripes.

(357) A marina at mile 105.7 (121.6) just E of Camas, has about 250 berths, open and covered and with electricity, gasoline, water, a launching ramp, and complete marine supplies. A marine sales and repair facility adjacent to the marina has a 12-ton hoist that can handle craft to 42 feet for hull and engine repairs. A sawmill is just E of the marina.

(358) There are five power cables crossing at **Ione Reef,** S of Lady Island. The least clearance is 133 feet.

(359) The entrance to **Sandy River,** on the Oregon side opposite Camas, bares at low water. At higher flood stages, passage up Sandy River as far as **Troutdale** is possible.

Local magnetic disturbance

(360) Differences of as much as 8° from the normal variation have been observed between **Tunnel Point** and **Point Vancouver,** E of **Reed Island.**

Dangers

(361) In this section of the river, the principal hazards to navigation are the strong currents, rocks and rocky banks, winds, and an accumulation of ice.

Currents

(362) In general, currents run fair with the main channels with considerable intensity, increasing in regions upstream toward Bonneville. Exceptions are the turn in the channel at Washougal Light 50, where a NW set prevails; SW of **Cape Horn,** where a W set is experienced; and the region between Fashion Reef and Multnomah Falls, where a S set is experienced.

Weather, Corbett

(363) Between **Corbett,** Mile 110.3 (127), and The Dalles, Mile 165 (189.8), the river flows between the bold mountains of the **Cascade Range.** In this stretch, winds of considerable force prevail during much of the time; generally they blow upstream in summer and downstream in winter. Daily peak velocities vary from 6 to 42 knots, but Corps of Engineers officials at Bonneville Dam measured gusts as high as 76 knots during 1960-62.

(364) Near **Warrendale,** Mile 123 (141.5), the river becomes very constricted within less than a mile and continues so almost to the approach to the locks of Bonneville Dam, at the lower end of **Bradford Island.**

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(365) **Beacon Rock,** 840 feet high and 300 yards inshore, is on the Washington side opposite Warrendale. It is a prominent dark gray rock outcropping of volcanic origin. A State park of the same name surrounds the rock. The park maintains a mooring float just inside the entrance to the channel W of **Pierce Island;** moorage is restricted to pleasure boats and to periods not to exceed 36 hours. Water and ice are available at the park.

(366) **Bonneville,** on the Oregon side at Mile 126 (145), is the headquarters of the U.S. Army Corps of Engineers in charge of the Bonneville Lock and Dam.

(367) **Bonneville Lock and Dam,** 126.3 (145.3) miles above the mouth of the Columbia River, is in four parts. Powerhouse No. 2 is between the Washington shore and Cascade Island; the spillway is between Cascade Island and Bradford Island; Powerhouse No. 1 and the old lock are between Bradford Island and Robins Island; and the new lock is between Robins Island and the Oregon shore. The new navigation lock has a vertical lift of about 59 feet, a width of 86 feet and a length of 675 feet. Overhead power cables over the lock have a clearance of 210 feet. The old lock has been placed in mothball status. Restricted areas are above and below the spillway and powerhouse. (See **207.718,** chapter 2, for information concerning use, administration, and navigation of Bonneville Lock and Dam.)

(368) The strong current toward the powerhouse makes it difficult to approach Bonneville Lock from upstream, particularly if the lock is approached at an angle and if a turn is to be executed in time to avoid an accident. Therefore, all craft approaching the lock from the E and pushing one or more barges should steer as close to the Oregon mainland shore as safety will permit, should be in line with the lock upon reaching the E end of the guide wall, and should continue at a steady but reduced speed if the lock is prepared for entrance and the signal for entrance has been given.

(369) From Bonneville to The Dalles, the channel is through the pool created by Bonneville Dam, which extends 40 (46) miles to The Dalles Dam. Depths and overhead clearances are at **normal pool level.**

(370) Although there is deep water in much of the pool, the controlling depth to The Dalles Dam navigation lock is about 20 feet. The channels are marked by aids to navigation.

(371) An overhead power cable with a clearance of 190 feet crosses the river 1 (1.1) mile above the dam.

(372) Tugs use the dolphins on the S side of the river 1.2 (1.5) miles above the lock for mooring and shifting barges and log rafts. Small craft can find refuge in the mouth of **Eagle Creek,** 0.6 (0.7) miles above the lock, if the creek is not in flood.

Currents

(373) From the lock at Bonneville through Cascade Rapids, constant piloting is necessary because of the strong currents. From Cascade Rapids E, a set of 1° to 3° may be experienced depending on the angle that the course makes with the general direction of the river, the strength of the current, and the direction and strength of the wind.

Local magnetic disturbance

(374) Differences of as much as 6° from normal variation have been observed along this section of Columbia River.

(375) **Bridge of the Gods,** 2.6 (2.8) miles above the Bonneville Dam, has a fixed span with a clearance of 135 feet over a middle width of 284 feet.

(376) **Cascade Locks** 3 (3.3) miles above the Bonneville Dam, have been drowned out. At normal stages of pool level the sides of the old chamber of the lock bare about 3 feet. A strong current flows through the lock. A marina, just E of the lock, has berths, gasoline, and a launching ramp.

(377) Along this section are several inlets or rivers, generally used for log storage, where small craft may find refuge. Most are behind fixed bridges. These places, and their distances above the Bonneville Dam are:

(378) **Rock Creek** at **Stevenson,** Wash., 4.2 (4.8) miles; the bridge clearance is 18 feet. **Government Cove,** on the Oregon side, 5.6 (6.4) miles. **Wind River** at **Home Valley,** Wash., 8.1 (9.3) miles; the minimum bridge clearance is 26 feet. **Drano Lake,** near **Cook,** Wash., 14.5 (16.7) miles; the bridge clearance is 15 feet. **Ruthton,** OR, 17.8 (20.4) miles. **White Salmon River** at **Underwood,** Wash., 20.9 (24) miles; the bridge clearance is 26 feet.

(379) Rock Creek, Wind River, and Drano Lake have log rafts and booms used by nearby sawmills.

(380) **Hood River,** Oreg., 21.7 (25) miles above the Bonneville Dam, is a town at the junction of Columbia and Hood Rivers. There are two boat basins at Hood River; the W basin is privately owned and is used by a repair yard for building and repairing steel barges and tugs. The E basin, operated by the Port of Hood River Commission, has about 55 berths. Gasoline and water are available. The entrance to the W basin is marked by a daybeacon, and the entrance to the E basin is marked by private lights. In 1976, depths of 7 to 12 feet were reported available in the E basin. In August 1990, a shoal was reported to extend NW from the E basin, across the mouth of the Hood River, to just N of the W basin entrance light. Another bare spot is about 0.1 mile northward.

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(381) The highway bridge over Columbia River just above the small-craft basin has a lift span with a clearance of 67 feet down and 148 feet up. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign KTD-562. (See **117.1 through 117.59 and 117.869**, chapter 2, for drawbridge regulations.)

(382) There are power cables with clearance of 155 feet over the river at **Stanley Rock,** 22.9 (26.4) miles above Bonneville Dam, and at **Crates Point,** 13 (15) miles above Stanley Rock.

(383) At **Bingen,** on the Washington side 23 (26.4) miles above the Bonneville Dam, there are two barge basins with adjacent sawmills. A light and a daybeacon mark the entrance to the E basin, which has a launching ramp and about 20 berths for small craft. In 1976, the controlling depth was 7 feet at midchannel in the entrance to the E basin with 5 to 10 feet in the basin, except for shoaling along the edges. The entrance to the W basin is unmarked; reported depths of 10 feet are in this basin.

(384) **The Dalles** is on the Oregon side of Columbia River, 39 (44.8) miles above the Bonneville Dam. River traffic, between the town and Vancouver, consists mainly of petroleum products and general freight bound upstream, and wheat, wool, and rafted logs bound downstream.

(385) A small-boat mooring basin with a breakwater and sheer boom protection is just E of the city wharf. Depths inside are 4 to 8 feet. The basin has a small-craft launching ramp. Gasoline, ice, and marine supplies are available. Engine repairs can be made.

(386) The city wharf is over 1,000 feet long and has two warehouses; depths alongside are about 20 feet. There are also private facilities for handling petroleum products, bulk grain, and fresh fruit. An aluminum mill is at West The Dalles.

Charts 18533, 18535

(387) **The Dalles Lock** and Dam, 40 (46) miles above Bonneville Dam, has a single lift lock with a vertical lift of about 87.5 feet. **Restricted areas** are above and below the dam. (See **207.718**, chapter 2, for information concerning use, administration, and navigation of The Dalles Lock and Dam.) **Lake Celilo,** the pool created by The Dalles Dam, provides slack water navigation with a controlling depth of about 14 feet for 22 (25.3) miles upstream to the John Day Dam. Depths and overhead clearances are at **normal pool level.**

(388) Traffic above The Dalles Dam consists mostly of grain and petroleum products.

Ice

(389) Ice occasionally interferes with navigation for 2 weeks or more, usually in January or February.

(390) A fixed highway bridge across the downstream approach to the lock at The Dalles Dam has a clearance of 100 feet.

(391) A railroad bridge, 7 (8.1) miles above The Dalles Dam, has a lift span with clearance of 20 feet down and 79 feet up. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign KQ-9048. (See **117.1 through 117.59 and 117.869**, chapter 2, for drawbridge regulations.)

(392) The Celilo Park basin 7.7 (8.9) miles above The Dalles Dam, offers shelter to small boats, but there are no facilities except a launching ramp. The entrance to the basin is marked by a light.

(393) At **Miller Island,** 10.5 (12) miles above The Dalles Dam, the N and S channels are marked by ranges. The main channel is along the N side of the island; however it is reported that the S channel is more frequently used. In May 1994, submerged obstructions with depths of 1 to 3 feet were reported in the S channel in about 45°38'17"N., 120°54'56"W. and 45°38'14"N., 120°54'54.5"W.

(394) On the Oregon side just S of Miller Island is **Deschutes River,** crossed by a fixed bridge with clearance of 20 feet. Small craft occasionally seek shelter here during unfavorable weather.

(395) A grain elevator with a barge loading chute extending to the river is at **Biggs,** Oreg.

(396) The **Biggs Bridge,** 13.6 (17) miles above The Dalles Dam, has a clearance of 88 feet at the center of the fixed highway span. The bridge joins **Maryhill,** Wash., and **Biggs Junction,** Oreg.

Charts 18535, 18536, 18537, 18539

(397) **John Day Dam**, 188 (216.3) miles above the mouth of the Columbia and 21 miles above The Dalles Dam, has a single lift lock with a vertical lift of about 105 feet. **Restricted areas** are above and below the dam. (See **207.718,** chapter 2, for information concerning use, administration, and navigation of John Day Dam.) Depths and overhead clearances are at **normal pool level.**

(398) The rock awash near the E approach to John Day Locks in 45°43'25"N., 120°41'20"W. is marked by a light and sign; mariners are urged to exercise caution when passing N of Lake Umatilla Lighted Buoy 2, so as to avoid being carried to the NW and striking the rock awash.

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(399) **Lake Umatilla,** the pool created by John Day Dam, extends 65 (75) miles to McNary Dam. Depths are generally great, but there are many shoals. The winding channel through the lake has a controlling depth of about 19 feet and is marked by aids to navigation. The chart is the best guide. An overhead power cable with a clearance of 90 feet is about 41 (47.2) miles above John Day Dam.

(400) **John Day River** is 2.3 miles above John Day Dam on the S side of the Columbia. Just S of the highway bridges over the entrance to the river is the **John Day River Recreation Area.** There are floats here for about 40 craft and a launching ramp. The fixed highway bridges have a clearance of 19 feet.

(401) A grain elevator with barge-loading facilities is at **Arlington,** Oreg., 21.5 (24.7) miles above John Day Dam. A loading tower for the elevator is marked by a light. Small-craft moorage and a launching ramp are available at Arlington.

(402) At **Boardman,** 45.6 (52.5) miles above the John Day Dam, there is a small-craft basin protected by a stone breakwater and a jetty. Berths and a launching ramp are available here.

(403) A grain elevator and barge-loading pier are on each side of the river about 51.3 (59) miles above John Day Dam.

(404) **Umatilla** is on the Oregon side 62 (71.3) miles above the John Day Dam.

(405) There is a small-craft basin about 500 yards W of the highway bridge. The E side of the entrance is marked by a light. About 125 covered and uncovered berths, electricity, gasoline, diesel fuel, water, and ice are available. A concrete launching ramp is at the basin.

(406) The fixed parallel highway bridges across the river, 63 (72.5) miles above the John Day Dam near Umatilla, each has two navigational spans with a least clearance of 71 feet. The N openings are generally used during high water because there is less current, but during low water it is unsafe. The power cables E of the fixed parallel highway bridges have a least clearance of 82 feet.

Charts 18541, 18542, 18543

(407) **McNary Lock** and Dam, 254.5 (292.9) miles above the mouth of the Columbia River and just above Umatilla, has a single lift lock with a vertical lift of about 75 feet. A **restricted area** is above the dam. (See **207.718**, chapter 2, for information concerning use, administration, and navigation of McNary Lock and Dam.) Depths and overhead clearances are at **normal pool level.**

(408) **Lake Wallula,** the pool created by McNary Dam, provides slack-water navigation from McNary Dam to the junction with the **Yakima River,** a distance of about 37 (43) miles. Depths in the lake are generally deep, but there are shoal spots; depths range from 14 to 115 feet. The channel is marked by aids to navigation as far as Richland, 40 (46) miles above McNary Dam.

(409) The **Port of Umatilla,** on the Oregon side, about 0.4 mile above the McNary Lock and Dam, has a 218-foot port wharf with 918 feet of berthing space with dolphins; reported depths of 20 feet are available alongside. A grain elevator with a loading rate of 16,000 bushels per hour is just E of the port wharf, and a barge wharf, used for receipt of petroleum products, is just E of the elevator. The grain elevator is operated by the Pendleton Grain Growers Association, the oil wharf by the Tidewater Oil Co., and the port wharf by the Port of Umatilla.

(410) **Hat Rock State Park,** on the S side about 5.5 (6.3) miles above McNary Dam, has a public launching ramp and offers excellent protection for small craft. Gasoline is available here.

(411) **Port Kelley,** on the E side of Columbia River, 16 (19.5) miles above McNary Dam, has a large grain elevator and facilities for handling bulk grain by rail, truck, or water. The elevator loading rate is 30,000 bushels per hour. Unlighted ranges lead clear of the rock and shoal area in the middle ground 0.4 mile W of the facility.

(412) A small boat moorage is in the bight just NE of Port Kelley. Berths, electricity, gasoline, and water are available.

(413) The **Port of Walla Walla** operates no public facilities, but leases property at **Wallula Junction** to a grain concern and a chemical company. A grain elevator and warehouse are here; both facilities have barge loading equipment. The elevator loading rate is 15,000 bushels per hour. The port also owns the land just S of **Attalia** occupied by a large papermill. Barge slips are at the mill.

(414) **Walla Walla River** enters Columbia River on the E side 18.4 (21.2) miles above McNary Dam. There is a public launching ramp on the S side of the river just E of the highway bridges at the entrance.

(415) About 1.9 miles S of the Snake River mouth, on the W side, is the Collier Carbon and Chemical Co. plant; anhydrous liquid ammonia and urea are received here by barge. The barge wharf is 400 feet long and has reported depths of 33 feet alongside. Two white ammonia storage tanks at this plant are prominent.

(416) The Union Pacific Railroad bridge crossing Columbia River, 27 (31) miles above McNary Dam, has a vertical lift span with a clearance of 11 feet down and 72 feet up. The center span is equipped with a racon. The

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bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign KTD-561. (See **117.1 through 117.59 and 117.1035**, chapter 2, for drawbridge regulations.)

Charts 18545, 18546, 18547, 18548

(417) **Snake River**, 283 (325.2) miles above the mouth of Columbia River, rises in Yellowstone National Park, from which it winds S past the Grand Tetons, and thence for some 868 miles to its junction with the Columbia at Pasco, Wash.

(418) From that junction for 119 (137) miles to Lewiston, ID there are few small-craft facilities. (See small-craft facilities tabulation on charts 18545, 18546, 18547, and 18548 for supplies and services available.) There are several marinas along the river at **Clarkston,** WA and **Lewiston,** ID where berths, gasoline, diesel fuel, water, ice, and marine supplies may be obtained. The Ports of Clarkston and Lewiston at the confluence of the Snake and Clarkford Rivers are the primary ports along the Snake River and serve the inland agricultural and logging communities of Washington, Idaho, and Oregon. Barge loading facilities and grain terminals are available at both ports.

(419) Near its mouth, at the village of **Burbank,** Snake River is crossed by the Burlington Northern Railroad lift bridge with a clearance of 14 feet down and 60 feet up. The bridgetender monitors VHF-FM channel 16 and works on channel 13; call sign KQ- 9047. About 0.6 (0.7) mile above, there is a fixed highway bridge with a clearance of 61 feet. In February 1985, a new fixed highway bridge with a design clearance of 63 feet was under construction close S of the existing bridge. Numerous overhead cables with a reported minimum clearance of 43 feet cross Snake River between the fixed highway bridge and Ice Harbor Lock and Dam.

(420) **East Pasco,** on the N side of Snake River 1 mile above the mouth, has extensive storage for grain, petroleum products, cement, and ammonia; the wharves are privately owned. From East Pasco to Lewiston there are no usable wharves.

(421) **Ice Harbor Lock and Dam,** 8.4 (9.7) miles above the mouth of the Snake River, has a single lift lock with a vertical lift of about 100 feet. A **restricted area** (marked by lights, signs, and buoys) is above the dam. (See **207.718,** chapter 2, for information concerning use, administration, and navigation of Ice Harbor Lock and Dam.) In May 1986, shoaling to an unknown depth was reported between Snake River Light 9 and Snake River Buoy 20. Lake Sacajawea, the lake formed by the waters behind Ice Harbor Dam, provides depths at slack water of 10 feet or more for a distance of 27.8 (32) miles to Lower Monumental Dam.

(422) **Lower Monumental Lock and Dam,** 27.6 (31.8) miles above Ice Harbor Dam and about 36 (41.5) miles above the mouth of the Snake River, has a single lift lock with a vertical lift of about 100 feet. A **restricted area,** marked by lights, signs, and buoys, is above the dam. (See **207.718**, chapter 2, for information concerning use, administration, and navigation of Lower Monumental Lock and Dam.)

(423) The Snake River between Lower Monumental Dam and Little Goose Dam, 25 (28.8) miles above Lower Monumental Dam, is crossed by three fixed bridges with a least clearance of 52 feet; overhead power cables crossing the river between the two dams have a least clearance of 90 feet.

(424) **Little Goose Lock and Dam,** about 25 (28.8) miles above Lower Monumental Dam and about 61.1 (70.3) miles above the mouth of the Snake River, has a single lift lock with a vertical lift of about 98 feet. **A restricted area,** marked by lights, signs, and buoys, is above the dam. (See **207.718,** chapter 2, for information concerning use, administration, and navigation of Little Goose Lock and Dam.)

(425) **Lake Bryan,** the pool formed by Little Goose Dam is crossed by a fixed highway bridge with a clearance of 60 feet about 10.7 (12.3) miles above the dam; overhead power cables with a least clearance of 75 feet cross the lake between Little Goose Dam and Lower Granite Dam.

(426) **Lower Granite Lock and Dam,** about 31.5 (36.8) miles above Little Goose Dam and about 93.4 (107.5) miles above the mouth of the Snake River, has a single lift navigation lock 675 feet long and 86 feet wide. The dam, completed in 1975, permits navigation to **Lewiston,** Idaho, 120 (138) miles above the mouth of the Snake River. (See **207.718,** chapter 2, for information concerning use, administration, and navigation of Lower Granite Lock and Dam.) A fixed highway bridge with a clearance of 60 feet crosses Snake River about 1.5 miles below its junction with Clearwater River. A highway lift bridge with clearances of 7 feet down and 60 feet up crosses **Clearwater River** about 0.35 mile above the junction with Snake River (See **117.1 through 117.59 and 117.381,** chapter 2, for lift bridge regulations.) A fixed highway bridge, about 1.15 miles above the lift bridge, has a clearance of 21 feet. A vertical lift highway bridge with a clearance of 10 feet down and 42 feet up crosses the Snake River between Lewiston, Idaho and **Clarkston,** Washington. (See **117.1 through 117.59 and 117.385**, chapter 2, for drawbridge regulations.) A fixed highway bridge with a clearance of 60 feet is about 1.5 miles above the lift bridge. Overhead power cables with a minimum

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clearance of 80 feet cross the river between the dam and Lewiston.

Charts 18542, 18543

(427) **Pasco**, on the N side of the Columbia River 286 (329) miles above its mouth, is 32 (36.8) miles above McNary Dam. The 800-foot port wharf, leased to private interests, has about 16 feet alongside. A tank farm and a 500,000-bushel grain elevator are served by the wharf. The elevator loads barges at a rate of 500 tons per hour. Traffic at the port consists primarily of inbound petroleum products from Portland and outbound grain to Portland and Vancouver. A barge slip, about 400 feet wide and 800 feet long, is at the port's industrial park, about 1 mile below the Burlington Northern railroad lift bridge. Paper products and molasses are received at this slip. The Port of Pasco is a municipal corporation with a Board of Commissioners and a General Manager. In addition to the marine terminal and the industrial park, the port operates an airport. The Pasco-Kennewick-Richland area is the most important commercial barging center above Portland.

(428) The Pasco Yacht Basin, on the E side just below the railroad lift bridge, has berths, gasoline, diesel fuel, and marine supplies. Engine and electronic repairs can be made. An 8-ton hoist and a launching ramp are available at the basin.

(429) **Kennewick,** on the S side of Columbia River opposite Pasco, has grain storage facilities and a public wharf where dry cargo is moved. At **Clover Island,** there is a large small-craft harbor. About 80 berths with electricity, gasoline, diesel fuel, water, and marine supplies are available. Hull, engine, and electronic repairs can be made. A 12-ton crane is at a marina occupying the center section of the island. A private yacht club is on the S side of the island.

(430) Four bridges cross the river in this area; the railroad lift bridge clearance is 18 feet down and 70 feet up. (See **117.1 through 117.59 and 117.1035**, chapter 2, for drawbridge regulations.) The fixed highway bridges 0.35 (0.4) mile W of the railroad bridge has a least clearance of 49 feet. The fixed highway bridge 1.7 (2.0) miles W of the railroad bridge has a clearance of 61 feet. An overhead power cable crossing the river at the E end of Clover Island has a least clearance of 54 feet.

(431) **Columbia Park Recreation Area,** just above the upper fixed highway bridge at Pasco, has a small-craft marina at which berths, electricity, gasoline, water, a launching ramp, and marine supplies are available. Engine repairs can be made. Diesel fuel is available in the town of **Richland,** just above the recreation area. Interstate Route 182 fixed bridge crossing the Columbia River at Richland has a clearance of 73 feet.

(432) The **Hanford Works,** a huge U.S. Department of Energy reservation, is on the S and W sides of the Columbia River about 13 (15) miles above Richland. The facility is devoted to energy research, development, and demonstration; production of nuclear materials; management of defense nuclear waste; and commercial nuclear fuel cycle research. The original site was created in 1943 under the direction of the Manhattan District of the Army Corps of Engineers for the production of materials for nuclear weapons such as those which helped to end World War II.

(433) **Priest Rapids Dam,** 68 (78.3) miles above McNary Dam and 353 (407) miles above the mouth of Columbia River, completed and dedicated in 1962, is the head of navigation, although in its construction provision was made for later building of a navigational lock if needed. However, Richland is the present practical head of navigation.

Charts 18551, 18553

(434) **Franklin D. Roosevelt Lake**, Wash., is a National Recreation Area on the upper Columbia River impounded by the **Grand Coulee Dam** (47°57.5'N., 118°59.0'W.). Information about facilities and services is available at the recreation area headquarters in the town of Coulee Dam, the visitors' center at Fort Spokane, and the ranger station at Kettle Falls.

(435) A **restricted area** has been established in the discharge channel of the Grand Coulee Dam, and extending about 2.5 miles downstream from the dam. (See **162.230,** chapter 2, for limits and regulations.)

Chart 18554

(436) **Lake Pend Oreille** (48°10'N., 116°25'W.), Idaho, is a recreation area nearly surrounded by the Kaniksu National Forest. The charted depths are based on a lake level of 2048.15 feet above mean sea level. Normal winter and summer lake levels are about 3 feet and 14 feet above the charted depths, respectively. Lake level information, corrected daily, can be obtained by calling the Corps of Engineers, Albeni Falls Dam, telephone (208-437-3133). Marina services at **Sandpoint,** on the N side of the **Pend Oreille River** at its junction with Lake Pend Oreille, include berthing, gasoline, a launching ramp, winter storage, and hull and engine repairs. The drawspan of the railroad bridge across the Pend Oreille River, at the river and lake junction, is in the permanently closed position. (See **117.1 through 117.59 and 117.383**, chapter 2, for drawbridge

regulations.) U.S. Route 95 fixed highway bridge crosses the river just above the railroad bridge; the least clearance for both bridges is 14 feet. At **Bayview** (47°59'N., 116°34'W.), at the SW end of the lake just W of Scenic Bay, has several marinas that can provide transient berthing, gasoline, diesel fuel, launching ramps, winter storage, marine supplies, water, and pump-out stations; complete marine services are available. Additional information about facilities and services may be obtained from the Sandpoint Chamber of Commerce, Sandpoint, Idaho 83864.

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