United States Coast Pilot 9

Pacific and Arctic Coasts Alaska: Cape Spencer to Beaufort Sea

17th Edition

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service

United States Coast Pilot 9

Pacific and Arctic Coasts Alaska: Cape Spencer to Beaufort Sea

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The last published change to the previous edition (16th/1994) was change 9. Change 8 was published in Defense Mapping Agency Notice to Mariners 29 dated 07/22/95. Change 8 was published in Commander Seventeenth Coast Guard District Local Notice to Mariners 24 dated 06/13/95. Changes 1 through 9 to the previous edition have been entered into this 17th edition.

U.S. DEPARTMENT OF COMMERCE
Ronald H. Brown, Secretary

National Oceanic and Atmospheric Administration (NOAA)
D. James Baker, Under Secretary of Commerce for Oceans and Atmosphere, and Administrator, NOAA

National Ocean Service
W. Stanley Wilson, Assistant Administrator for Ocean Services and Coastal Zone Management

Washington, DC 1995
For sale by the National Ocean Service and its sales agents.

LIMITS OF UNITED STATES COAST PILOT

Atlantic Coast

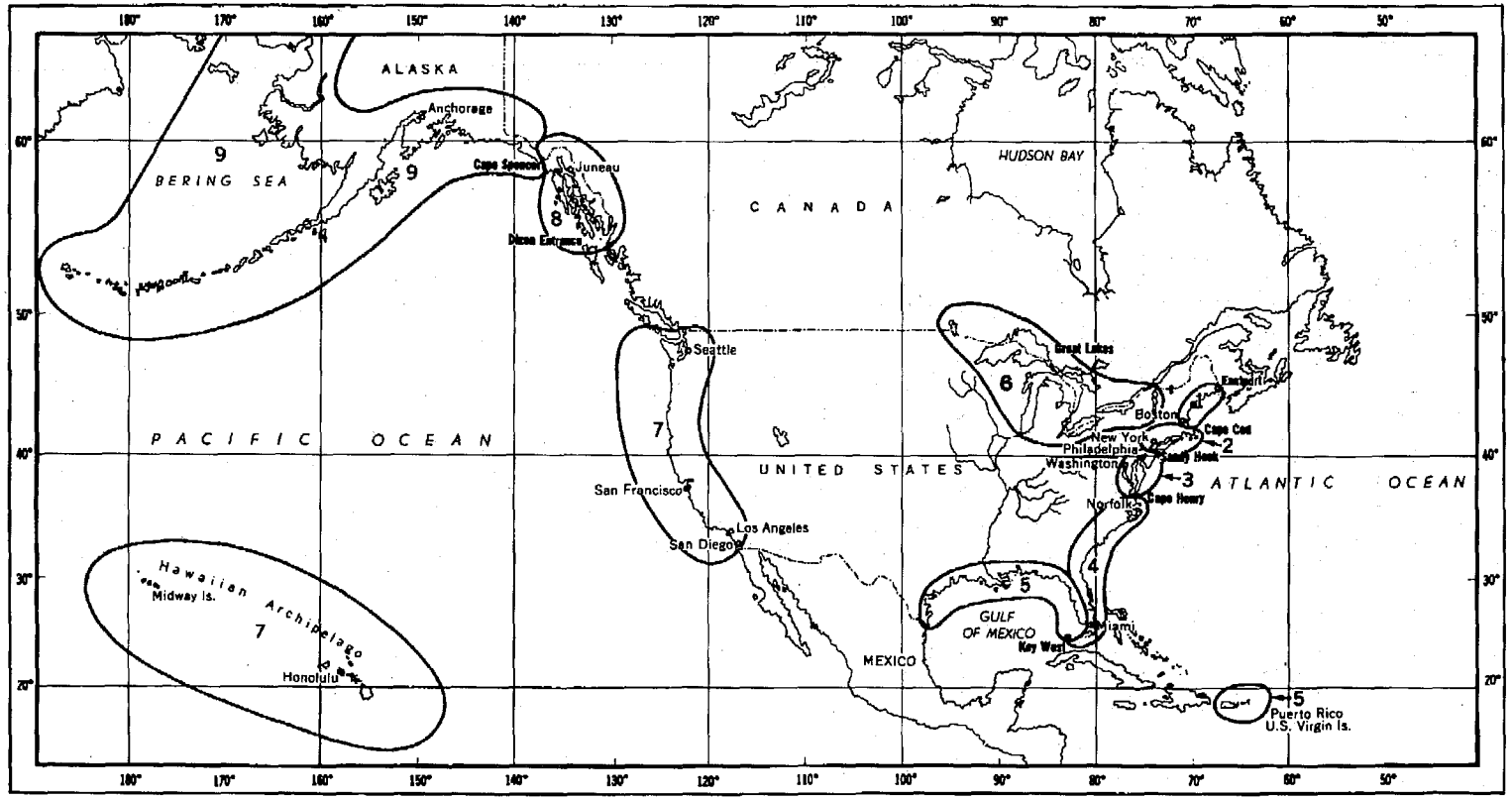
1 Eastport to Cape Cod
2 Cape Cod to Sandy Hook
3 Sandy Hook to Cape Henry
4 Cape Henry to Key West
5 Gulf of Mexico, Puerto Rico, and Virgin Islands

Pacific Coast

7 California, Oregon, Washington, and Hawaii
8 Alaska - - Dixon Entrance to Cape Spencer
9 Alaska - - Cape Spencer to Beaufort Sea

Great Lakes

6 The Lakes and their Connecting Waterways



Preface

United States Coast Pilot is published by the National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), pursuant to the Act of 6 August 1947 (33 U.S.C. 883a and b), and the Act of 22 October 1968 (44 U.S.C. 1310).

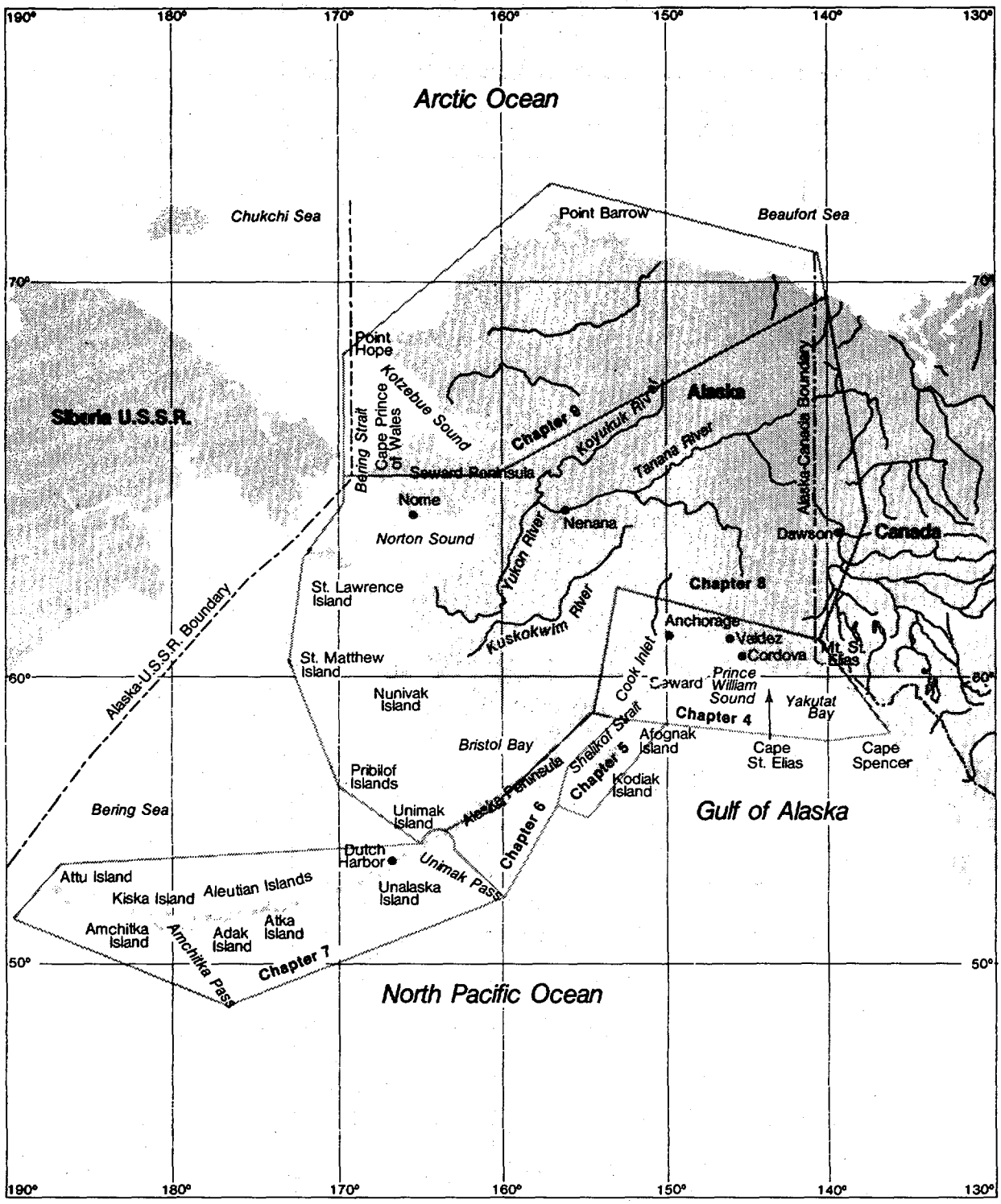
The Coast Pilot supplements the navigational information shown on the nautical charts. The sources for updating the Coast Pilot include but are not limited to field inspections conducted by NOAA, information published in Notices to Mariners, reports from NOAA Hydrographic vessels and field parties, information from other Government agencies, State and local governments, maritime and pilotage associations, port authorities, and mariners.

This volume of Coast Pilot 9, Pacific and Arctic Coasts, Cape Spencer to Beaufort Sea, cancels the 1994 (16th) Edition.

Notice.-Amendments are issued to this publication through U.S. Coast Guard Local Notices to Mariners. A subscription to the Local Notice to Mariners is available upon application to the appropriate Coast Guard District Commander (Aids to Navigation Branch). Consult appendix for address. All amendments are also issued in Defense Mapping Agency Notices to Mariners.

Mariners and others are urged to report promptly to the National Ocean Service errors, omissions, or any conditions found to differ from or to be additional to those published in the Coast Pilot or shown on the charts in order that they may be fully investigated and proper corrections made. A Coast Pilot Report form is included in the back of this book and a Marine Information Report form is published in the Defense Mapping Agency Hydrographic/ Topographic Center Notice to Mariners for your convenience. These reports and/or suggestions for increasing the usefulness of the Coast Pilot should be sent to

Chief,
Office of Coast Survey (N/CS261)
National Ocean Service, NOAA
1315 East-West Highway, Station 7317
Silver Spring, MD 20910-3282.



Graphic Chapter Index

RECORD OF CHANGES

CHANGE NO.	FROM NOTICE TO MARINERS NO.	ENTERED BY	DATE ENTERED

Contents

1. GENERAL INFORMATION

(1) **UNITED STATES COAST PILOT.**–The National Ocean Service Coast Pilot is a series of nine nautical books that cover a wide variety of information important to navigators of U.S. coastal and intracoastal waters, and the waters of the Great Lakes. Most of this book information cannot be shown graphically on the standard nautical charts and is not readily available elsewhere. The subjects in the Coast Pilot include, but are not limited to, channel descriptions, anchorages, bridge and cable clearances, currents, tide and water levels, prominent features, pilotage, towage, weather, ice conditions, wharf descriptions, dangers, routes, traffic separation schemes, small-craft facilities, and Federal regulations applicable to navigation.

(2) **Notice.–Amendments are issued to this publication through U.S. Coast Guard Local Notices to Mariners. A subscription to the Local Notice to Mariners is available upon application to the appropriate Coast Guard District Commander (Aids to Navigation Branch). Consult appendix for address. All amendments are also issued in Defense Mapping Agency Notices to Mariners.**

(3) **Bearings.**–These are true and are expressed in degrees from 000° (north) to 359°, measured clockwise. General bearings are expressed by initial letters of the points of the compass (e.g., N, NNE, NE, etc.). Adjective and adverb endings, except in chapter 2, Navigation Regulations, have been discarded. Wherever precise bearings are intended degrees are used. Light-sector bearings are toward the light.

(4) **Bridges and cables.**–Vertical clearances of bridges and overhead cables are in feet (meters) above mean high water unless otherwise stated; clearances of drawbridges are for the closed position, although the open clearances are also given for vertical-lift bridges. Clearances given in the Coast Pilot are those approved for nautical charting, and are supplied by the U.S. Coast Guard (bridges) and U.S. Army Corps of Engineers (cables); they may be as-built (verified by actual inspection after completion of structures) or authorized (design values specified in permit issued prior to construction). No differentiation is made in the Coast Pilot between as-built and authorized clearances. (See charts for horizontal clearances of bridges, as these are given in the Coast Pilot only when they are less than 50 feet (15 meters).) Submarine cables are rarely mentioned.

(5) **Cable ferries.**–Cable ferries are guided by cables fastened to shore and sometimes propelled by a cable rig attached to the shore. Generally, the cables are suspended during crossings and dropped to the bottom when the ferries dock. Where specific operating procedures are known they are mentioned in the text. Since operating procedures vary, mariners are advised to exercise extreme caution and seek local knowledge. **DO NOT ATTEMPT TO PASS A MOVING CABLE FERRY.**

(6) **Courses.**–These are true and are expressed in the same manner as bearings. The directives "steer" or "make good" a course mean, without exception, to proceed from a point of origin along a track having the identical meridional angle as the designated course. Vessels following the directives must allow for every influence tending to cause deviation from such track, and navigate so that the designated course is continuously being made good.

(7) **Currents.**–Stated current velocities are the averages at strength. Velocities are in knots, which are nautical miles per hour. Directions are the true directions to which the currents set.

(8) **Depths.**–*Depth is the vertical distance from the chart* datum to the bottom and is expressed in the same units as the applicable chart (feet, meters or fathoms). (See Chart Datum this chapter for further detail.) The **controlling depth** of a channel is the least depth within the limits of the channel; it restricts the safe use of the channel to drafts of less than that depth. The **centerline controlling depth** of a channel applies only to the channel centerline; lesser depths may exist in the remainder of the channel. The **midchannel controlling depth** of a channel is the controlling depth of only the middle half of the channel. **Federal project depth** is the design dredging depth of a channel constructed by the Corps of Engineers, U.S. Army; the project depth may or may not be the goal of maintenance dredging after completion of the channel, and, for this reason, project depth must not be confused with controlling depth. **Depths alongside wharves** usually have been reported by owners and/or operators of the waterfront facilities, and have not been verified by Government surveys; since these depths may be subject to change, local authorities should be consulted for the latest controlling depths.

(9) In general, the Coast Pilot gives the project depths for deep-draft ship channels maintained by the Corps of Engineers. The latest controlling depths are usually shown on the charts and published in the Notices to Mariners. For other channels, the latest controlling depths available at the time of publication are given. **In all cases, however, mariners are advised to consult with pilots, port and local authorities, and Federal and State authorities for the latest channel controlling depths.**

(10) **Under-keel clearances.**–It is becoming increasingly evident that economic pressures are causing mariners to navigate through waters of barely adequate depth, with under–keel clearances being finely assessed from the charted depths, predicted tide levels, and depths recorded by echo sounders.

(11) It cannot be too strongly emphasized that even charts based on modern surveys may not show all sea-bed obstructions or the shoalest depths, and actual tide levels may be appreciably lower than those predicted.

(12) In many ships an appreciable correction must be applied to shoal soundings recorded by echo sounders due to the horizontal distance between the transducers. This separation correction, which is the amount by which recorded depths therefore exceed true depths, increases with decreasing depths to a maximum equal to half the distance apart of the transducers; at this maximum the transducers are aground. Ships whose transducers are more than 6 feet (1.8 meters) apart should construct a table of true and recorded depths using the Traverse Tables. (Refer to discussion of echo soundings elsewhere in chapter 1.)

(13) Other appreciable corrections, which must be applied by many ships, are for settlement and squat. These corrections depend on the depth of water below the keel, the hull form and speed of the ship.

(14) Settlement causes the water level around the ship to be lower than would otherwise be the case. It will always cause echo soundings to be less than they would otherwise be. Settlement is

appreciable when the depth is less than seven times the draft of the ship, and increases as the depth decreases and the speed increases.

(15) Squat denotes a change in trim of a ship underway, relative to her trim when stopped. It usually causes the stern of a vessel to sit deeper in the water. However, it is reported that in the case of mammoth ships squat causes the bow to sit deeper. Depending on the location of the echo sounding transducers, this may cause the recorded depth to be greater or less than it ought to be. **Caution and common sense are continuing requirements for safe navigation.**

(16) **Distances.**–These are in nautical miles unless otherwise stated. A nautical mile is one minute of latitude, or approximately 2,000 yards, and is about 1.15 statute miles.

(17) **Heights.**–These are in feet (meters) above the tidal datum used for that purpose on the charts, usually mean high water. However, the heights of the decks of piers and wharves are given in feet (meters) above the chart datum for depths.

(18) **Light and fog signal characteristics.**– These are not described, and light sectors and visible ranges are normally not defined. (See Coast Guard Light Lists.)

(19) **Obstructions.**–Wrecks and other obstructions are mentioned only if of a relatively permanent nature and in or near normal traffic routes.

(20) **Radio aids to navigation.**–These are seldom described. (See Coast Guard Light Lists and Defense Mapping Agency Hydrographic/Topographic Center Radio Navigational Aids publications.)

(21) **Ranges.**–These are not fully described. **"A 339° Range"** means that the rear structure bears 339° from the front structure. (See Coast Guard Light Lists.)

(22) **Reported information.**–Information received by NOS from various sources concerning depths, dangers, currents, facilities, and other subjects, which has not been verified by Government surveys or inspections, is often included in the Coast Pilot; such **unverified information** is qualified as "reported", and should be regarded with caution.

(23) **Time.**–Unless otherwise stated, all times are given in local standard time in the 24-hour system. (Noon is 1200, 2:00 p.m. is 1400, and midnight is 0000.)

(24) **Winds.**–Directions are the true directions from which the winds blow. Unless otherwise indicated, speeds are given in knots, which are nautical miles per hour.

NOTICES TO MARINERS

(25) **Notices to Mariners** are published by Federal agencies to advise operators of vessels of marine information affecting the safety of navigation. The notices include changes in aids to navigation, depths in channels, bridge and overhead cable clearances, reported dangers, and other useful marine information. They should be used routinely for updating the latest editions of nautical charts and related publications.

(26) **Local Notice to Mariners** is issued by each Coast Guard District Commander for the waters under his jurisdiction. (See appendix for Coast Guard district(s) covered by this volume.) These notices are usually published weekly and may be obtained without cost by making application to the appropriate District Commander.

(27) **Notice to Mariners,** published weekly by the Defense Mapping Agency Hydrographic/Topographic Center, is prepared jointly with NOS and the Coast Guard. These notices contain selected items from the Local Notices to Mariners and other reported marine information required by oceangoing vessels operating in both **foreign** and **domestic** waters. Special items covering a variety of subjects and generally not discussed in the Coast Pilot or shown on nautical charts are published annually in Notice to Mariners No. 1. These items are important to the mariner and should be read for future reference. These notices may be obtained by operators of oceangoing vessels, without cost, by making application to Defense Mapping Agency (see Defense Mapping Agency Procurement Information in appendix).

(28) Notices and reports of **improved channel depths** are also published by district offices of the Corps of Engineers, U.S. Army (see appendix for districts covered by this volume). Although information from these notices/reports affecting NOS charts and related publications is usually published in the Notices to Mariners, the local district engineer office should be consulted where depth information is critical.

(29) **Marine Broadcast Notices to Mariners** are made by the Coast Guard through Coast Guard, Navy, and some commercial radio stations to report deficiencies and important changes in aids to navigation. (See Radio Navigation Warnings and Weather, this chapter.)

(30) Vessels operating within the limits of the Coast Guard districts can obtain information affecting NOS charts and related publications from the Local Notices to Mariners. Small craft using the Intracoastal Waterway and other waterways and small harbors within the United States that are not normally used by oceangoing vessels will require the Local Notices to Mariners to keep charts and related publications up-to-date. Information for oceangoing vessels can be obtained from the Notice to Mariners published by the Defense Mapping Agency Hydrographic/Topographic Center.

(31) Notices to Mariners may be consulted at Coast Guard district offices, NOS field offices, Defense Mapping Agency Hydrographic/Topographic Center offices and depots, most local marine facilities, and sales agents handling charts and related publications.

U.S. GOVERNMENT AGENCIES PROVIDING MARITIME SERVICES

(32) **Animal and Plant Health Inspection Service,** Department of Agriculture.–The Agricultural Quarantine Inspection Program and Animal Health Programs of this organization are responsible for protecting the Nation's animal population, food and fiber crops, and forests from invasion by foreign pests. They administer agricultural quarantine and restrictive orders issued under authority provided in various acts of Congress. The regulations prohibit or restrict the importation or interstate movement of live animals, meats, animal products, plants, plant products, soil, injurious insects, and associated items that may introduce or spread plant pests and animal diseases which may be new to or not widely distributed within the United States or its territories. Inspectors examine imports at ports of entry as well as the vessel, its stores, and crew or passenger baggage.

(33) The Service also provides an inspection and certification service for exporters to assist them in meeting the quarantine requirements of foreign countries. (See appendix for a list of ports where agricultural inspectors are located and inspections conducted.)

(34) **Customs Service,** Department of the Treasury.–The U.S. Customs Service administers certain laws relating to: entry and clearance of vessels and permits for certain vessel movements

between points in the United States; prohibitions against coastwise transportation of passengers and merchandise; salvage, dredging and towing by foreign vessels; certain activities of vessels in the fishing trade; regular and special tonnage taxes on vessels; the landing and delivery of foreign merchandise (including unlading, appraisement, lighterage, drayage, warehousing, and shipment in bond); collection of customs duties, including duty on imported pleasure boats and yachts and 50% duty on foreign repairs to American vessels engaged in trade; customs treatment of sea and ship's stores while in port and the baggage of crewmen and passengers; illegally imported merchandise; and remission of penalties or forfeiture if customs or navigation laws have been violated. The Customs Service also cooperates with many other Federal agencies in the enforcement of statutes they are responsible for. Customs districts and ports of entry, including customs stations, are listed in the appendix.

(35) The Customs Service may issue, without charge, a **cruising license,** valid for a period of up to 6 months and for designated U.S. waters, to a yacht of a foreign country which has a reciprocal agreement with the United States. A foreign yacht holding a cruising license may cruise in the designated U.S. waters and arrive at and depart from U.S. ports without entering or clearing at the customhouse, filing manifests, or obtaining or delivering permits to proceed, provided it does not engage in trade or violate the laws of the United States or visit a vessel not yet inspected by a Customs Agent and does, within 24 hours of arrival at each port or place in the United States, report the fact of arrival to the nearest customhouse. Countries which have reciprocal agreements granting these privileges to U.S. yachts are Argentina, Australia, Bahama Islands, Bermuda, Canada, Federal Republic of Germany, Great Britain, Greece, Honduras, Jamaica, Liberia, the Netherlands, and New Zealand. Further information concerning cruising licenses may be obtained from the headquarters port for the customs district in which the license is desired. U.S. yacht owners planning cruises to foreign ports may contact the nearest customs district headquarters as to customs requirements.

(36) **National Ocean Service** (NOS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.–The National Ocean Service provides charts and related publications for the safe navigation of marine and air commerce, and provides basic data for engineering and scientific purposes and for other commercial and industrial needs. The principal facilities of NOS are located in Silver Spring, Md.; in Norfolk, Va. (Atlantic Marine Center); and in Seattle, Wash. (Pacific Marine Center). NOAA ships are based at the marine centers. These offices maintain files of charts and other publications which are available for the use of mariners, who are invited to avail themselves of the facilities afforded. (See appendix for addresses.)

(37) **Sales agents** for Charts, the Coast Pilot, Tide Tables, Tidal Current Tables, and Tidal Current Charts of the National Ocean Service are located in many U.S. ports and in some foreign ports. A list of authorized sales agents and chart catalogs may be had free upon request from National Ocean Service, Distribution Division (N/ACC3). (See appendix for address.)

(38) **Nautical charts** are published primarily for the use of the mariner, but serve the public interest in many other ways. They are compiled principally from NOS basic field surveys, supplemented by data from other Government organizations.

(39) **Tide Tables** are computed annually by NOS in advance of the year for which they are prepared. These tables include predicted times and heights of high and low waters for every day in the year for a number of reference stations and differences for obtaining similar predictions for numerous other places. They also include other useful information such as a method of obtaining heights of tide at any time, local mean time of sunrise and sunset for various latitudes, reduction of local mean time to standard time, and time of moonrise and moonset for various ports.

(40) **Caution.**–In using the Tide Tables, slack water should not be confused with high or low water. For ocean stations there is usually little difference between the time of high or low water and the beginning of ebb or flood currents; but for places in narrow channels, landlocked harbors, or on tidal rivers, the time of slack current may differ by several hours from the time of high or low water. The relation of the times of high or low water to the turning of the current depends upon a number of factors, so that no simple general rule can be given. (To obtain the times of slack water, refer to the Tidal Current Tables.)

(41) **Tidal Current Tables** for the coasts of the United States are issued annually by NOS in advance of the year for which they are prepared. These tables include daily predictions of the times of slack water and the times and velocities of strength of flood and ebb currents for a number of waterways, together with differences for obtaining predictions for numerous other places. Also included is other useful information such as a method for obtaining the velocity of current at any time, duration of slack, coastal tidal currents, wind currents, combination of currents, and current diagrams. Some information on the Gulf Stream is included in the tables for the Atlantic coast.

(42) **Tidal Current Charts** are published by NOS for various localities. These charts depict the direction and velocity of the current for each hour of the tidal cycle. They present a comprehensive view of the tidal current movement in the respective waterways as a whole and when used with the proper current tables or tide tables supply a means for readily determining for any time the direction and velocity of the current at various localities throughout the areas covered.

(43) **HOW TO OBTAIN TIDAL PREDICTIONS AND DATA FROM THE NATIONAL OCEAN SERVICE.**–NOS, which annually publishes Tide Prediction Tables and Tidal Current Prediction Tables, is experiencing a shortage of funds to print and distribute those Tables. In addition, the role of NOS with regard to the publication of the Tables is redefined to be that of maintaining and updating the tidal prediction database from domestic and international sources and generating the annual predictions and associated information. Therefore, beginning with the 1996 edition of these Tables, NOS will no longer print and distribute book-form Tables as a standard nautical product.

(44) The titles of the NOS publications affected are:

(45) Tide Tables 1996 - East Coast of North and South America including Greenland;

(46) Tide Tables 1996 - West Coast of North and South America including the Hawaiian Islands;

(47) Tide Tables 1996 - Central and Western Pacific Ocean and Indian Ocean;

(48) Tide Tables 1996 - Europe and West Coast of Africa including the Mediterranean Sea;

(49) Tidal Current Tables 1996 - Atlantic Coast of North America;

(50) Tidal Current Tables 1996 - Pacific Coast of North America and Asia;

(51) Regional Tide and Tidal Current Tables 1996 - New York Harbor to Chesapeake Bay;

(52) Supplemental Tidal Predictions - Anchorage, Nikiski, Seldovia, and Valdez, Alaska - 1996.

(53) Although NOS will no longer print and distribute the Tables in a book format, a complete set of Tables will be made available to all who request it as a special compilation of prediction information on CD-ROM. The CD-ROM will contain camera-ready PostScript page-images. A PostScript reader will also be included to allow viewing documents on-screen. There will be a fee charged for production and distribution of the special compilation. Although available to all who request it, the CD-ROM vehicle may also be used by private printers who wish to print in book-form the full set of Tables for distribution to retailers and the general public. The annual predictions and associated information will be made available on the same schedule as followed in previous years.

(54) In addition to the CD-ROM, two new vehicles will be provided for obtaining predictions. First, for the approximately 3,700 domestic tide stations, a 3-day window of predictions for any date in 1995 and 1996 will be offered on the NOS, Coastal and Estuarine Oceanography Branch, Tidal Information Distribution and Education System (TIDES) electronic bulletin board which is accessible by telephone modem (301) 713-4492, N-8-1, up to 9600 baud). During 1996, this feature will be expanded to include about 3,000 additional sites in 120 countries around the world. Second, for domestic tidal reference stations, predictions covering a 4-day period beginning on the day of inquiry will be available on the NOS, Coastal and Estuarine Oceanography Branch, Mosaic Homepage on the Internet (**http://www-ceob.nos.noaa.gov**). These two new communication pathways will also be used to continuously inform customers when prediction products become available or finalized during the year. Further, NOS will continue to provide tide and tidal current prediction and associated information on the media and in the time-frames with which customers have been familiar from past experience with NOS.

(55) Thus, all requests for prediction and associated information continue to be welcome. Beginning immediately, NOS is accepting prediction data requests via two new communication pathways. The first is the TIDES electronic bulletin board. The second, is the NOS, Coastal and Estuarine Oceanography Branch, World Wide Web Homepage.

(56) As NOS is no longer printing and distributing the Tables in book-form, the NOS Nautical Chart Sales Agents will no longer obtain the Tables in book-form from the NOS Distribution Branch. Instead, they may obtain quantities of the Tables for resale to the public from various private printers and distributors. NOS is aware of a small number of vendors who have shown interest in printing and distributing the Tables in book-form. NOS requests any and all parties who may be interested in printing and distributing the Tables in book-form to contact NOS (address follows).

(57) The U.S. Coast Guard, through the Federal regulation 33 CFR 164.33, requires certain charts and publications be carried on board vessels of 1,600 gross tons and greater when traversing U.S. waters. NOS has been in contact with the U.S. Coast Guard concerning this regulation. Questions concerning this regulation should be addressed to Chief, Navigation Rules Branch, G-NVT-3, United States Coast Guard, Washington, D.C. 20593-0001, telephone (202) 267-0416; fax (202) 267-4826.

(58) Anyone with questions or comments regarding the above subject or private printers and distributors wishing more information should write, telephone, fax or e-mail to:

(59) National Ocean Service, NOAA
(60) Attn: Tidal Predictions (N/OES33)
(61) 1305 East-West Highway
(62) Silver Spring, MD 20910-3281
(63) Telephone (301) 713-2815
(64) FAX (301) 713-4501
(65) E-MAIL ipss@ceob-g30.nos.noaa.gov
(66) WWW http://www-ceob.nos.noaa.gov

(67) Tidal observation data for some of the NOS tide stations, and information about how to obtain other data, is available from the NOS Ocean and Lake Levels Division. This information is available on the World Wide Web at **http://isis.ngs.noaa.gov:80/olld/home.html**. TELNET access to tidal data and information is available at **wlnet2.nos.noaa.gov**. Tidal observation data is also available in hard copy by mail, and in some instances, by fax. Special arrangements can be made for continuing access to data, or for real-time access to certain data sets.

(68) Anyone with questions or comments regarding the above subject or wishing more information should write, telephone, or fax to:

(69) National Ocean Service, NOAA
(70) Attn: Ocean and Lake Levels (N/OES232)
(71) 1305 East-West Highway
(72) Silver Spring, MD 20910-3281
(73) Telephone (301) 713-2877
(74) FAX (301) 713-4366

(75) NOS, in partnership with other agencies and institutions, has established a series of Physical Oceanographic Real Time Systems (PORTS) in selected areas. These PORTS sites provide constantly updated information on tidal and tidal current conditions, water temperature, and weather conditions. This information is updated every six minutes. The PORTS sites currently in operation include: Tampa Bay, Florida; San Francisco, California; and New York/New Jersey; with future sites to be added. The information is accessible through a computer data connection or by a voice response system at the following numbers:

(76) **TAMPA BAY**
(77) Voice response (813) 822-5836 or (813) 822-0022
(78) Data (813) 822-5931 (2400 baud, N-8-1)
(79) **SAN FRANCISCO**
(80) Voice response (707) 642-4337
(81) Data (707) 642-4608 (2400 baud, N-8-1)
(82) **NEW YORK/NEW JERSEY**
(83) Voice response (212) 688-7725

(84) Anyone with questions or comments regarding the above subject or wishing more information should write, telephone, or fax to:

(85) National Ocean Service, NOAA
(86) Attn: Office of Ocean and Earth Sciences (OES333)
(87) 1305 East-West Highway, Station 6544
(88) Silver Spring MD 20910-3281
(89) Telephone (301) 713-2809
(90) FAX (301) 713-4501

(91) **Coast Guard,** Department of Transportation.– The Coast Guard has among its duties the enforcement of the laws of the United States on the high seas and in coastal and inland waters of the United States and its possessions; enforcement of navigation and neutrality laws and regulations; establishment and enforcement of navigational regulations upon the Inland Waters of the United States, including the establishment of a demarcation line separating the high seas from waters upon which U.S. navigational rules apply; administration of the Oil Pollution Act of 1961, as

amended; establishment and administration of vessel anchorages; approval of bridge locations and clearances over navigable waters; administration of the alteration of obstructive bridges; regulation of drawbridge operations; inspection of vessels of the Merchant Marine; admeasurement of vessels; documentation of vessels; preparation and publication of merchant vessel registers; registration of stack insignia; port security; issuance of Merchant Marine licenses and documents; search and rescue operations; investigation of marine casualties and accidents, and suspension and revocation proceedings; destruction of derelicts; operation of aids to navigation; publication of Light Lists and Local Notices to Mariners; and operation of ice-breaking facilities.

(92) The Coast Guard, with the cooperation of coast radio stations of many nations, operates the **Automated Mutual-assistance Vessel Rescue System (AMVER).** It is an international maritime mutual assistance program which provides important aid to the development and coordination of search and rescue (SAR) efforts in many offshore areas of the world. Merchant ships of all nations making offshore passages are encouraged to voluntarily send movement (sailing) reports and periodic position reports to the AMVER Center at Coast Guard New York via selected radio stations. Information from these reports is entered into an electronic computer which generates and maintains dead reckoning positions for the vessels. Characteristics of vessels which are valuable for determining SAR capability are also entered into the computer from available sources of information.

(93) A worldwide communications network of radio stations supports the AMVER System. Propagation conditions, location of vessel, and traffic density will normally determine which station may best be contacted to establish communications. To ensure that no charge is applied, all AMVER reports should be passed through specified radio stations. Those stations which currently accept AMVER reports and apply no coastal station, ship station, or landline charge are listed in each issue of the "AMVER Bulletin" publication. Also listed are the respective International radio call signs, locations, frequency bands, and hours of operation. The "AMVER Bulletin" is available from AMVER Maritime Relations, U.S. Coast Guard, Building 110, Box 26, Governor's Island, NY 10004-5034, telephone: (212) 668-7764. Although AMVER reports may be sent through nonparticipating stations, the Coast Guard cannot reimburse the sender for any charges applied.

(94) Information concerning the predicted location and SAR characteristics of each vessel known to be within the area of interest is made available upon request to recognized SAR agencies of any nation or vessels needing assistance. Predicted locations are only disclosed for reasons related to marine safety.

(95) Benefits of AMVER participation to shipping include: (1) improved chances of aid in emergencies, (2) reduced number of calls for assistance to vessels not favorably located, and (3) reduced time lost for vessels responding to calls for assistance. An AMVER participant is under no greater obligation to render assistance during an emergency than a vessel who is not participating.

(96) All AMVER messages should be addressed to Coast Guard New York regardless of the station to which the message is delivered, except those sent to Canadian stations which should be addressed to AMVER Halifax or AMVER Vancouver to avoid incurring charges to the vessel for these messages.

(97) Instructions guiding participation in the AMVER System are available in the following languages: Chinese, Danish, Dutch, English, French, German, Greek, Italian, Japanese, Korean, Norwegian, Portuguese, Polish, Russian, Spanish and Swedish. The AMVER Users Manual is available from: AMVER Maritime Relations, U.S. Coast Guard, Building 110, Box 26, Governor's Island, NY 10004-5034, telephone: (212) 668-7764; Commander, Atlantic Area, U.S. Coast Guard, Governors Island, NY 10004-5000; Commander, Pacific Area, U.S. Coast Guard, Coast Guard Island, Alameda, CA 94501-5100; and at U.S. Coast Guard District Offices, Marine Safety Offices, Marine Inspection Offices, and Captain of the Port Offices in major U.S. ports. Requests for instructions should state the language desired if other than English.

(98) For AMVER participants bound for U.S. ports there is an additional benefit. AMVER participation via messages which include the necessary information is considered to meet the requirements of 33 CFR 160. (See 160.201, chapter 2, for rules and regulations.)

(99) **AMVER Reporting Required.**–U.S. Maritime Administration regulations effective August 1, 1983, state that certain U.S. flag vessels and foreign flag "War Risk" vessels must report and regularly update their voyages to the AMVER Center. This reporting is required of the following: (a) U.S. flag vessels of 1,000 gross tons or greater, operating in foreign commerce; (b) foreign flag vessels of 1,000 gross tons or greater, for which an Interim War Risk Insurance Binder has been issued under the provisions of Title XII, Merchant Marine Act, 1936.

(100) Details of the above procedures are contained in the AMVER Users Manual. The system is also published in DMAHTC Pub. 117.

(101) Search and Rescue Operation procedures are contained in the International Maritime Organization (IMO) SAR Manual (MERSAR). U.S. flag vessels may obtain a copy of MERSAR from local Coast Guard Marine Safety Offices and Marine Inspection Offices or by writing to U.S. Coast Guard (G-OSR), Washington, D.C. 20593-0001. Other flag vessels may purchase MERSAR directly from IMO.

(102) The Coast Guard conducts and/or coordinates **search and rescue** operations for surface vessels and aircraft that are in distress or overdue. (See Distress Signals and Communication Procedures this chapter.)

(103) **Light Lists,** published by the Coast Guard, describe aids to navigation, consisting of lights, fog signals, buoys, lightships, daybeacons, and electronic aids, in United States (including Puerto Rico and U.S. Virgin Islands) and contiguous Canadian waters. Light Lists are for sale by the Government Printing Office (See appendix for address.), and by sales agents in the principal seaports. Mariners should refer to these publications for detailed information regarding the characteristics and visibility of lights, and the descriptions of light structures, lightships, buoys, fog signals, and electronic aids.

(104) **Documentation** (issuance of certificates of registry, enrollments, and licenses), admeasurements of vessels, and administration of the various navigation laws pertaining thereto are functions of the Coast Guard. Yacht commissions are also issued, and certain undocumented vessels required to be numbered by the Federal Boat Safety Act of 1971 are numbered either by the Coast Guard or by a State having an approved numbering system (the latter is most common). Owners of vessels may obtain the necessary information from any Coast Guard District Commander, Marine Safety Office, or Marine Inspection Office. Coast Guard District Offices, Coast Guard Stations, Marine Safety Offices, Captain of the Port Offices, Marine Inspection Offices, and Documentation Offices are listed in the appendix. (Note: A Marine Safety Office performs the same functions as those of a Captain of the Port and a Marine Inspection Office. When a function is at a

different address than the Marine Safety Office, it will be listed separately in the appendix.)

(105) **Corps of Engineers,** Department of the Army.–The Corps of Engineers has charge of the improvement of the rivers and harbors of the United States and of miscellaneous other civil works which include the administration of certain Federal laws enacted for the protection and preservation of navigable waters of the United States; the establishment of regulations for the use, administration, and navigation of navigable waters; the establishment of harbor lines; the removal of sunken vessels obstructing or endangering navigation; and the granting of permits for structures or operations in navigable waters, and for discharges and deposits of dredged and fill materials in these waters.

(106) Information concerning the various ports, improvements, channel depths, navigable waters, and the condition of the Intracoastal Waterways in the areas under their jurisdiction may be obtained direct from the District Engineer offices. (See appendix for addresses.)

(107) **Restricted areas** in most places are defined and regulations governing them are established by the Corps of Engineers. The regulations are enforced by the authority designated in the regulations, and the areas are shown on the large-scale charts of NOS. Copies of the regulations may be obtained at the District offices of the Corps of Engineers. The regulations also are included in the appropriate Coast Pilots.

(108) **Fishtraps.**–The Corps of Engineers has general supervision of location, construction, and manner of maintenance of all traps, weirs, pounds, or other fishing structures in the navigable waters of the United States. Where State and/or local controls are sufficient to regulate these structures, including that they do not interfere with navigation, the Corps of Engineers leaves such regulation to the State or local authority. See **33 CFR 330** (not carried in this Pilot) for applicable Federal regulations. Construction permits issued by the Engineers specify the lights and signals required for the safety of navigation.

(109) **Fish havens,** artificial reefs constructed to attract fish, can be established in U.S. coastal waters only as authorized by a Corps of Engineers permit; the permit specifies the location, extent, and depth over these "underwater junk piles".

(110) **Environmental Protection Agency (EPA).**–The U.S. Environmental Protection Agency provides coordinated governmental action to assure the protection of the environment by abating and controlling pollution on a systematic basis. The ocean dumping permit program of the Environmental Protection Agency provides that except when authorized by permit, the dumping of any material into the ocean is prohibited by the "Marine Protection, Research, and Sanctuaries Act of 1972, Public Law 92–532," as amended (33 USC 1401 et seq.).

(111) Permits for the **dumping of dredged material** into waters of the United States, including the territorial sea, and into ocean waters are issued by the Corps of Engineers. Permits for the dumping of fill material into waters of the United States, including the territorial sea, are also issued by the Corps of Engineers. Permits for the dumping of other material in the territorial sea and ocean waters are issued by the Environmental Protection Agency.

(112) Corps of Engineers regulations relating to the above are contained in **33 CFR 323–324**; Environmental Protection Agency regulations are in **40 CFR 220–229**. (See Disposal Sites this chapter.)

(113) Persons or organizations who want to file for an application for an ocean dumping permit should write the Environmental Protection Agency Regional Office for the region in which the port of departure is located. (See appendix for addresses of regional offices and States in the EPA coastal regions.)

(114) The letter should contain the name and address of the applicant; name and address of person or firm; the name and usual location of the conveyance to be used in the transportation and dumping of the material involved; a physical description where appropriate; and the quantity to be dumped and proposed dumping site.

(115) Everyone who writes EPA will be sent information about a final application for a permit as soon as possible. This final application is expected to include questions about the description of the process or activity giving rise to the production of the dumping material; information on past activities of applicant or others with respect to the disposal of the type of material involved; and a description about available alternative means of disposal of the material with explanations about why an alternative is thought by the applicant to be inappropriate.

(116) **Federal Communications Commission.**–The Federal Communications Commission controls non-Government radio communications in the United States, Guam, Puerto Rico, and the Virgin Islands. Commission inspectors have authority to board ships to determine whether their radio stations comply with international treaties, Federal Laws, and Commission regulations. The commission has field offices in the principal U.S. ports. (See appendix for addresses.) Information concerning ship radio regulations and service documents may be obtained from the Federal Communications Commission, Washington, D.C. 20554, or from any of the field offices.

(117) **Immigration and Naturalization Service,** Department of Justice.–The Immigration and Naturalization Service administers the laws relating to admission, exclusion, and deportation of aliens, the registration and fingerprinting of aliens, and the naturalization of aliens lawfully resident in the United States.

(118) The designated ports of entry for aliens are divided into three classes. Class A is for all aliens. Class B is only for aliens who at the time of applying for admission are lawfully in possession of valid resident aliens' border-crossing identification cards or valid nonresident aliens' border-crossing identification cards or are admissible without documents under the documentary waivers contained in 8 CFR 212.1 (a). Class C is only for aliens who are arriving in the United States as crewmen as that term is defined in Section 101 (a) (10) of the Immigration and Nationality Act. (The term "crewman" means a person serving in any capacity on board a vessel or aircraft.) No person may enter the United States until he has been inspected by an immigration officer. A list of the offices covered by this Coast Pilot is given in the appendix.

(119) **Defense Mapping Agency Hydrographic/Topographic Center (DMAHTC),** Department of Defense.–The Defense Mapping Agency Hydrographic/Topographic Center provides hydrographic, navigational, topographic, and geodetic data, charts, maps, and related products and services to the Armed Forces, other Federal Agencies, the Merchant Marine and mariners in general. Publications include Sailing Directions, List of Lights, Distances Between Ports, Radio Navigational Aids, International Code of Signals, American Practical Navigator (Bowditch), and

Notice to Mariners. (See Defense Mapping Agency Procurement Information in appendix.)

(120) **Public Health Service,** Department of Health and Human Services.–The Public Health Service administers foreign quarantine procedures at U.S. ports of entry.

(121) All vessels arriving in the United States are subject to public health inspection. Vessels subject to routine boarding for quarantine inspection are only those which have had on board during the 15 days preceding the date of expected arrival or during the period since departure (whichever period of time is shorter) the occurrence of any death or ill person among passengers or crew (including those who have disembarked or have been removed). The master of a vessel must report such occurrences immediately by radio to the quarantine station at or nearest the port at which the vessel will arrive.

(122) In addition, the master of a vessel carrying 13 or more passengers must report by radio 24 hours before arrival the number of cases (including zero) of diarrhea in passengers and crew recorded in the ship's medical log during the current cruise. All cases that occur after the 24 hour report must also be reported not less than 4 hours before arrival.

(123) "Ill person" means person who:

(124) 1. Has a temperature of 100°F (or 38°C) or greater, accompanied by a rash, glandular swelling, or jaundice, or which has persisted for more than 48 hours; or

(125) 2. Has diarrhea, defined as the occurrence in a 24 hour period of three or more loose stools or of a greater than normal (for the person) amount of loose stools.

(126) Vessels arriving at ports under control of the United States are subject to sanitary inspection to determine whether measures should be applied to prevent the introduction, transmission, or spread of communicable disease.

(127) Specific public health laws, regulations, policies, and procedures may be obtained by contacting U.S. Quarantine Stations, U.S. Consulates or the Chief Program Operations, Division of Quarantine, Centers for Disease Control, Atlanta, Georgia 30333. (See appendix for addresses of U.S. Public Health Service Quarantine Stations.)

(128) **Food and Drug Administration (FDA),** Public Health Service, Department of Health and Human Services.–Under the provisions of the Control of Communicable Diseases Regulations (**21 CFR 1240**) and Interstate Conveyance Sanitation Regulations (**21 CFR 1250**), vessel companies operating in interstate traffic shall obtain potable water for drinking and culinary purposes only at watering points found acceptable to the Food and Drug Administration. Water supplies used in watering point operations must also be inspected to determine compliance with applicable Interstate Quarantine Regulations (**42 CFR 72**). These regulations are based on authority contained in the Public Health Service Act (**PL 78–410**). Penalties for violation of any regulation prescribed under authority of the Act are provided for under Section 368 (**42 USC 271**) of the Act.

(129) **Vessel Watering Points.-FDA** annually publishes a list of **Acceptable Vessel Watering Points**. This list is available from most FDA offices or from the Interstate Travel Sanitation Subprogram Center for Food Safety and Applied Nutrition, FDA (HFF-312), 200 C Street, SW., Washington, D.C. 20204. Current status of watering points can be ascertained by contacting any FDA office. (See appendix for addresses.)

(130) **National Weather Service** (NWS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.–The National Weather Service provides marine weather forecasts and warnings for the U.S. coastal waters, the Great Lakes, offshore waters, and high seas areas. Scheduled marine forecasts are issued four times daily from more than 20 **National Weather Service Forecast Offices (WSFOs)** around the country, operating 24 hours a day. Marine services are also provided by over 50 **National Weather Service Offices** with local areas of responsibility. (See appendix for Weather Service Forecast Offices and Weather Service Offices for the areas covered by this Coast Pilot.)

(131) Typically, the forecasts contain information on wind speed and direction, wave heights, visibility, weather, and a general synopsis of weather patterns affecting the region. The forecasts are supplemented with special marine warnings and statements, radar summaries, marine observations, small-craft advisories, gale warnings, storm warnings and various categories of tropical cyclone warnings e.g., tropical depression, tropical storm and hurricane warnings. Specialized products such as coastal flood, seiche, and tsunami warnings, heavy surf advisories, low water statements, ice forecasts and outlooks, and lakeshore warnings and statements are issued as necessary.

(132) The principal means of disseminating marine weather services and products in coastal areas is **NOAA Weather Radio.** This network of more than 350 stations nationwide is operated by the NWS and provides continuous broadcasts of weather information for the general public. These broadcasts repeat taped messages every 4–6 minutes. Tapes are updated periodically, usually every 2–3 hours and amended as required to include the latest information. When severe weather threatens, routine transmissions are interrupted and the broadcast is devoted to emergency warnings. (See appendix for NOAA Weather Radio Stations covered by this Coast Pilot.)

(133) In coastal areas, the programming is tailored to the needs of the marine community. Each coastal marine forecast covers a specific area. For example, "Cape Henlopen to Virginia Beach, out 20 miles." The broadcast range is about 40 miles from the transmitting antenna site, depending on terrain and quality of the receiver used. When transmitting antennas are on high ground, the range is somewhat greater, reaching 60 miles or more. Some receivers are equipped with a warning alert device that can be turned on by means of a tone signal controlled by the NWS office concerned. This signal is transmitted for 13 seconds preceding an announcement of a severe weather warning.

(134) NWS marine weather products are also disseminated to marine users through the broadcast facilities of the Coast Guard, Navy, National Bureau of Standards, certain Sea Grant Universities, and commercial marine radio stations. Details on these broadcasts including times, frequencies, and broadcast content are listed in the joint NWS/Navy publication Worldwide Marine Weather Broadcasts. For marine weather services in the coastal areas, the NWS publishes a series of Marine Weather Services Charts showing locations of NOAA Weather Radio stations, Coastal Warning Display sites, telephone numbers of recorded weather messages and NWS offices, and other useful marine weather information.

(135) Ships of all nations share equally in the effort to report weather observations. These reports enable meteorologists to create a detailed picture of wind, wave, and weather patterns over the open waters that no other data source can provide and upon which marine forecasts are based. The effectiveness and reliability of these forecasts and warnings plus other services to the marine

community are strongly linked to the observations received from mariners. There is an especially urgent need for ship observations in the coastal waters, and the NWS asks that these be made and transmitted whenever possible. Many storms originate and intensify in coastal areas. There may be a great difference in both wind direction and speed between the open sea, the offshore waters, and on the coast itself.

(136) Information on how ships, commercial fishermen, offshore industries, and others in the coastal zone may participate in the marine observation program is available from **National Weather Service Port Meteorological Officers (PMOs).** Port Meteorological Officers are located in major U.S. port cities and the Republic of Panama, where they visit ships in port to assist masters and mates with the weather observation program, provide instruction on the interpretation of weather charts, calibrate barometers and other meteorological instruments, and discuss marine weather communications and marine weather requirements affecting the ships' operations. (See appendix for addresses of Port Meteorological Officers in or near the area covered by this Coast Pilot.)

(137) **National Environmental Satellite, Data, and Information Service** (NESDIS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce.–Among its functions, NESDIS archives, processes, and disseminates the nonrealtime meteorological and oceanographic data collected by government agencies and private institutions. Marine weather observations are collected from ships at sea on a voluntary basis. About 1 million observations are received annually at NESDIS's National Climatic Center. They come from vessels representing every maritime nation. These observations, along with land data, are returned to the mariners in the form of climatological summaries and atlases for coastal and ocean areas. They are available in such NOAA publications as the **U.S. Coast Pilot, Mariners Weather Log,** and **Local Climatological Data, Annual Summary.** They also appear in the Defense Mapping Agency Hydrographic/Topographic Center's **Pilot Charts** and **Sailing Directions Planning Guides.**

DISTRESS SIGNALS AND COMMUNICATION PROCEDURES

(138) **Coast Guard search and rescue operations.**–The Coast Guard conducts and/or coordinates search and rescue operations for surface vessels or aircraft that are in distress or overdue. Search and Rescue vessels and aircraft have special markings, including a wide slash of red-orange and a small slash of blue on the forward portion of the hull or fuselage. Other parts of aircraft, normally painted white, may have other areas painted red to facilitate observation. The cooperation of vessel operators with Coast Guard helicopters, fixed-wing aircraft, and vessels may mean the difference between life and death for some seaman or aviator; such cooperation is greatly facilitated by the prior knowledge on the part of vessel operators of the operational requirements of Coast Guard equipment and personnel, of the international distress signals and procedures, and of good seamanship.

(139) **Note.**-In August 1993, all Coast Guard communication stations and cutters discontinued watchkeeping on the distress frequency 500 kHz. Distress and other calls to Coast Guard communication stations may be made on any of the following HF single sideband radiotelephone channels: 424 (4134 kHz), 601 (6200 kHz) 816 (8240 kHz), or 1205 (12242 kHz).

(140) **International distress signals.**–(1) A signal made by radiotelegraphy or by any other signalling method consisting of the group "SOS" in Morse Code.

(141) (2) A signal sent by radiotelephony consisting of the spoken word "MAYDAY".

(142) (3) The International Flag Code Signal of NC.

(143) (4) A signal consisting of a square flag having above or below it a ball or anything resembling a ball.

(144) (5) Flames on the craft (as from a burning oil barrel, etc.)

(145) (6) A rocket parachute flare or hand flare showing a red light.

(146) (7) Rockets or shells, throwing red stars fired one at a time at short intervals.

(147) (8) Orange smoke, as emitted from a distress flare.

(148) (9) Slowly and repeatedly raising and lowering arms outstretched to each side.

(149) (10) A gun or other explosive signal fired at intervals of about 1 minute.

(150) (11) A continuous sounding of any fog-signal apparatus.

(151) (12) The radiotelegraph alarm signal.

(152) (13) The radiotelephone alarm signal.

(153) (14) Signals transmitted by emergency position-indicating radiobeacons.

(154) (15) A piece of orange-colored canvas with either a black square and circle or other appropriate symbol (for identification from the air).

(155) (16) A dye marker.

(156) **Radio distress procedures.**–Distress calls are made on 500 kHz (SOS) for radiotelegraphy and on 2182 kHz or channel 16 VHF-FM (MAYDAY) for radiotelephony. For less serious situations than warrant the distress procedure, the urgency signal PAN-PAN (PAHN-PAHN, spoken three times), or the safety signal SECURITY (SAY-CURITAY, spoken three times), for radiotelephony, are used as appropriate. Since radiotelegraph transmissions are normally made by professional operators, and urgency and safety situations are less critical, only the distress procedures for voice radiotelephone are described. For complete information on emergency radio procedures, see 47 CFR 83 or DMAHTC Pub. 117 (See appendix for a list of Coast Guard Stations which guard 2182 kHz and channel 16.) Complete information on distress guards can be obtained from Coast Guard District Commanders.

(157) Distress calls indicate a vessel or aircraft is threatened by grave and imminent danger and requests immediate assistance. They have absolute priority over all other transmissions. All stations which hear a distress call must immediately cease any transmission capable of interfering with the distress traffic and shall continue to listen on the frequency used for the emission of the distress call. This call shall not be addressed to a particular station, and acknowledgement of receipt shall not be given before the distress message which follows it is sent.

(158) **Radiotelephone distress communications include the following actions:**

(159) (1) The **radiotelephone alarm signal** (if available): The signal consists of two audio tones, of different pitch, transmitted alternately; its purpose is to attract the attention of persons on radio watch or to actuate automatic alarm devices. It may only be used to announce that a distress call or message is about to follow.

(160) (2) The **distress call,** consisting of:–the distress signal MAYDAY (spoken three times);

(161) the words THIS IS (spoken once);

(162) the call sign or name of the vessel in distress (spoken three times).

(163) (3) The **distress message** follows immediately and consists of:

(164) the distress signal MAYDAY:

(165) The call sign and name of the vessel in distress;

(166) particulars of its position (latitude and longitude, or true bearing and distance from a known geographical position);

(167) the nature of the distress;

(168) the kind of assistance desired;

(169) the number of persons aboard and the condition of any injured;

(170) present seaworthiness of vessel;

(171) description of the vessel (length; type; cabin; masts; power; color of hull, superstructure, trim; etc.);

(172) any other information which might facilitate the rescue, such as display of a surface-to-air identification signal or a radar reflector;

(173) your listening frequency and schedule;

(174) THIS IS (call sign and name of vessel in distress). OVER.

(175) (4) **Acknowledgement of receipt of a distress message:** If a distress message is received from a vessel which is definitely in your vicinity, immediately acknowledge receipt. If it is not in your vicinity, allow a short interval of time to elapse before acknowledging, in order to permit vessels nearer to the vessel in distress to acknowledge receipt without interference. However, in areas where reliable communications with one or more shore stations are practicable, all vessels may defer this acknowledgement for a short interval so that a shore station may acknowledge receipt first. The acknowledgement of receipt of a distress is given as follows:

(176) the call sign or name of the vessel sending the distress (spoken three times);

(177) the words THIS IS;

(178) the call sign or name of acknowledging vessel (spoken three times);

(179) The words RECEIVED MAYDAY.

(180) After the above acknowledgement, allow a momentary interval of listening to insure that you will not interfere with another vessel better situated to render immediate assistance; if not, with the authority of the person in charge of the vessel, transmit:

(181) the word MAYDAY;

(182) the call sign and name of distressed vessel;

(183) the words THIS IS;

(184) the call sign and name of your vessel;

(185) your position (latitude and longitude, or true bearing and distance from a known geographical position);

(186) the speed you are proceeding towards, and the approximate time it will take to reach, the distressed vessel. OVER.

(187) (5) **Further distress messages and other communications:** Distress communications consist of all messages relating to the immediate assistance required by the distressed vessel. Each distress communication shall be preceded by the signal MAYDAY. The vessel in distress or the station in control of distress communications may **impose silence** on any station which interferes. The procedure is:–the words SEELONCE MAYDAY (Seelonce is French for silence). Silence also may be imposed by nearby mobile stations other than the vessel in distress or the station in control of distress communications. The mobile station which believes that silence is essential may request silence by the following procedure:–the word SEELONCE, followed by the word DISTRESS, and its **own** call sign.

(188) (6) **Transmission of the distress procedure by a vessel or shore station not itself in distress:** A vessel or a shore station which learns that a vessel is in distress shall transmit a distress message in any of the following cases:

(189) (a) When the vessel in distress is not itself able to transmit the distress message.

(190) (b) When a vessel or a shore station considers that further help is necessary.

(191) (c) When, although not in a position to render assistance, it has heard a distress message that has not been acknowledged.

(192) In these cases, the transmission shall consist of:

(193) the radiotelephone alarm signal (if available);

(194) the words MAYDAY RELAY (spoken three times);

(195) the words THIS IS;

(196) the call sign and name of vessel (or shore station), spoken three times.

(197) When a vessel transmits a distress under these conditions, it shall take all necessary steps to contact the Coast Guard or a shore station which can notify the Coast Guard.

(198) (7) **Termination of distress:** When distress traffic has ceased, or when silence is no longer necessary on the frequency used for the distress traffic, the station in control shall transmit on that frequency a message to all stations as follows:

(199) the distress signal MAYDAY;

(200) the call TO ALL STATIONS, spoken three times;

(201) the words THIS IS;

(202) the call sign and name of the station sending the message;

(203) the time;

(204) the name and call sign of the vessel in distress;

(205) the words SEELONCE FEENEE (French for silence finished).

DISTRESS ASSISTANCE AND COORDINATION PROCEDURES

(206) **Rescue Coordination Centers.**–There are four Rescue Coordination Centers in Alaska. The centers depend upon information from many sources in order to perform effectively. Mariners are requested to report any information to the nearest center concerning fire, collision or other emergencies, foreign fishing vessels, oil spills, possible illegal entry, submarine sighting, icebergs, foreign naval vessels, or any other unusual sightings. (See the appendix for the location of the centers.)

(207) **Surface ship procedures for assisting distressed surface vessels.**

(208) (1) The following immediate action should be taken by each ship on receipt of a distress message:

(209) (a) Acknowledge receipt and, if appropriate, retransmit the distress message;

(210) (b) Immediately try to take D/F bearings during the transmission of the distress message and maintain a D/F watch on 500 kHz and/or 2182 kHz;

(211) (c) Communicate the following information to the ship in distress:

(212) (i) identity;

(213) (ii) position;

(214) (iii) speed and estimated time of arrival (ETA);

(215) (iv) when available, true bearing of the ship in distress.

(216) (d) Maintain a continuous listening watch on the frequency used for the distress. This will normally be:

(217) (i) 500 kHz (radiotelegraphy) and/or

(218) (ii) 2182 kHz (radiotelephony).

(219) (e) Additionally, maintain watch on VHF-FM channel 16 (156.80 MHz) as necessary;

(220) (f) Operate radar continuously;

(221) (g) If in the vicinity of the distress, post extra lookouts.

(222) (2) The following action should be taken when proceeding to the area of distress:

(223) (a) Plot the position, course, speed, and ETA of other assisting ships.

(224) (b) Know the communication equipment with which other ships are fitted. This information may be obtained from the International Telecommunication Union's List of Ship Stations.

(225) (c) Attempt to construct an accurate "picture" of the circumstances attending the casualty. The important information needed is included under Distress Signals and Communication Procedures, this chapter. Should the ship in distress fail to transmit this information, a ship proceeding to assist should request what information is needed.

(226) (3) The following on-board preparation while proceeding to the distress area should be considered:

(227) (a) A rope (guest warp) running from bow to quarter at the waterline on each side and secured by lizards to the ship's side to assist boats and rafts to secure alongside;

(228) (b) A derrick rigged ready for hoisting on each side of the ship with a platform cargo sling, or rope net, secured to the runner to assist the speedy recovery of exhausted or injured survivors in the water;

(229) (c) Heaving lines, ladders, and scramble net placed ready for use along both sides of the ship on the lowest open deck and possibly crew members suitably equipped to enter the water and assist survivors;

(230) (d) A ship's liferaft made ready for possible use as a boarding station;

(231) (e) Preparations to receive survivors who require medical assistance including the provision of stretchers;

(232) (f) When own lifeboat is to be launched, any means to provide communications between it and the parent ship will prove to be of very great help;

(233) (g) A line throwing appliance with a light line and a heavy rope, ready to be used for making connection either with the ship in distress or with survival craft.

(234) **Aircraft procedures for directing surface craft to scene of distress incident.**–The following procedures performed in sequence by an aircraft mean that the aircraft is directing a surface craft toward the scene of a distress incident,

(235) (a) Circling the surface craft at least once.

(236) (b) Crossing the projected course of the surface craft close ahead at low altitude, rocking the wings, opening and closing the throttle, or changing the propeller pitch.

(237) (c) Heading in the direction in which the surface craft is to be directed. The surface craft should acknowledge the signal by changing course and following the aircraft. If, for any reason, it is impossible to follow, the surface craft should hoist the international code flag NOVEMBER, or use any other signaling means available to indicate this.

(238) The following procedures performed by an aircraft mean that the assistance of the surface craft is no longer required:

(239) (a) Crossing the wake of the surface craft close astern at a low altitude, rocking the wings, opening and closing the throttle or changing the propeller pitch.

(240) Since modern jet-engined aircraft cannot make the characteristic sound associated with opening and closing the throttle, or changing propeller pitch, ships should be alert to respond to the signals without the sounds, when jets or turboprop aircraft are involved.

(241) **Surface ship procedures for assisting aircraft in distress.**– 1. When an aircraft transmits a distress message by radio, the first transmission is generally made on the designated air/ground enroute frequency in use at the time between the aircraft and aeronautical station. The aircraft may change to another frequency, possibly another enroute frequency or the aeronautical emergency frequencies of 121.50 MHz or 243 MHz. In an emergency, it may use any other available frequency to establish contact with any land, mobile, or direction-finding station.

(242) 2. There is liaison between Coast Radio Stations aeronautical units, and land–based search and rescue organizations. Merchant ships will ordinarily be informed of aircraft casualties at sea by broadcast messages from Coast Radio Stations, made on the international distress frequencies of 500 kHz and 2182 kHz. Ships may, however, become aware of the casualty by receiving:

(243) (a) An SOS message from an aircraft in distress which is able to transmit on 500 kHz or a distress signal from an aircraft using radiotelephone on 2182 kHz.

(244) (b) A radiotelegraphy distress signal on 500 kHz from a hand-operated emergency transmitter carried by some aircraft.

(245) (c) A message from a SAR aircraft.

(246) 3. For the purpose of emergency communications with aircraft, special attention is called to the possibility of conducting direct communications on 2182 kHz, if both ship and aircraft are so equipped.

(247) 4. An aircraft in distress will use any means at its disposal to attract attention, make known its position, and obtain help, including some of the signals prescribed by the applicable Navigation Rules.

(248) 5. Aircraft usually sink quickly (e.g. within a few minutes). Every endeavor will be made to give ships an accurate position of an aircraft which desires to ditch. When given such a position, a ship should at once consult any other ships in the vicinity on the best procedure to be adopted. The ship going to the rescue should answer the station sending the broadcast and give her identity, position, and intended action.

(249) 6. If a ship should receive a distress message direct from an aircraft, she should act as indicated in the immediately preceding paragraph and also relay the message to the nearest Coast Radio Station. Moreover, a ship which has received a distress message direct from an aircraft and is going to the rescue should take a bearing on the transmission and inform the Coast Radio Station and other ships in the vicinity of the call sign of the distressed aircraft and the time at which the distress message was received, followed by the bearing and time at which the signal ceased.

(250) 7. When an aircraft decides to ditch in the vicinity of a ship, the ship should:

(251) (a) Transmit homing bearings to the aircraft, or (if so required) transmit signals enabling the aircraft to take its own bearings.

(252) (b) By day, make black smoke.

(253) (c) By night, direct a searchlight vertically and turn on all deck lights. Care must be taken not to direct a searchlight toward the aircraft, which might dazzle the pilot.

(254) 8. Ditching an aircraft is difficult and dangerous. A ship which knows that an aircraft intends to ditch should be prepared to give the pilot the following information:

(255) (a) Wind direction and force.

(256) (b) Direction, height, and length of primary and secondary swell systems.

(257) (c) Other pertinent weather information.

(258) The pilot of an aircraft will choose his own ditching heading. If this is known by the ship, she should set course parallel to the ditching heading. Otherwise the ship should set course parallel to the main swell system and into the wind component, if any.

(259) 9. A land plane may break up immediately on striking the water, and liferafts may be damaged. The ship, should, therefore, have a lifeboat ready for launching, and if possible, boarding nets should be lowered from the ship and heaving lines made ready in the ship and the lifeboat. Survivors of the aircraft may have bright colored lifejackets and location aids.

(260) 10. The method of recovering survivors must be left to the judgment of the master of the ship carrying out the rescue operation.

(261) 11. It should be borne in mind that military aircraft are often fitted with ejection seat mechanisms. Normally, their aircrew will use their ejection seats, rather than ditch. Should such an aircraft ditch, rather than the aircrew bail out, and it becomes necessary to remove them from their ejection seats while still in the aircraft, care should be taken to avoid triggering off the seat mechanisms. The activating handles are invariably indicated by red and or black/yellow coloring.

(262) 12. A survivor from an aircraft casualty who is recovered may be able to give information which will assist in the rescue of other survivors. Masters are therefore asked to put the following questions to survivors and to communicate the answers to a Coast Radio Station. They should also give the position of the rescuing ship and the time when the survivors were recovered.

(263) (a) What was the time and date of the casualty?

(264) (b) Did you bail out or was the aircraft ditched?

(265) (c) If you bailed out, at what altitude?

(266) (d) How many others did you see leave the aircraft by parachute?

(267) (e) How many ditched with the aircraft?

(268) (f) How many did you see leave the aircraft after ditching?

(269) (g) How many survivors did you see in the water?

(270) (h) What flotation gear had they?

(271) (i) What was the total number of persons aboard the aircraft prior to the accident?

(272) (j) What caused the emergency?

(273) **Helicopter evacuation** of personnel.–Helicopter evacuation, usually performed by the Coast Guard, is a hazardous operation to the patient and to the flight crew, and should only be attempted in event of very serious illness or injury. Provide the doctor on shore with all the information you can concerning the patient, so that an intelligent evaluation can be made concerning the need for evacuation. Most rescue helicopters can proceed less than 150 miles offshore (a few new helicopters can travel 250 to 300 miles out to sea), dependent on weather conditions and other variables. If an evacuation is necessary, the vessel must be prepared to proceed within range of the helicopter, and should be familiar with the preparations which are necessary prior to and after its arrival.

(274) **When requesting helicopter assistance:**

(275) (1) Give the accurate position, time, speed, course, weather conditions, sea conditions, wind direction and velocity, type of vessel, and voice and CW frequency for your ship.

(276) (2) If not already provided, give complete medical information including whether or not the patient is ambulatory.

(277) (3) If you are beyond helicopter range, advise your diversion intentions so that a rendezvous point may be selected.

(278) (4) If there are changes to any items reported earlier, advise the rescue agency immediately. Should the patient die before the arrival of the helicopter, be sure to advise those assisting you.

(279) **Preparations prior to the arrival of the helicopter:**

(280) (1) Provide continuous radio guard on 2182 kHz or specified voice frequency, if possible. The helicopter normally cannot operate CW.

(281) (2) Select and clear the most suitable hoist area, preferably aft on the vessel with a minimum of 50 feet (15.2 meters) radius of clear deck. This must include the securing of loose gear, awnings, and antenna wires. Trice up running rigging and booms. If hoist is aft, lower the flag staff.

(282) (3) If the hoist is to take place at night, light the pickup areas as well as possible. Be sure you do not shine any lights on the helicopter, so that the pilot is not blinded. If there are any obstructions in the vicinity, put a light on them so the pilot will be aware of their positions.

(283) (4) Point searchlights vertically to aid the flight crew in locating the ship and turn them off when the helicopter is on the scene.

(284) (5) Be sure to advise the helicopter of the location of the pickup area on the ship before the helicopter arrives, so that the pilot may make his approach to aft, amidships, or forward, as required.

(285) (6) There will be a high noise level under the helicopter, so voice communications on deck are almost impossible. Arrange a set of hand signals among the crew who will assist.

(286) **Hoist operations:**

(287) (1) If possible, have the patient moved to a position as close to the hoist area as his condition will permit–**time is important.**

(288) (2) Normally, if a litter (stretcher) is required, it will be necessary to move the patient to the special litter which will be lowered by the helicopter. Be prepared to do this as quickly as possible. Be sure the patient is strapped in, face up, and with a life jacket on (if his condition will permit).

(289) (3) Be sure that the patient is tagged to indicate what medication, if any, was administered to him and when it was administered.

(290) (4) Have patient's medical record and necessary papers in an envelope or package ready for transfer with the patient.

(291) (5) Again, if the patient's condition permits, be sure he is wearing a life jacket.

(292) (6) Change the vessel's course to permit the ship to ride as easily as possible with the wind on the bow, preferably on the port bow. Try to choose a course to keep the stack gases clear of the hoist area. Once established, maintain course and speed.

(293) (7) Reduce speed to ease ship's motion, but maintain steerageway.

(294) (8) If you do not have radio contact with the helicopter, when you are in all respects ready for the hoist, signal the helicopter in with a "come on" with your hand, or at night by flashlight signals.

(295) (9) **Allow basket or stretcher to touch deck prior to handling to avoid static shock.**

(296) (10) If a trail line is dropped by the helicopter, guide the basket or stretcher to the deck with the line; keep the line free at all times. This line will not cause shock.

(297) (11) Place the patient in basket, sitting with his hands clear of the sides, or in the litter, as described above. Signal the helicopter hoist operator when ready for the hoist. Patient should signal by a nodding of the head if he is able. Deck personnel give thumbs up.

(298) (12) If it is necessary to take the litter away from the hoist point, unhook the hoist cable and keep it free for the helicopter to haul in. **Do not secure cable or trail line to the vessel or attempt to move stretcher without unhooking.**

(299) (13) When patient is strapped into the stretcher, signal the helicopter to lower the cable, attach cable to stretcher sling (bridle), then signal the hoist operator when the patient is ready to hoist. Steady the stretcher so it will not swing or turn.

(300) (14) If a trail line is attached to the basket or stretcher, use it to steady the patient as he is hoisted. Keep your feet clear of the line, and keep the line from becoming entangled.

(301) **Medical advice and/or evacuation.**–In the event a master of a vessel requires medical advice and/or there is a potential of evacuation the following should be volunteered by the master:

(302) Vessel's name and call sign.

(303) Vessel's position and time at position.

(304) Vessel's course, speed and next port and estimated time of arrival (ETA).

(305) Patient's name, nationality, age, race and sex.

(306) Patient's respiration, pulse and temperature.

(307) Patient's symptoms and nature of illness.

(308) Any known history of similar illness.

(309) Location and type of pain.

(310) Medical supplies carried on board vessel.

(311) Medication given to patient.

(312) Weather.

(313) Communication schedule and frequency.

(314) **Coast Guard droppable, floatable pumps.**–The Coast Guard often provides vessels in distress with emergency pumps by either making parachute drops, by lowering on helicopter hoist, or by delivering by vessel. The most commonly used type of pump comes complete in a sealed aluminum drum about half the size of a 50-gallon oil drum. One single lever on top opens it up. Don't be smoking as there may be gas fumes inside the can. The pump will draw about 90 gallons per minute. There should be a waterproof flashlight on top of the pump for night use. Operating instructions are provided inside the pump container.

(315) **Preparations for being towed by Coast Guard:**

(316) (1) Clear the forecastle area as well as you can.

(317) (2) If a line-throwing gun is used, keep everyone out of the way until line clears the boat. The Coast Guard vessel will blow a police whistle or otherwise warn you before firing.

(318) (3) Have material ready for chafing gear.

(319) **Radar reflectors on small craft.**–Operators of disabled wooden and fiberglass craft and persons adrift in rubber rafts or boats that are, or may consider themselves to be, the object of a search, should hoist on a halyard or otherwise place aloft as high as possible any irregularly shaped metallic object that would assist their detection by radar. The more irregular the shape, the better will be the radar reflective quality. Coast Guard cutters and aircraft are radar equipped and thus are able to continue searching in darkness and during other periods of low visibility. For quick identification at night, shine spotlights straight up. If aircraft are involved, once you are identified, turn lights away so as not to blind aircraft crew. It is advisable for coastal fishing boats, yachts, and other small craft to have efficient radar reflectors permanently installed aboard the vessel.

(320) **Filing Cruising schedules.**–Small-craft operators should prepare a cruising plan before starting on extended trips and leave it ashore with a yacht club, marina, friend, or relative. It is advisable to use a checking-in procedure by telephone for each point specified in the cruising plan. Such a trip schedule is vital for determining if a boat is overdue and will assist materially in locating a missing craft in the event search and rescue operations become necessary.

(321) **Medical advice.**–Free medical advice is furnished to seamen by radio through the cooperation of Governmental and commercial radio stations whose operators receive and relay messages prefixed **RADIOMEDICAL** from ships at sea to the U.S. Coast Guard and/or directly to a hospital and then radio the medical advice back to the ships. (See appendix for list of radio stations that provide this service.)

RADIO NAVIGATION WARNINGS AND WEATHER

(322) Marine radio warnings and weather are disseminated by many sources and through several types of transmissions. Morse code radiotelegraph broadcasts of navigational warnings and other advisories are not described, since these transmissions are normally copied only by professional radio operators. U.S. Coast Guard NAVTEX, high-frequency (HF) narrow-band direct printing (radio telex), HF radiofacsimile, and radiotelephone broadcasts of maritime safety information are summarized here. (For complete information on radio warnings and weather see DMAHTC Pub. 117 and the joint National Weather Service/Navy publication, Selected Worldwide Marine Weather Broadcasts.)

(323) **Frequency units.–Hertz (Hz),** a unit equal to one cycle per second, has been generally adopted for radio frequencies; accordingly, frequencies formerly given in the Coast Pilot in kilocycles (kc) and megacycles (mc) are now stated in **kilohertz (kHz)** and **Megahertz (MHz),** respectively.

(324) **Coast Guard radio stations.**–Coast Guard radio stations provide urgent, safety, and scheduled marine information broadcasts with virtually complete coverage of the approaches and coastal waters of the United States, Puerto Rico, and the U.S. Virgin Islands.

(325) **Urgent and safety radiotelephone broadcasts** of important Notice to Mariners items, storm warnings, and other vital marine information are transmitted upon receipt, and urgent broadcasts are repeated 15 minutes later; additional broadcasts are made at the discretion of the originator. **Urgent** broadcasts are preceded by the urgent signal PAN-PAN (PAHN-PAHN, spoken three times). **Both the urgent signal and message are transmitted on 2182 kHz and/or VHF-FM channel 16. Safety** broadcasts are preceded by the safety signal SECURITY (SAY-CURITAY, spoken three times.) **The safety signal is given on 2182 kHz and/or VHF-FM channel 16 (156.80 MHz), and the message is given on 2670 kHz and/or VHF-FM channel 22A (157.10 MHz).**

(326) Scheduled radiotelephone broadcasts include routine weather, small-craft advisories, storm warnings, navigational information, and other advisories. Short-range broadcasts are made on **2670 kHz** and/or **VHF-FM channel 22A,** following a preliminary call on **2182 kHz** and/or **VHF-FM channel 16.** (See appendix for a list of stations and their broadcast frequencies and times for the area covered by this Coast Pilot.)

(327) Weather information is not normally broadcast by the Coast Guard on VHF-FM channel 22A in areas where NOAA Weather Radio service is available. See note below regarding VHF-FM channel 22A.

(328) HF single-sideband broadcasts of high seas weather information is available on the (carrier) frequencies 4428.7, 6506.4, 8765.4, 13113.2, and 17307.3 kHz from Portsmouth, VA and San Francisco, CA.

(329) Narrow-band direct printing (radio telex or sitor) broadcasts of NAVAREA and other navigational warnings are transmitted on the following assigned frequencies:

(330) Atlantic ice reports: 5320, 8502, and 12570 kHz.

(331) Other Atlantic warnings: 8490, 16968.8 kHz.

(332) Pacific: 8710.5, 8714.5, 8718, 13077, 13084.5, 17203, 22567, and 22574.5 kHz.

(333) HF radiofacsimile broadcasts of weather and ice charts are made on the following frequencies:

(334) Atlantic: 3242, 7530, 8502 (ice only), 12750 (ice only) kHz.

(335) Pacific: 4298 (Kodiak), 4336, 8459 (Kodiak), 8682, 12730, 17151.2 kHz.

(336) **National Standard Abbreviations for Broadcasts.** – A listing of Standard Abbreviations for Textual Maritime Safety Broadcasts is contained in tables T-31 through T-33. These abbreviations were jointly approved by the U.S. Coast Guard, National Weather Service, Defense Mapping Agency, and the Radio Technical Commission for Maritime Services. In addition to appearing in radio broadcasts of the U.S. Coast Guard and National Weather Service, they appear in Notices to Mariners of the U.S. Coast Guard and Defense Mapping Agency, and in NAVTEX.

(337) **Warning Regarding Coast Guard VHF-FM Channel 22A Broadcasts.**–The Coast Guard broadcasts urgent and routine maritime safety information to ships on channel 22A (157.10 MHz), the ship station transmit frequency portion of channel 22, of Appendix 18 of the International Telecommunications Union (ITU) Radio Regulations. This simplex use of channel 22A is not compatible with the international duplex arrangement of the channel (coast transmit 161.70 MHz, ship transmit 157.10 MHz). As a result, many foreign flag vessels having radios tuned to the international channel 22 can not receive these maritime safety broadcasts. A 1987 Coast Guard survey of foreign vessels in U.S. waters indicated that half of foreign vessels in U.S. waters did not have equipment on board capable of receiving channel 22A broadcasts.

(338) Operators of vessels which transit U.S. waters and who do not have VHF-FM radios tunable to USA channel 22A are urged to either obtain the necessary equipment, to monitor the radiotelephone frequency 2182 kHz and tune to 2670 kHz when a broadcast is announced, or to carry a NAVTEX receiver.

(339) **NAVTEX.**–NAVTEX is a maritime radio warning system consisting of a series of coast stations transmitting radio teletype (CCIR Recommendation 476 standard narrow band direct printing, sometimes called Sitor or ARQ/FEC) safety messages on the international standard medium frequency 518 kHz. Coast stations transmit during preset time slots so as to minimize interference with one another. Routine messages are normally broadcast four to six times daily. Urgent messages are broadcast upon receipt, provided that an adjacent station is not transmitting. Since the broadcast uses the medium frequency band, a typical station service radius ranges from 100-500 NM day and night. Interference from or receipt of stations farther away occasionally occurs at night.

(340) Each NAVTEX message broadcast contains a four-character header describing identification of station (first character), message content (second character), and message serial number (third and fourth characters). This header allows the microprocessor in the shipborne receiver to screen messages, selecting only those stations relevant to the user, messages of subject categories needed by the user, and messages not previously received by the user. Selected messages are printed on a roll of paper as received, to be read by the mariner at his convenience. Unwanted messages are suppressed. Suppression of unwanted messages is more and more important to the mariner as the number of messages, including rebroadcasts, increases yearly. With NAVTEX, a mariner will no longer find it necessary to listen to, or sift through, a large number of irrelevant data to obtain the information necessary for safe navigation.

(341) Vessels regulated by the Safety of Life at Sea (SOLAS) Convention, as amended in 1988 (cargo vessels over 300 tons and passenger vessels, on international voyages), and operating in areas where NAVTEX service is available, have been required to carry NAVTEX receivers since 1 August 1993. The USCG discontinued broadcasts of safety information over MF Morse frequencies on that date.

(342) The USCG voice broadcasts (Ch. 22A), often of more inshore and harbor information, will remain unaffected by NAVTEX. With NAVTEX, mariners who do not have the knowledge of Morse code necessary to receive safety messages, or who have difficulty receiving them on a timely basis, should find a significant advantage in owning a NAVTEX receiver. Mariners not able to man a radio on a 24-hour basis in order to hear critical warning messages (e.g., commercial fishermen) should also find a significant advantage in owning a NAVTEX receiver.

(343) See appendix, U.S. NAVTEX Transmitting Stations, for a list of NAVTEX broadcast stations (Pacific Ocean) and message content.

(344) **NOAA Weather Radio–.**The National Weather Service operates **VHF- FM radio stations**, usually on frequencies **162.40, 162.475, or 162.55 MHz,** to provide continuous recorded weather broadcasts. These broadcasts are available to those with suitable receivers within about 40 miles of the antenna site. (See the appendix for a list of these stations in the area covered by this Coast Pilot.)

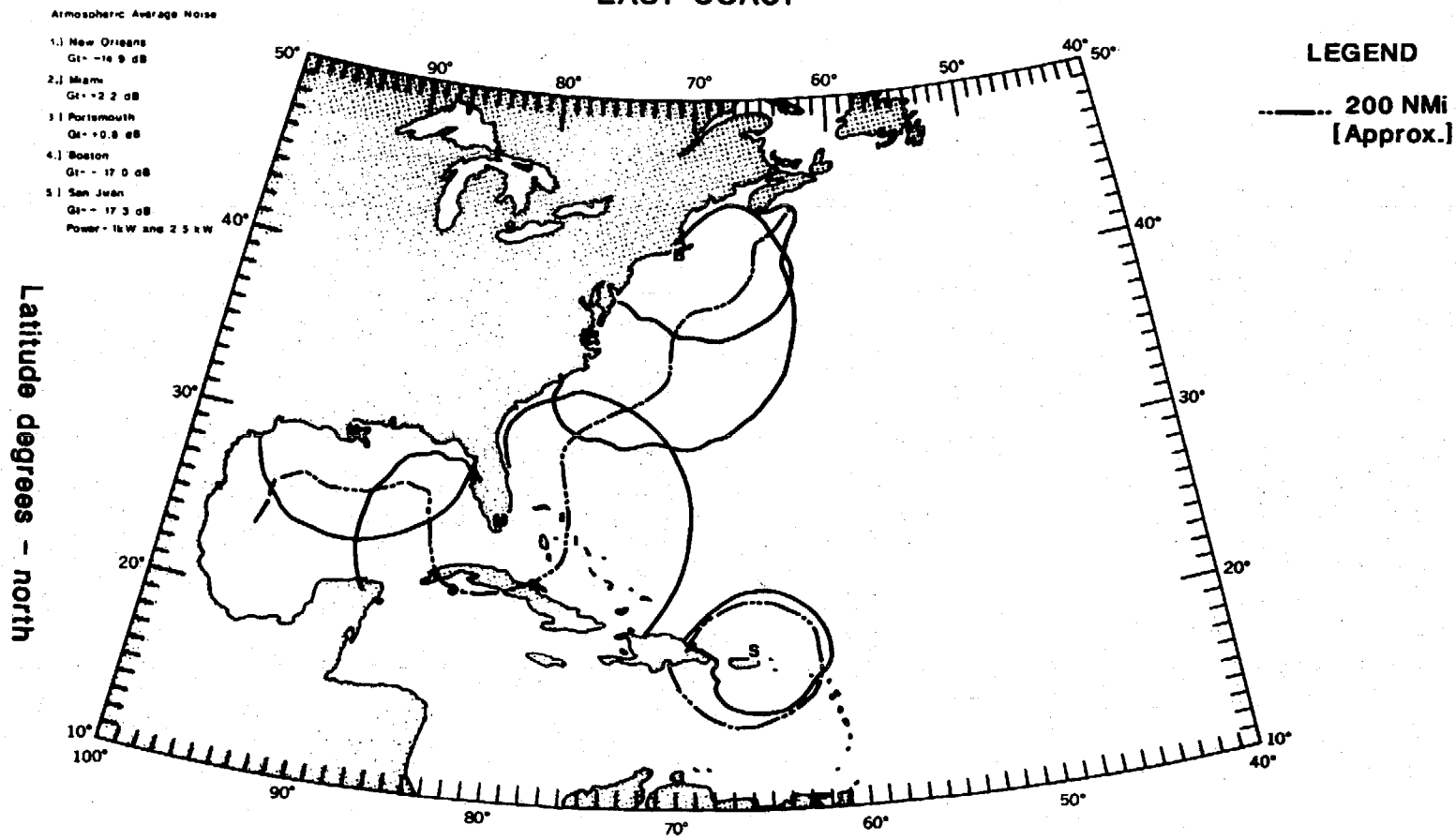
(345) **Commercial radiotelephone coast stations.**–Broadcasts of coastal weather and warnings are made by some commercial radiotelephone coast stations (marine operators) on the normal transmitting frequencies of the stations. Vessels with suitable receivers and desiring this service may determine the frequencies and schedules of these broadcasts from their local stations, from Worldwide Marine Weather Broadcasts, or from the series of Marine Weather Services Charts published by NWS.

(346) **Local broadcast-band radio stations.**–Many local radio stations in the standard AM and FM broadcast band give local marine weather forecasts from NWS on a regular schedule. These stations are listed on the series of Marine Weather Services Charts published by NWS.

(347) **Reports from ships.**–The master of every U.S. ship equipped with radio transmitting apparatus, on meeting with a tropical cyclone, dangerous ice, subfreezing air temperatures with gale force winds causing severe ice accretion on superstructures, derelict, or any other direct danger to navigation, is required to cause to be transmitted a report of these dangers to ships in the vicinity and to the appropriate Government agencies.

NAVTEX PREDICTED COVERAGE AREA

EAST COAST



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(348) During the West Indies hurricane season, June 1 to November 30, ships in the Gulf of Mexico, Caribbean Sea area, southern North Atlantic Ocean, and the Pacific waters W of Central America and Mexico are urged to cooperate with NWS in furnishing these special reports in order that warnings to shipping and coastal areas may be issued.

(349) **Time Signals.**–The **National Institute of Standards and Technology** broadcasts time signals continuously, day and night, from its radio stations **WWV,** near Fort Collins, Colorado, (40°49′49″N., 105°02′27″W.) on frequencies of 2.5, 5, 10, 15, and 20 MHz, and **WWVH,** Kekaha, Kauai, Hawaii (21°59′26″N., 159°46′00″W.) on frequencies 2.5, 5, 10, and 15 MHz. Services include time announcements, standard time intervals, standard audio frequencies, Omega Navigation System status reports, geophysical alerts, BCD (binary coded decimal) time code, UT1 time corrections, and high seas storm information.

(350) Time announcements are made every minute, commencing at 15 seconds before the minute by a female voice and at 7½ seconds before the minute by a male voice, from WWVH and WWV, respectively. The time given is in Coordinated Universal Time (UTC) and referred to the time at Greenwich, England, i.e., Greenwich Mean Time.

(351) **NIST Times and Frequency Dissemination Services, Special Publication 432,** gives a detailed description of the time and frequency dissemination services of the National Institute of Standards and Technology. Single copies may be obtained upon request from the National Institute of Standards and Technology, Time and Frequency Division, Boulder, Colo. 80303. Quantities may be obtained from the Government Printing Office (See appendix for address.).

NAUTICAL CHARTS

(352) **Reporting chart deficiencies.**–Users are requested to report all significant observed discrepancies in and desirable additions to NOS nautical charts, including depth information in privately maintained channels and basins; obstructions, wrecks, and other dangers; new landmarks or the nonexistence or relocation of charted ones; uncharted fixed private aids to navigation; and deletions or additions of small-craft facilities. All such reports should be sent to Chief, Marine Charts Division (N/CS2), National Ocean Service, NOAA, 1315 East-West Highway, Station 7317, Silver Spring, MD 20910-3282.

(353) **Chart symbols and abbreviations.**–The standard symbols and abbreviations approved for use on all regular nautical charts published by the Defense Mapping Agency Hydrographic/Topographic Center and NOS are contained in **Chart No. 1,** United States of America **Nautical Chart Symbols and Abbreviations.** This publication is available from NOS Distribution Branch (see Sales Information, appendix.)

(354) On certain foreign charts reproduced by the United States, and on foreign charts generally, the symbols and abbreviations used may differ from U.S. approved standards. It is, therefore, recommended that navigators who acquire and use foreign charts and reproductions procure the symbol sheet or Chart No. 1 produced by the same foreign agency.

(355) The mariner is warned that the buoyage systems, shapes, and colors used by other countries often have a different significance than the U.S. system.

(356) **Chart Datum.**-Chart Datum is the particular tidal datum to which soundings and depth curves on a nautical chart or bathymetric map are referred. The tidal datum of **Mean Low Water** has been used as Chart Datum along the east coast of the United States and in parts of the West Indies. It is presently being changed to Mean Lower Low Water, with no adjustments to soundings, shorelines, low water lines, clearances, heights, elevations, or in the application of tide predictions for navigational purposes. The tidal datum of **Mean Lower Low Water** is used as Chart Datum along the Gulf and west coasts; the coasts of Alaska, Hawaii, and other United States and United Nations islands of the Pacific; and in parts of the West Indies.

(357) Mean Low Water is defined as the arithmetic mean of all the low water heights observed over the National Tidal Datum Epoch. Mean Lower Low Water is defined as the arithmetic mean of the lower low water height of each tidal day (24.84 hours) observed over the National Tidal Datum Epoch. The National Tidal Datum Epoch is the specific 19-year period adopted by the National Ocean Service, NOAA, as the official time segment over which tide observations are taken and reduced to obtain mean values for tidal datums. The present Epoch is 1960 through 1978.

(358) **Accuracy of a nautical chart.**–The value of a nautical chart depends upon the accuracy of the surveys on which it is based. The chart reflects what was found by field surveys and what has been reported to NOS Headquarters. The chart represents general conditions at the time of surveys or reports and does not necessarily portray present conditions. Significant changes may have taken place since the date of the last survey or report.

(359) Each sounding represents an actual measure of depth and location at the time the survey was made, and each bottom characteristic represents a sampling of the surface layer of the sea bottom at the time of sampling. Areas where sand and mud prevail, especially the entrances and approaches to bays and rivers exposed to strong tidal current and heavy seas, are subject to continual change.

(360) In coral regions and where rocks and boulders abound, it is always possible that surveys may have failed to find every obstruction. Thus, when navigating such waters, customary routes and channels should be followed and areas avoided where irregular and sudden changes in depth indicate conditions associated with pinnacle rocks, coral heads, or boulders.

(361) Information charted as "reported" should be treated with caution in navigating the area, because the actual conditions have not been verified by government surveys.

(362) The **date of a chart** is of vital importance to the navigator. When charted information becomes obsolete, further use of the chart for navigation may be dangerous. Announcements of new editions of nautical charts are usually published in notices to mariners. The publication, **Dates of Latest Editions,** published quarterly, gives the edition and date of the latest edition of charts published by NOS. It is distributed to sales agents; free copies may be obtained from the sales agents or by writing to Distribution Branch (N/CG33), National Ocean Service. (See appendix for address.)

(363) **Source diagrams.**– The Coast and Geodetic Survey has recently committed to adding a source diagram to all charts 1:500,000 scale and larger. This diagram is intended to provide the mariner with additional information about the density and reliability of the sounding data depicted on the chart. The adequacy with which sounding data depicts the configuration of the bottom depends on the following factors:

(364) •Survey technology employed (sounding and navigation equipment).

(365) •Survey specifications in effect (prescribed survey line spacing and sounding interval).

(366) •Type of bottom (e.g., rocky with existence of submerged pinnacles, flat sandy, coastal deposits subject to frequent episodes of deposition and erosion).

(367) Depth information on nautical charts is based on soundings from the latest available hydrographic survey, which in many cases may be quite old. The age of hydrographic surveys supporting nautical charts varies. Approximately 60 percent of inshore hydrography was acquired by **leadline** (pre-1940) sounding technology.

(368) The sounding information portrayed on NOAA nautical charts is considered accurate but does not, as noted above, represent a complete picture of the seafloor because older sounding technologies only collected discrete samples. For example, a leadline survey provides only a single point sounding. **Electronic echo sounders,** which came into common use during the 1940's, collected continuous soundings along the path of the survey vessel, but no information between survey lines. Full bottom coverage technology which is transitioning into use as a supplemental method in the early 1990's, will make leadline and conventional echo sounder technologies obsolete in areas of complex bathymetry.

(369) The following shows the eras of survey technology and their impact on the adequacy with which the bottom configuration is portrayed.

(370) Prior to 1940: The majority of survey data acquired prior to 1940 consisted of leadline soundings which were positioned using horizontal sextant angles. This positioning method is considered to be accurate.

(371) A deficiency with pre-1940 data exists in the leadline sounding method because it represents discrete single-point sampling. Depths of areas between or outside of leadline sounding points can only be inferred or estimated leaving the possibility of undetected features, especially in areas of irregular relief.

(372) 1940 to present: During this period sounding data has been collected using continuous recording single-beam echo sounders which yield a graphic record of the entire sounding line—not just isolated points. Using this graphic record, features which fall between the standard position fixes can be inserted into the data set. Positioning of the sounding vessel in this era has varied from horizontal sextant angles to modern Global Positioning System satellite fixes.

(373) Although the sampling is continuous along the track of the sounding vessel, features can be missed between sounding lines.

(374) The spacing of sounding lines required to survey an area depends on several factors; such as water depths, bottom configuration, survey scale, general nature of the area, and the purpose of the survey. For example, a 1:10,000-scale survey conducted in an estuary will typically have 100-meter line spacing requirements, but may be reduced to 50 meters or less to adequately develop an irregular bottom, shoal, or some other feature that may present a hazard to navigation. Also, hydrographic project instructions for surveys may have required line spacing that deviates from these general specifications.

(375) The following table shows the various sounding technologies, line spacings, and areas or depths for each given period of hydrographic surveying. The terminology used to describe the different types of bottom in the table are derived from the first through fourth editions of the Hydrographic Manual and Hydrographic Survey Guideline No. 69.

ERA	SOUNDING TECHNOLOGY	MAXIMUM LINE SPACING	AREAS OR DEPTHS
PRE-1940	Leadline	50 Meters	Anchorages, Channel Lines
			Open Coast
			Even Botton
		200-300 Meters	0-10 Fathoms
		0.5 Mile	10-15 Fathoms
		1-4 Miles	15-100 Fathoms
		Reduced as Necessary	Uneven Bottom
1940 TO 1989	Continuous Recording Echo-sounder		**Harbors & Restricted Areas**
		50 Meters	Shoal Development
		100 Meters	<20 Fathoms
		200 Meters	20-30 Fathoms
		400 Meters	>30 Fathoms
			Open Coast
			Irregular Bottom
		100 Meters	<20 Fathoms (Rocky points, spits & channel entrances)
			Smooth Bottom
		200 Meters	<20 Fathoms (All Other Areas)
		400 Meters	20-30 Fathoms
		800 Meters	30-110 Fathoms
		1600 Meters	110-500 Fathoms
1989 TO PRESENT	Continuous Recording Echo-sounder (Metrication)		**Harbors & Restricted Areas**
		100 Meters	<30 Meters
		200 Meters	30-50 Meters
		400 Meters	>50 Meters
			Open Coast
		100 Meters	<30 Meters (Rocky points, spits & channel entrances)
		200 Meters	<30 Meters (All Other Areas)
		400 Meters	30-50 Meters
		800 Meters	50-200 Meters
		1600 Meters	200-900 Meters

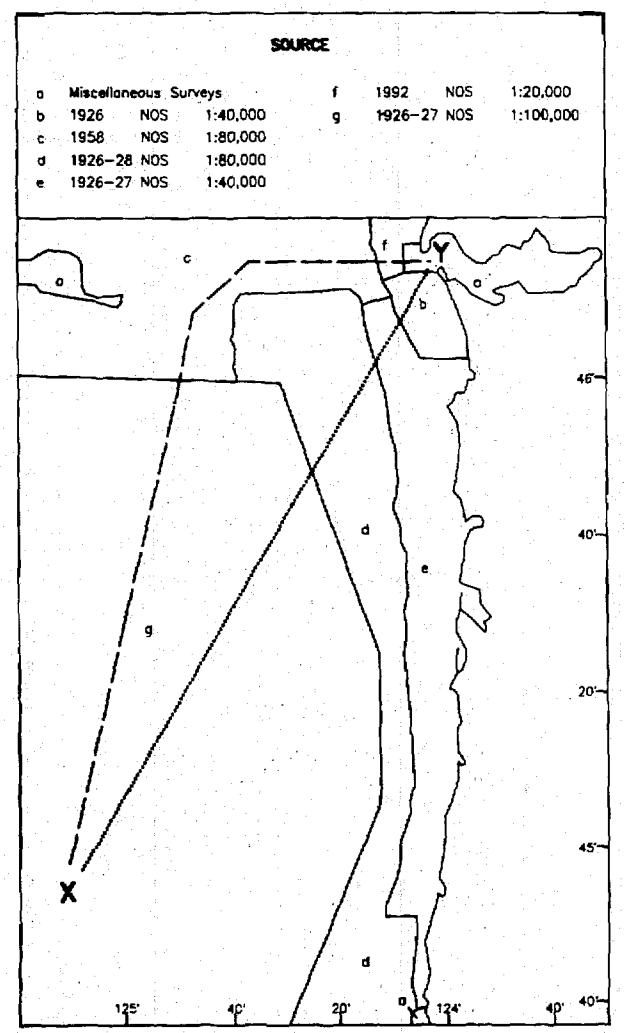
(376) Referring to the accompanying sample Source Diagram and the above discussion of survey methods over time, a mariner transiting from Point X to Point Y, along the track indicated by the **dotted line**, would have the following information available about the relative quality of the depth information shown on the chart.

(377) •Point X lies in an area surveyed by NOS in 1926-27 at a scale of 1:100,000. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between the sounding points in areas of irregular relief. Caution should be exercised.

(378) •The transit continues to cross areas surveyed by NOS in the 1920's using leadline survey technology. As depths decrease, the line spacing decreases, but depths still can only be inferred between sounding points. Shoals and undetected features might exist between the sounding points in areas of irregular relief. Caution must still be exercised.

(379) •The transit ends in an area charted from miscellaneous surveys. These surveys may be too numerous to depict or vary in age, reliability, origin, or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

SOURCE DIAGRAM



(380) Referring again to the accompanying sample Source Diagram, and the above discussion of survey methods over time, a mariner could choose to transit from Point X to Point Y, along the track shown with a **dashed line**.

(381) •The transit again starts in an area surveyed by NOS in 1926-27 at a scale of 1:100,000. The sounding data would have been collected by leadline. Depths between sounding points can only be inferred, and undetected features might exist between sounding points in areas of irregular relief. Caution should be exercised.

(382) •The transit then crosses an area surveyed by NOS in 1958 at a scale of 1:80,000. The charted hydrography in this area would have been acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

(383) •The transit then crosses an area surveyed by NOS in 1992 at a scale of 1:20,000. The data is collected in metric units acquired by continuous recording single beam echo sounder. It is possible that features could have been missed between sounding lines, although echo sounders record all depths along a sounding line with varying beam widths.

(384) •The transit ends in an area where the charted hydrography is derived from miscellaneous surveys. These surveys may be too numerous to depict or vary in age, reliability, origin, or technology used. No inferences about the fitness of the data can be made in this area from the diagram.

(385) By choosing to transit along the track shown by the dashed line, the mariner would elect to take advantage of more recent survey information collected with more modern technology.

(386) **U.S. Nautical Chart Numbering System.**– This chart numbering system, adopted by the National Ocean Service and the Defense Mapping Agency Hydrographic/Topographic Center, provides for a uniform method of identifying charts published by both agencies. Nautical charts published by the Defense Mapping Agency Hydrographic/Topographic Center are identified in the Coast Pilot by an asterisk preceding the chart number.

(387) **Corrections to charts.**–It is essential for navigators to keep charts corrected through information published in the notices to mariners, especially since the NOS no longer hand-corrects charts prior to distribution.

(388) **Caution in using small-scale charts.**–Dangers to navigation cannot be shown with the same amount of detail on small-scale charts as on those of larger scale. Therefore, the largest scale chart of an area should always be used.

(389) The **scales of nautical charts** range from 1:2,500 to about 1:5,000,000. Graphic scales are generally shown on charts with scales of 1:80,000 or larger, and numerical scales are given on smaller scale charts. NOS charts are classified according to scale as follows:

(390) **Sailing charts,** scales 1:600,000 and smaller, are for use in fixing the mariner's position as he approaches the coast from the open ocean, or for sailing between distant coastwise ports. On such charts the shoreline and topography are generalized and only offshore soundings, and the principal lights, outer buoys, and landmarks visible at considerable distances are shown.

(391) **General charts,** scales 1:150,000 to 1:600,000, are for coastwise navigation outside of outlying reefs and shoals.

(392) **Coast charts,** scales 1:50,000 to 1:150,000 are for inshore navigation leading to bays and harbors of considerable width and for navigating large inland waterways.

(393) **Harbor charts,** scales larger than 1:50,000, are for harbors, anchorage areas, and the smaller waterways.

(394) **Special charts,** various scales, cover the Intracoastal waterways and miscellaneous small-craft areas.

(395) **Blue tint in water areas.**–A blue tint is shown in water areas on many charts to accentuate shoals and other areas considered dangerous for navigation when using that particular chart. Since the danger curve varies with the intended purpose of a chart a careful inspection should be made to determine the contour depth of the blue tint areas.

(396) **Caution on bridge and cable clearances.**– For bascule bridges whose spans do not open to a full vertical position, unlimited overhead clearance is not available for the entire charted horizontal clearance when the bridge is open, due to the inclination of the drawspans over the channel.

(397) The charted clearances of overhead cables are for the lowest wires at mean high water unless otherwise stated. **Vessels with masts, stacks, booms, or antennas should allow sufficient clearance under power cables to avoid arcing.**

(398) **Submarine cables and submerged pipelines** cross many waterways used by both large and small vessels, but all of them may not be charted. For inshore areas, they usually are buried beneath the seabed, but, for offshore areas, they may lie on the ocean floor. Warning signs are often posted to warn mariners of their existence.

(399) The installation of submarine cables or pipelines in U.S. waters or the Continental Shelf of the United States is under the jurisdiction of one or more Federal agencies, depending on the nature of the installation. They are shown on the charts when the necessary information is reported to NOS and they have been recommended for charting by the cognizant agency. The chart symbols for submarine cable and pipeline areas are usually shown for inshore areas, whereas, chart symbols for submarine cable and pipeline routes may be shown for offshore areas. Submarine cables and pipelines are not described in the Coast Pilot.

(400) In view of the serious consequences resulting from damage to submarine cables and pipelines, vessel operators should take special care when anchoring, fishing, or engaging in underwater operations near areas where these cables or pipelines may exist or have been reported to exist. Mariners are also warned that the areas where cables and pipelines were originally buried may have changed and they may be exposed; extreme caution should be used when operating vessels in depths of water comparable to the vessel's draft.

(401) Certain cables carry high voltage, while many pipelines carry natural gas under high pressure or petroleum products. Electrocution, fire, or explosion with injury, loss of life, or a serious pollution incident could occur if they are broached.

(402) Vessels fouling a submarine cable or pipeline should attempt to clear without undue strain. Anchors or gear that cannot be cleared should be slipped, but no attempt should be made to cut a cable or pipeline.

(403) **Artificial obstructions to navigation.–Disposal areas** are designated by the Corps of Engineers for depositing dredged material where existing depths indicate that the intent is not to cause sufficient shoaling to create a danger to surface navigation. The areas are charted without blue tint, and soundings and depth curves are retained.

(404) **Disposal Sites** are areas established by Federal regulation **(40 CFR 220–229)** in which dumping of dredged and fill material and other nonbuoyant objects is allowed with the issuance of a permit. Dumping of dredged and fill material is supervised by the Corps of Engineers and all other dumping by the Environmental Protection Agency (EPA). (See Corps of Engineers and Environmental Protection Agency, this chapter, and appendix for office addresses.)

(405) **Dumping Grounds** are also areas that were established by Federal regulation **(33 CFR 205)**. However, these regulations have been revoked and the use of the areas discontinued. These areas will continue to be shown on nautical charts until such time as they are no longer considered to be a danger to navigation.

(406) Disposal Sites and Dumping Grounds are rarely mentioned in the Coast Pilot, but are shown on nautical charts. **Mariners are advised to exercise extreme caution in and in the vicinity of all dumping areas.**

(407) **Spoil areas** are for the purpose of depositing dredged material, usually near and parallel to dredged channels; they are usually a hazard to navigation. Spoil areas are usually charted from survey drawings from Corps of Engineers after-dredging surveys, though they may originate from private or other Government agency surveys. Spoil areas are tinted blue on the chart and labeled, and all soundings and depth curves are omitted. Navigators of even the smallest craft should avoid crossing spoil areas.

(408) **Fish havens** are established by private interests, usually sport fishermen, to simulate natural reefs and wrecks that attract fish. The reefs are constructed by dumping assorted junk ranging from old trolley cars and barges to scrap building material in areas which may be of very small extent or may stretch a considerable distance along a depth curve; old automobile bodies are a commonly used material. The Corps of Engineers must issue a permit, specifying the location and depth over the reef, before such a reef may be built. However, the reefbuilders' adherence to permit specifications can be checked only with a wire drag. Fish havens are outlined and labeled on the charts and show the minimum authorized depth when known. Fish havens are tinted blue if they have a minimum authorized depth of 11 fathoms or less or if the minimum authorized depth is unknown and they are in depths greater than 11 fathoms but still considered a danger to navigation. Navigators should be cautious about passing over fish havens or anchoring in their vicinity.

(409) **Fishtrap areas** are areas established by the Corps of Engineers, or State or local authority, in which traps may be built and maintained according to established regulations. The fish stakes which may exist in these areas are obstructions to navigation and may be dangerous. The limits of fishtrap areas and a cautionary note are usually charted. Navigators should avoid these areas.

(410) **Local magnetic disturbances.**–If measured values of magnetic variation differ from the expected (charted) values by several degrees, a magnetic disturbance note will be printed on the chart. The note will indicate the location and magnitude of the disturbance, but the indicated magnitude should not be considered as the largest possible value that may be encountered. Large disturbances are more frequently detected in the shallow waters near land masses than on the deep sea. Generally, the effect of a local magnetic disturbance diminishes rapidly with distance, but in some locations there are multiple sources of disturbances and the effects may be distributed for many miles.

(411) **Compass roses on charts.**–Each compass rose shows the date, magnetic variation, and the annual change in variation. Prior to the new edition of a nautical chart, the compass roses are reviewed. Corrections for annual change and other revisions may be made as a result of newer and more accurate information. On some general and sailing charts, the magnetic variation is shown by isogonic lines in addition to the compass roses.

(412) The **Mercator projection** used on most nautical charts has straight-line meridians and parallels that intersect at right angles. On any particular chart the distances between meridians are equal throughout, but distances between parallels increase progressively from the Equator toward the poles, so that a straight line between any two points is a rhumb line. This unique property of the Mercator projection is one of the main reasons why it is preferred by the mariner.

(413) **Echo soundings.**–Ships' echo sounders may indicate small variations from charted soundings; this may be due to the fact that various corrections (instrument corrections, settlement and squat, draft, and velocity corrections) are made to echo soundings in surveying which are not normally made in ordinary navigation, or to observational errors in reading the echo sounder. Instrument errors vary between different equipment and must be determined by calibration aboard ship. Most types of echo sounders are factory calibrated for a velocity of sound in water of 800 fathoms per second, but the actual velocity may differ from the calibrated velocity by as much as 5 percent, depending upon the temperature and salinity of the waters in which the vessel is operating; the highest velocities are found in warm, highly saline water, and the lowest in icy, freshwater. Velocity corrections for these variations are determined and applied to echo soundings during hydrographic surveys. All echo soundings must be corrected for the vessel's draft, unless the draft correction has been set on the echo sounder.

(414) Observational errors include misinterpreting false echos from schools of fish, seaweed, etc., but the most serious error which commonly occurs is where the depth is greater than the scale range of the instrument; a 400-fathom scale indicates 15 fathoms when the depth is 415 fathoms. Caution in navigation should be exercised when wide variations from charted depths are observed.

AIDS TO NAVIGATION

(415) **Reporting of defects in aids to navigation.**–Promptly notify the nearest Coast Guard District Commander if an aid to navigation is observed to be missing, sunk, capsized, out of position, damaged, extinguished, or showing improper characteristics.

(416) Radio messages should be prefixed "Coast Guard" and transmitted directly to any U.S. Government shore radio station for relay to the Coast Guard District Commander. If the radio call sign of the nearest U.S. Government radio shore station is not known, radiotelegraph communication may be established by the use of the general call "NCG" on the frequency of 500 kHz. Merchant ships may send messages relating to defects noted in aids to navigation through commercial facilities only when they are unable to contact a U.S. Government shore radio station. Charges for these messages will be accepted "collect" by the Coast Guard.

(417) **Lights.**–The range of visibility of lights as given in the Light Lists and as shown on the charts is the **Nominal range,** which is the maximum distance at which a light may be seen in clear weather (meteorological visibility of 10 nautical miles) expressed in nautical miles. The Light Lists give the Nominal ranges for all Coast Guard lighted aids except range and directional lights. **Luminous range** is the maximum distance at which a light may be seen under the existing visibility conditions. By use of the diagram in the Light Lists, Luminous range may be determined from the known Nominal range, and the existing visibility conditions. Both the Nominal and Luminous ranges do not take into account elevation, observer's height of eye, or the curvature of the earth. **Geographic range** is a function of only the curvature of the earth and is determined solely from the heights above sea level of the light and the observer's eye; therefore, to determine the actual Geographic range for a height of eye, the Geographic range must be corrected by a distance corresponding to the height difference, the distance correction being determined from a table of "distances of visibility for various heights above sea level." (See Light List or Coast Pilot table following appendix.) The maximum distances at which lights can be seen may at times be increased by abnormal atmospheric refraction and may be greatly decreased by unfavorable weather conditions, such as fog, rain, haze, or smoke. All except the most powerful lights are easily obscured by such conditions. In some conditions of the atmosphere white lights may have a reddish hue. During weather conditions which tend to reduce visibility, colored lights are more quickly lost to sight than are white lights. Navigational lights should be used with caution because of the following conditions that may exist:

(418) A light may be extinguished and the fact not reported to the Coast Guard for correction, or a light may be located in an isolated area where it will take time to correct.

(419) In regions where ice conditions prevail the lantern panes of unattended lights may become covered with ice or snow, which will greatly reduce the visibility and may also cause colored lights to appear white.

(420) Brilliant shore lights used for advertising and other purposes, particularly those in densely populated areas, make it difficult to identify a navigational light.

(421) At short distances flashing lights may show a faint continuous light between flashes.

(422) The distance of an observer from a light cannot be estimated by its apparent intensity. The characteristics of lights in an area should always be checked in order that powerful lights visible in the distance will not be mistaken for nearby lights showing similar characteristics at low intensity such as those on lighted buoys.

(423) The apparent characteristic of a complex light may change with the distance of the observer, due to color and intensity variations among the different lights of the group. The characteristic as charted and shown in the Light List may not be recognized until nearer the light.

(424) Motion of a vessel in a heavy sea may cause a light to alternately appear and disappear, and thus give a false characteristic.

(425) Where lights have different colored sectors, be guided by the correct bearing of the light; do not rely on being able to accurately observe the point at which the color changes. On either side of the line of demarcation of colored sectors there is always a small arc of uncertain color.

(426) On some bearings from the light, the range of visibility of the light may be reduced by obstructions. In such cases, the obstructed arc might differ with height of eye and distance. When a light is cut off by adjoining land and the arc of visibility is given, the bearing on which the light disappears may vary with the distance of the vessel from which observed and with the height of eye. When the light is cut off by a sloping hill or point of land, the light may be seen over a wider arc by a ship far off than by one close to.

(427) Arcs of circles drawn on charts around a light are not intended to give information as to the distance at which it can be seen, but solely to indicate, in the case of lights which do not show equally in all directions, the bearings between which the variation of visibility or obscuration of the light occurs.

(428) Lights of equal candlepower but of different colors may be seen at different distances. This fact should be considered not only in predicting the distance at which a light can be seen, but also in identifying it.

(429) Lights should not be passed close aboard, because in many cases riprap mounds are maintained to protect the structure against ice damage and scouring action.

(430) Many prominent towers, tanks, smokestacks, buildings, and other similar structures, charted as landmarks, display flashing and/or fixed red aircraft obstruction lights. Lights shown from landmarks are charted only when they have distinctive characteristics to enable the mariner to positively identify the location of the charted structure.

(431) **Articulated lights.**–An articulated light is a vertical pipe structure supported by a submerged buoyancy chamber and attached by a universal coupling to a weighted sinker on the seafloor. The light, allowed to move about by the universal coupling, is not as precise as a fixed aid. However, it has a much smaller watch circle than a conventional buoy, because the buoyancy chamber tends to force the pipe back to a vertical position when it heels over under the effects of wind, wave, or current.

(432) **Articulated daybeacons.**–Same description as for articulated lights (see above) except substitute daybeacon for light.

(433) **Bridge lights and clearance gages.**–The Coast Guard regulates marine obstruction lights and clearance gages on bridges across navigable waters. Where installed, clearance gages are generally vertical numerical scales, reading from top to bottom, and show the actual vertical clearance between the existing water level and the lowest point of the bridge over the channel; the gages are normally on the right-hand pier or abutment of the bridge, on both the upstream and downstream sides.

(434) Bridge lights are fixed red or green, and are privately maintained; they are generally not charted or described in the text of the Coast Pilot. All bridge piers (and their protective fenders) and abutments which are in or adjacent to a navigation channel are marked on all channel sides by red lights. On each channel span of a fixed bridge, there is a range of two green lights marking the center of the channel and a red light marking both edges of the channel, except that when the margins of the channel are confined by bridge piers, the red lights on the span are omitted, since the pier lights then mark the channel edges; for multiplespan fixed bridges, the main-channel span may also be marked by three white lights in a vertical line above the green range lights.

(435) On all types of drawbridges, one or more red lights are shown from the drawspan (higher than the pier lights) when the span is closed; when the span is open, the higher red lights are obscured and one or two green lights are shown from the drawspan, higher than the pier lights. The number and location of the red and green lights depend upon the type of drawbridge.

(436) Bridges and their lighting, construction, maintenance, and operation are set forth in **33 CFR 114-118** (not carried in this Coast Pilot). Aircraft obstruction lights, prescribed by the Federal Aviation Administration, may operate at certain bridges. Drawbridge operation regulations are published in chapter 2 of the Coast Pilot.

(437) **Fog signals.**–Caution should be exercised in the use of sound fog signals for navigation purposes. They should be considered solely as warning devices.

(438) Sound travels through the air in a variable manner, even without the effects of wind, therefore, the hearing of fog signals cannot be implicitly relied upon.

(439) Experience indicates that distances must not be judged only by the intensity of the sound; that occasionally there may be areas close to a fog signal in which it is not heard; and that fog may exist not far from a station, yet not be seen from it, so the signal may not be operating. It is not always possible to start a fog signal immediately when fog is observed.

(440) **Avoidance of collision with offshore light stations and large navigational buoys (LNB).**–Courses should invariably be set to pass these aids with sufficient clearance to avoid the possibility of collision from any cause. Errors of observation, current and wind effects, other vessels in the vicinity, and defects in steering gear may be and have been the cause of actual collisions, or imminent danger thereof, needlessly jeopardizing the safety of these facilities and their crews, and of all navigation dependent on these important aids to navigation.

(441) Experience shows that offshore light stations cannot be safely used as leading marks to be passed close aboard, but should always be left broad off the course, whenever sea room permits. When approaching fixed offshore light structures and large navigational buoys (LNB) on radio bearings, the risk of collision will be avoided by ensuring that radio bearing does not remain constant.

(442) It should be borne in mind that most large buoys are anchored to a very long scope of chain and, as a result, the radius of their swinging circle is considerable. The charted position is the location of the anchor. Furthermore under certain conditions of wind and current, they are subject to sudden and unexpected sheers which are certain to hazard a vessel attempting to pass close aboard.

(443) **Buoys.**–The aids to navigation depicted on charts comprise a system consisting of fixed and floating aids with varying degrees of reliability. Therefore, prudent mariners will not rely solely on any single aid to navigation, particularly a floating aid.

(444) The approximate position of a buoy is represented by the dot or circle associated with the buoy symbol. The approximate position is used because of practical limitations in positioning and maintaining buoys and their sinkers in precise geographical locations. These limitations include, but are not limited to, inherent imprecisions in position fixing methods, prevailing atmospheric and sea conditions, the slope of and the material making up the seabed, the fact that buoys are moored to sinkers by varying lengths of chain, and the fact that buoy body and/or sinker positions are not under continuous surveillance, but are normally checked only during the periodic maintenance visits which often occur more than a year apart. The position of the buoy body can be expected to shift inside and outside of the charting symbol due to the forces of nature. The mariner is also cautioned that buoys are liable to be carried away, shifted, capsized, sunk, etc. Lighted buoys may be extinguished or sound signals may not function as a result of ice, running ice or other natural causes, collisions, or other accidents.

(445) For the foregoing reasons, a prudent mariner must not rely completely upon the charted position or operation of floating aids to navigation, but will also utilize bearings from fixed objects and aids to navigation on shore. Further, a vessel attempting to pass close aboard always risks collision with a yawing buoy or with the obstruction the buoys marks.

(446) Buoys may not always properly mark shoals or other obstructions due to shifting of the shoals or of the buoys. Buoys marking wrecks or other obstructions are usually placed on the seaward or channelward side and not directly over a wreck. Since buoys may be located some distance from a wreck they are

intended to mark, and since sunken wrecks are not always static, extreme caution should be exercised when operating in the vicinty of such buoys.

(447) **Caution, channel markers.**–Lights, daybeacons, and buoys along dredged channels do not always mark the bottom edges. Due to local conditions, aids may be located inside or outside the channel limits shown by dashed lines on a chart. The Light List tabulates the offset distances for these aids in many instances.

(448) Aids may be moved, discontinued, or replaced by other types to facilitate dredging operations. Mariners should exercise caution when navigating areas where dredges with auxiliary equipment are working.

(449) Temporary changes in aids are not included on the charts.

(450) **Radiobeacons.**–A map showing the locations and operating details of marine radiobeacons is given in each Light List. This publication describes the procedure to follow in using radiobeacons to calibrate radio direction finders as well as listing special radio direction-finder calibration stations.

(451) A vessel steering a course for a radiobeacon should observe the same precautions as when steering for a light or any other mark. If the radiobeacon is aboard a lightship, particular care should be exercised to avoid the possibility of collision, and sole reliance should never be placed on sighting the lightship or hearing its fog signal. If there are no dependable means by which the vessel's position may be fixed and the course changed well before reaching the lightship, a course should be selected that will ensure passing the lightship at a distance, rather than close aboard, and repeated bearings of the radiobeacon should show an increasing change in the same direction.

(452) **Radio bearings.**–No exact data can be given as to the accuracy to be expected in radio bearings taken by a ship, since the accuracy depends to a large extent upon the skill of the ship's operator, the condition of the ship's equipment, and the accuracy of the ship's calibration curve. Mariners are urged to obtain this information for themselves by taking frequent radio bearings, when their ship's position is accurately known, and recording the results.

(453) Radio bearings obtained at twilight or at night, and bearings which are almost parallel to the coast, should be accepted with reservations, due to "night effect" and to the distortion of radio waves which travel overland. Bearings of aircraft ranges and standard broadcast stations should be used with particular caution due to coastal refraction and lack of calibration of their frequencies.

(454) **Conversion of radio bearings to Mercator bearings.**–Radio directional bearings are the bearings of the great circles passing through the radio stations and the ship, and, unless in the plane of the Equator or a meridian, would be represented on a Mercator chart as curved lines. Obviously it is impracticable for a navigator to plot such lines on a Mercator chart, so it is necessary to apply a correction to a radio bearing to convert it into a Mercator bearing, that is, the bearing of a straight line on a Mercator chart laid off from the sending station and passing through the receiving station.

(455) A table of corrections for the conversion of a radio bearing into a Mercator bearing follows the appendix. It is sufficiently accurate for practical purposes for distances up to 1,000 miles.

(456) The only data required are the latitudes and longitudes of the radiobeacons and of the ship by dead reckoning. The latter is scaled from the chart, and the former is either scaled from the chart or taken from the Light List.

(457) The table is entered with the differences of longitude in degrees between the ship and station (the nearest tabulated value being used), and opposite the middle latitude between the ship and station, the correction to be applied is read.

(458) The sign of the correction (bearings read clockwise from N) will be as follows: In north latitude, the minus sign is used when the ship is E of the radiobeacon and the plus sign used when the ship is W of the radiobeacon. In south latitude, the plus sign is used when the ship is E of the radiobeacon, and the minus sign is used when the ship is W of the radiobeacon.

(459) To facilitate plotting, 180 degrees should be added to or subtracted from the corrected bearing, and the result plotted from the radiobeacon.

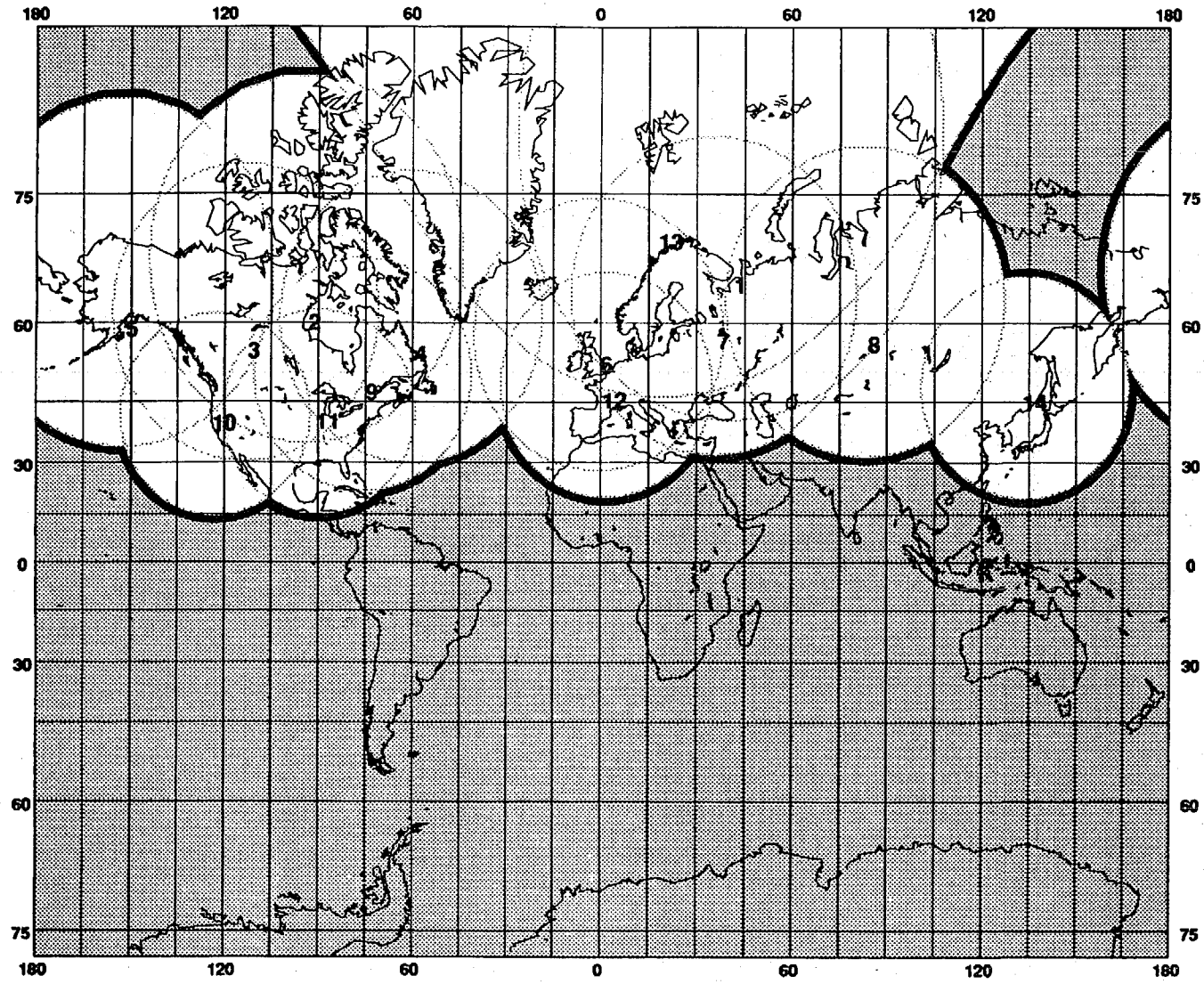
(460) Should the position by dead reckoning differ greatly from the true position of the ship as determined by plotting the corrected bearings, retrial should be made, using the new value as the position of the ship.

(461) **Radio bearings from other vessels.**–Any vessel with a radio direction-finder can take a bearing on a vessel equipped with a radio transmitter. These bearings, however, should be used only as a check, as comparatively large errors may be introduced by local conditions surrounding the radio direction-finder unless known and accounted for. Although any radio station, for which an accurate position is defintely known, may serve as a radiobeacon for vessels equipped with a radio direction-finder, extreme caution must be exercised in their use. Stations established especially for maritime services are more reliable.

(462) **SATELLITE POSITION INDICATING RADIO BEACON (EPIRB).**–Emergency position indicating radiobeacons (EPIRBs), devices which cost from $200 to over $2000, are designed to save your life if you get into trouble by alerting rescue authorities and indicating your location. EPIRB types are described in the accompanying table.

EPIRB Types

Type	Frequency	Description
Class A	121.5/243 MHz	Float-free, automatically-activating, detectable by aircraft and satellite. Coverage limited (see Chart).
Class B	121.5/243 MHz	Manually activated version of Class A.
Class C	VHF ch 15/16	Manually activated, operates on maritime channels only. Not detectable by satellite. Not authorized after 2/1/99.
Class S	121.5/243 MHz	Similar to Class B, except it floats, or is an integral part of a survival craft.
Cat I	406/121.5 MHz	Float-free, automatically activated EPIRB. Detectable by satellite anywhere in the world.
Cat II	406/121.5 MHz	Similar to Category I, except is manually activated.



Notes

LUTs

1 Archangelsk
2 Churchill
3 Edmonton
4 Goose Bay
5 Kodiak
6 Lasham
7 Moscow
8 Novosibirsk
9 Ottawa
10 Pt. Reyes
11 Scott AFB
12 Toulouse
13 Tromsø
14 Vladivostok

SARSAT satellite

Altitude	850 km
Elevation Angle	5 deg

1988 Satellite Visibility Area of SARSAT LUTs

(represents approximate System coverage at 121.5 MHz; at 406 MHz, the System covers the entire globe)

(463) **121.5/243 MHz EPIRBs.**–These are the most common and least expensive type of EPIRB, designed to be detected by overflying commercial or military aircraft. Satellites were designed to detect these EPIRBs, but are limited for the following reasons:

(464) (i) Satellite detection range is limited for these EPIRBs (satellites must be within line of sight of both the EPIRB and a ground terminal for detection to occur)(see Chart),

(465) (ii) EPIRB design and frequency congestion cause these devices to be subject to a high false alert/false alarm rate (over 99%); consequently, confirmation is required before search and rescue forces can be deployed.

(466) (iii) EPIRBs manufactured before October 1989 may have design or construction problems (e.g. some models will leak and cease operating when immersed in water), or may not be detectable by satellite.

(467) **Class C EPIRBs.** These are manually activated devices intended for pleasure craft who do not venture far offshore and for vessels on the Great Lakes. They transmit a short burst on VHF-FM channel 16 and a longer homing signal on channel 15. Their usefulness depends upon a coast station or another vessel guarding channel 16 and recognizing the brief, recurring tone as an EPIRB. Class C EPIRBs are not recognized outside of the United States.

(468) New class C EPIRB stations will not be authorized after February 1, 1995. Class C EPIRB stations installed on board vessels before February 1, 1995, may be used until February 1, 1999, and not thereafter.

(469) **406 MHz EPIRBs.**–The 406 MHz EPIRB was designed to operate with satellites. Its signal allows a satellite local user terminal to accurately locate the EPIRB (much more accurately than 121.5/243 MHz devices), and identify the vessel (the signal is encoded with the vessel's identity) anywhere in the world (there is no range limitation). These devices also include a 121.5 MHz homing signal, allowing aircraft and rescue craft to quickly find the vessel in distress. These are the only type of EPIRB which must be certified by Coast Guard approved independent laboratories before they can be sold in the United States.

(470) All 406 Mhz EPIRBs must be registered with NOAA. If you change your boat, your address or your phone number, you must re-register your EPIRB registration forms from, and mail or fax completed forms to:

(471) NOAA/NESDIS

(472) SARSAT Operations Division, E/SP3

(473) Federal Office Building 4

(474) Washington, DC 20233

(475) For additional information on registering these EPIRBs, call (301)763-4680 or fax (301)568-8649.

(476) An automatically activated, float-free version of this EPIRB will be required on Safety of Life at Sea Convention vessels (passenger ships and ships over 300 tons, on international voyages) of any nationality by 1 August 1993. The Coast Guard requires U.S. commercial fishing vessels carry this device (by May 1990, unless they carry a Class A EPIRB), and will require the same for other U.S. commercial uninspected vessels which travel more than 3 miles offshore.

(477) The **COSPAS-SARSAT system.**–COSPAS: Space System for Search of Distress Vessels (a Russian acronym); SARSAT: Search and Rescue Satellite-Aided Tracking. COSPAS-SARSAT is an international satellite-based search and rescue system established by the U.S., Russia, Canada and France to locate emergency radio beacons transmitting on the frequencies 121.5, 243 and 406 MHz. Since its inception only a few years ago, COSPAS-SARSAT has contributed to the saving of 1240 lives (as of June 6, 1989), 554 of these mariners. The Coast Guard operates two local user terminals, satellite earth stations designed to received EPIRB distress calls forwarded from COSPAS-SARSAT satellites, located in Kodiak, Alaska and Point Reyes, California. The Air Force operates a third terminal at Scott Air Force Base, Illinois.

(478) **Testing EPIRBs.**–The Coast Guard urges those owning EPIRBs to periodically examine them for water tightness, battery expiration date and signal presence. FCC rules allow Class A, B, and S EPIRBs to be turned on briefly (for three audio sweeps, or one second only) during the first five minutes of each hour. Signal presence can be detected by an FM radio tuned to 99.5 MHz, or an AM radio tuned to any vacant frequency and located close to an EPIRB. FCC rules allow Class C EPIRBs to be tested within the first five minutes of every hour, for not more than five seconds. Class C EPIRBs can be detected by a marine radio tuned to channel 15 or 16. 406 MHz EPIRBs can be tested through its self-test function, which is an integral part of the device.

(479) **Radar beacons (Racons)** are low-powered radio transceivers that operate in the marine radar X-band frequencies. When activated by a vessel's radar signal, **Racons** provide a distinctive visible display on the vessel's radarscope from which the range and bearing to the beacon may be determined. (See Light List and DMAHTC Pub. 117 for details.)

(480) **LORAN-C.**–LORAN, an acronym for LOng RAnge Navigation, is an electronic aid to navigation consisting of shore-based radio transmitters. The LORAN system enables users equipped with a LORAN receiver to determine their position quickly and accurately, day or night, in practically any weather.

(481) A LORAN-C chain consists of three to five transmitting stations separated by several hundred miles. Within a chain, one station is designated as master while the other stations are designated as secondaries. Each secondary station is identified as either whiskey, x-ray, yankee, or zulu.

(482) The master station is always the first station to transmit. It transmits a series of nine pulses. The secondary stations then follow in turn, transmitting eight pulses each, at precisely timed intervals. This cycle repeats itself endlessly. The length of the cycle is measured in microseconds and is called a Group Repetition Interval (GRI).

(483) LORAN-C chains are designated by the four most significant digits of their GRI. For example, a chain with a GRI of 89,700 microseconds is referred to as 8970. A different GRI is used for each chain because all LORAN-C stations broadcast in the same 90 to 110 kilohertz frequency band and would otherwise interfere with one another.

(484) The LORAN-C system can be used in either a hyperbolic or range mode. In the widely used hyperbolic mode, a LORAN-C line of position is determined by measuring the time difference between sychronized pulses received from two separate transmitting stations. In the range mode, a line of position is determined by measuring the time required by LORAN-C pulses to travel from a transmitting station to the user's receiver.

(485) A user's position is determined by locating the crossing point of two lines of position on a LORAN-C chart. Many receivers have built-in coordinate converters which will automatically display the receiver's latitude and longitude. With a coordinate converter, a position can be determined using a chart that is not overprinted with LORAN-C lines of position.

(486) **CAUTION: The latitude/longitude computation on some models is based upon an all seawater propagation path. This may lead to error if the LORAN-C signals from the vari-**

ous stations involve appreciable overland propagation paths. These errors may put the mariner at risk in areas requiring precise positioning if the proper correctors (ASF) are not applied. Therefore, it is recommended that mariners using Coordinate Converters check the manufacturer's operating manual to determine if and how corrections are to be applied to compensate for the discontinuity caused by the overland paths.

(487) There are two types of LORAN-C accuracy: absolute and repeatable. Absolute accuracy is a measure of the navigator's ability to determine latitude and longitude position from the LORAN-C time differences measured. Repeatable accuracy is a measure of the LORAN-C navigator's ability to return to a position where readings have been taken before.

(488) The absolute accuracy of LORAN-C is 0.25 nautical miles, 95% confidence within the published coverage area using standard LORAN-C charts and tables. Repeatable accuracy depends on many factors, so measurements must be taken to determine the repeatable accuracy in any given area. Coast Guard surveys have found repeatable accuracies between 30 and 170 meters in most ground wave coverage areas. LORAN-C position determination on or near the baseline extensions are subject to significant errors and, therefore, should be avoided whenever possible. The use of skywaves is not recommended within 250 miles of a station being used, and corrections for these areas are not usually tabulated.

(489) If the timing or pulse shape of a master-secondary pair deviates from specified tolerances, the first two pulses of the secondary station's pulse train will blink on and off. The LORAN-C receiver sees this blinking signal and indicates a warning to the user. This warning will continue until the signals are once again in tolerance. A blinking signal is not exhibited during off-air periods, so a separate receiver alarm indicates any loss of signal. Never use a blinking secondary signal for navigation.

(490) In coastal waters, LORAN-C should not be relied upon as the only aid to navigation. A prudent navigator will use radar, radio direction finder, fathometer and any other aid to navigation, in addition to the LORAN-C receiver.

(491) **LORAN-C Interference**

(492) Interference to LORAN-C may result from radio transmissions by public or private sources operating near the LORAN-C band of 90-110 kHz.

(493) **LORAN-C Charts and Publications**

(494) Navigational charts overprinted with LORAN-C lines of position are available from National Ocean Service, Distribution Division (N/ACC3). (See Appendix for Address.)

(495) A general source of LORAN-C information is the LORAN-C User Handbook written by the U.S. Coast Guard. This publication can be purchased from the Government Printing Office, Washington, DC (see appendix for address).

(496) **Satellite Navigation.**–Satellite navigation presently consists of two global systems. Each may be considered a refinement of celestial navigation, using artificial earth-orbiting satellites to form an electronic "constellation", serviced by land-based control and tracking stations, and passively "sighted" by mobile receivers. These systems take advantage of three areas of technical advancement: wide coverage demonstrated by the use of satellites for communications; precise control and measurement of time by means of stable oscillator frequencies; and rapidly developing computer design and application. These systems have been developed by the U.S. Navy and the U.S. Air Force. The Navy system is the Navy Navigation Satellite System (**NAVSAT**). The Air Force system is the NAVSTAR Global Positioning System (**GPS**). NAVSAT became operational in 1964 and has been available for commercial use since 1967. GPS development began in 1973 and has reached initial operational capability.

(497) **NAVSAT Navigation System.**–The current NAVSAT constellation contains ten satellites, each designated either OSCAR or NOVA, in near-circular, non-geostationary, polar orbits at an altitude of 600 miles. Seven satellites are operational and three satellites are stored in orbit. The system operates with a minimum of four satellites in operation, with additional satellites providing system redundancy and more frequent fix availability. Because the orbits converge over the poles, fix frequency increases with latitude. Fix frequency varies from an average of 110 minutes at the equator to an average of 30 minutes at 80°. Presently, due to non-uniform orbital precession, the NAVSAT satellites are no longer in evenly spaced orbits. Consequently, a user can occasionally expect a period greater than 6 hours between fixes. This condition exists for less than 5 percent of system availability. Each satellite sends satellite time and orbital parameter data in 2 minute phase-modulated broadcasts on 150 MHz and 400 MHz frequencies.

(498) A NAVSAT receiver measures frequency shifts (Doppler effect) in the broadcast frequencies as a satellite moves along its orbit. The receiver compares this information to orbital position data received from the satellite, computing satellite-to-receiver range applied to receiver position estimates. The use of two frequencies enables correction of ionospheric refraction errors. NAVSAT fixed tracking stations in Hawaii, California, Minnesota, and Maine relay broadcast information from the satellites to a computing center. This center recomputes satellite position data, which is transmitted to each satellite via injection stations (in the same locations as the tracking stations). These orbital data injections are updated every 12 hours. Fix information may be accurate to (plus or minus) 50 meters.

(499) **Termination of NAVSAT.** The Navy will terminate operation of the system by the end of 1996.

(500) **GPS Navigation System.**–GPS is a space-based positioning, velocity, and time system that has three major segments: space, control, and user. The Space Segment is composed of 24 satellites in six orbital planes. The satellites operate in circular 20,200 km (10,900 nm) orbits at an inclination angle, relative to the equator, of 55° and with a 12-hour period. The system normally operates with twenty-one satellites in service, the remaining three serving as active spares. At any given time, a minimum of four satellites are observable from any position on earth, providing instantaneous position information. Each satellite transmits on two L band frequencies: 1575.42 MHz (L1) and 1227.6 MHz (L2). L1 carries a precise (P) code and a course/acquisition (C/A) code. L2 carries the P code. A navigation data message is superimposed on the codes. The same navigation data message is carried on both frequencies. This message contains satellite ephemeris data, atmospheric propagation correction data, and satellite clock bias.

(501) The Control Segment consists of five monitor stations, three of which have uplink capabilities, located in Colorado, Hawaii, Kwajalein, Diego Garcia, and Ascension Island. The monitor stations use a GPS receiver to passively track all satellites in view, accumulating ranging data from the satellites' signals. The information from the monitor stations is processed at the Master Control Station (MCS), located in Colorado Springs, CO, to determine satellite orbits and to update the navigation message of each satellite. The updated information is transmitted to the satellites via ground antennas. The ground antennas, located at Kwa-

jelein, Diego Garcia, and Ascension Island, are also used for transmitting and receiving satellite control information.

(502) The User Segment consists of antennas and receiver-processors that provide positioning, velocity, and precise timing to the user. The GPS receiver makes time-of-arrival measurements of the satellite signals to obtain the distance between the user and the satellites. The distance calculations, known as pseudoranges, together with range rate information, are converted to yield system time and the user's three-dimensional position and velocity with respect to the satellite system. A time coordination factor then relates the satellite system to earth coordinates. A minimum of four pseudoranges are needed to produce a three-dimensional fix (latitude, longitude, and altitude). GPS receivers compute fix information in terms of the **World Geodetic System (1984)**, which may need datum shift correction before it can be accurately plotted on a chart. **There are three different types of receivers. Sequential** receivers track only one satellite at a time, computing a fix after a series of pseudoranges have been sequentially measured; these receivers are inexpensive but slow. **Continuous** receivers have at least four channels to process information from several satellites simultaneously; these process fix information the fastest. **Multiplex** receivers switch at a fast rate from satellite to satellite, receiving and processing data from several satellites simultaneously, producing a fix by a sort of "round-robin" process.

(503) GPS provides two services for position determination, **Standard Positioning Service (SPS)** and **Precise Positioning Service (PPS)**. Accuracy of a GPS fix varies with the capability of the user equipment. SPS is the standard level of positioning and timing accuracy that is available, without restrictions, to any user on a continuous worldwide basis. SPS provides positions with a horizontal accuracy of approximately 100 meters. PPS, limited to authorized users, provides horizontal accuracy of 30 meters or less.

(504) **Differential GPS (DGPS)**

(505) The U.S. Coast Guard plans to provide a Differential GPS (**DGPS**) service for public use in all U.S. harbors and approach areas by 1996, including the Great Lakes, Puerto Rico, most of Alaska, and Hawaii. The system will provide radionavigational accuracy of 10 meters or less. DGPS reference stations will determine range errors and generate corrections for all GPS satellites in view. The DGPS signals will be broadcast using existing Coast Guard radiobeacons. Monitor stations will independently verify the quality of the DGPS broadcast. Until the system is declared operational by the Coast Guard, mariners are cautioned that signal availability and accuracy are subject to change due to the availability of GPS, testing of this developing service, and the unreliability of prototype equipment. For further information and/or operational questions regarding GPS or DGPS, contact:

(506) Commanding Officer

(507) U.S. Coast Guard Navigation Center

(508) 7323 Telegraph Road

(509) Alexandria, VA 22310-3998

(510) Telephone: (703) 313-5900

(511) FAX: (703) 313-5920

(512) Electronic Bulletin Board Service (703) 313-5910.

(513) **Omega.**–Omega is a very long range hyperbolic radio navigation system operating between 10.2 kHz and 13.6 kHz. It provides navigational service throughout the world using a transmitting complex of eight stations. Since the transmissions are controlled by cesium atomic frequency standards, the signals can be used for time dissemination.

(514) Omega differs from LORAN by using very low radio frequencies and phase-difference measurement techniques for navigation instead of the LORAN time difference measurement techniques.

(515) **Operation.**–The system design calls for eight stations, designated A through H, transmitting on a time-shared basis at the frequencies of 10.2 kHz, 11.33 kHz, and 13.6 kHz.

(516) There is no master-slave relationship between stations. All stations are equal and each is, in a sense, a slave to the definition of time. Since the transmitted signals from each of the transmitting stations are in absolute phase, measurements may be taken in pairs (for example: station A minus station B yields pair AB) to give a hyperbolic position line. Measurements may also be taken with respect to a precision source of phase (high quality oscillator, (R); therefore, R minus station A yields range A) in the receiver to give circular or range position lines.

(517) The intersection of two or more LOP's gives the receiver's position.

(518) Because of the cyclic nature of phase differences, the same phase difference can be observed in multiple lanes. This is known as lane ambiguity. Lane ambiguity can be resolved by setting the receiver's lane counter at a known or estimated location.

(519) Because of the long distances that the Omega signal travels, the variable effects of propagation of the signals through the atmosphere are very important. Most modern receivers automatically compensate for these effects using models for propagation corrections (PPC's).

(520) Accuracy improvement by as much as a factor of ten may be obtained with a technique called Differential Omega. This technique removes the propagation variation and prediction errors, which are the principal causes of positional inaccuracy in Omega. These errors are removed by using the knowledge that Omega signals have spatial coherence over relatively large areas such as 100 to 300 miles.

(521) **Stations and Receivers.**–Omega is operated as an international partnership between the United States, Argentina, Australia, Liberia, France, Japan, and Norway. The U.S. Coast Guard, through the Omega Navigation System Center in Alexandria, VA, has operational control of the system. Modern transmission of Omega signals is controlled by Omega signal format generators and cesium atomic frequency standards at each station. Each station is synchronized within 2 microseconds of the mean reference time of all eight stations. In addition, Omega system time is within 5 microseconds of Coordinated Universal Time (UTC).

(522) Modern receivers are equipped with coordinate converters to display latitude and longitude, and do not require use of reference publications. Early receivers required Omega Propagation Correction (PPC) tables (OMPUB224100CA - 224318CF).

(523) Omega receivers compute positions using the phase measurements in one to two modes: direct ranging or hyperbolic. In both modes the receiver must be initialized to a known position. Modern receivers contain a microprocessor-based PPC model to correct the nominal phase computations for diurnal and seasonal variations.

(524) Omega receivers may be designed to use one or all of the Omega frequencies. The additional frequencies assist in the lane resolution and position fixing. Because of the long range and stability of the Omega signal, a single set of stations can be used to traverse thousands of miles.

(525) Detailed Omega information is contained in the Coast Guard's Omega Navigation System User's Guide (COMDTPUB P16566.3).

(526) **Range and Coverage.**–Signals radiated at the designed power of 10kW provide field strengths sufficient to allow phase tracking at any location in the world. No less than five LOP's should be available in any area. Current coverage is depicted on the Omega coverage software called ACCESS. ACCESS is a computer-based coverage tool which gives predictions on a 24 hour basis. The ACCESS package is available through:

(527) COMMANDING OFFICER

(528) NAVIGATION CENTER

(529) 7323 TELEGRAPH ROAD

(530) ALEXANDRIA VA 22310-3998

(531) Telephone: (703) 313-5905 or 5906.

(532) The Differential Omega mode will be limited in coverage according to the number of local monitors. However, the maximum range from any one monitor is expected to be approximately 300 NM.

(533) When transmitted Omega signals are known to be unreliable or disturbed by various phenomena, such as a polar cap disturbance (PCD), appropriate warnings will be transmitted via the NAVAREA IV/XII, HYDROLANT/HYDROPAC message systems and will be published in the weekly Notice to Mariners

Station List:

Station	Position	
Norway (A)	66°25′12.7″N	13°08′13.1″E
Liberia (B)	6°18′19.3″N	10°39′51.9″W
Hawaii (C)	21°24′17.9″N	157°49′51.0″W
North Dakota (D)	46°21′57.4″N	98°20′08.2″W
Reunion (E)	20°58′26.9″S	55°17′23.6″E
Argentina (F)	43°03′12.8″S	65°11′26.8″W
Australia (G)	38°28′52.4″S	146°56′07.1″E
Japan (H)	34°36′53.1″N	129 27′13.1″E

(534) **LORAN-C, OMEGA, GPS, DGPS, AND GENERAL RADIONAVIGATION USER INFORMATION.**–The Commandant of the U.S. Coast Guard has consolidated radionavigation operational control, management, and information responsibilities of the Commandant Radionavigation Division (G-NRN), the Omega Navigation System Center (ONSCEN), Commander Atlantic Area (ATL), and Commander Pacific Area (PTL) at one field unit, entitled Navigation Center (NAVCEN). NAVCEN address:

(535) Commanding Officer

(536) USCG Navigation Center

(537) 7323 Telegraph Road

(538) Alexandria, VA 22310-3998.

(539) A reorganized G-NRN Staff remains at Coast Guard Headquarters for policy and planning functions of the radionavigation program.

(540) NAVCEN provides the following services:

(541) **Computer Bulletin Board (BBS)**: The BBS provides Loran-C, Omega, GPS, Marine Radiobeacon, Differential GPS (DGPS), and general radionavigation user information and status. It is accessed by computer users with modems. The Coast Guard does not charge for access to the BBS. Modem setup parameters: 8 bits, no parity, 1 stop; 300-14400 BAUD; call (703) 313-5910.

(542) **GPS System**: Current status recorded voice announcements are available; phone (703) 313-5907. Printed materials on GPS may also be obtained; phone (703) 313-5900.

(543) **Omega**: Current status recorded voice announcements are available; phone (703) 313-5906. NAVCEN generates a weekly Omega status advisory, **Address Indicator Group 8980 (AIG 8980)**. For further information contact the watchstander at (703) 313-5900; available 24 hours.

(544) **Loran-C information**: the current operational status of all Loran-C stations is available from the coordinator of chain operations (**COCO**) or the **Regional Manager**. The COCO monitors the day-to-day operations of the Loran-C chain and provides information with a recorded telephone announcement or responds to queries directed to the COCO personally. The Regional Managers monitor the operation of the Loran-C chains in their areas. Pertinent telephone numbers follow:

(545) COCO Canadian east coast (CEC-5930) and Labrador Sea (LABSEA-7930) chains is located at Loran Monitor Station St. Anthony Newfoundland Canada. Recorded announcement: (709) 454-3261. COCO: (709) 454-2392.

(546) COCO Great Lakes (GKLS-8970) and northeast US (NEUS-9960) chains is located at Loran Station Seneca, NY. Recorded announcement: (607) 869-5395. COCO: (607) 869-1334.

(547) COCO southeast US (SEUS-7980) and south central US (SOCUS-9310) chains is located at Loran Station Malone, FL. Recorded announcement: (205) 899-5227. COCO: (205) 899-5225/6.

(548) Information concerning the Gulf of Alaska (7960), Canadian west coast (5990), US west coast (9940), Russian-American (5980), North Pacific (9990), and North Central US (8290) chains may be obtained from the USCG Pacific Area Loran-C Regional Manager in Alameda, CA at (510) 437-3232.

(549) European Loran-C information:

(550) Information concerning the Icelandic (9980), Norwegian Sea (7970), and Mediterranean Sea (7990) chains may be obtained from the Regional Manager at U.S. Coast Guard Activities Europe, London, UK at 011-44-71-872-0943. If additional information is required after contacting COCO'S or the Pacific or European Regional Managers, contact the NAVCEN by calling (703) 313-5900 or by writing: Commanding Officer (OPS), NAVCEN (address above).

(551) Scheduled Loran-C unusable times are published by announcements in USCG Local Notice to Mariners, Canadian Coast Guard Notice to Shipping (NOTSHIP'S), FAA Notice to Airmen (NOTAMS), FAA NOTAM "D"s, and on the pre-recorded service for the pertinent chain. In many cases scheduled outages are preceded by Coast Guard Marine Radio Voice and NAVTEX Broadcasts in the areas where coverage will be affected.

(552) Military or government users with an official **Government Plain Language Address (PLAD)** desiring inclusion on notification messages should request such in writing to NAVCEN; address above. Requests must include a point of contact, telephone number, why you need this service, and a Government PLAD. Due to the time sensitive nature of this information it is sent only by government message. These messages and other Loran-C information are also available to the public in the Loran-C section of the NAVCEN Bulletin Board (BBS).

(553) If you have a problem with Loran, contact the applicable COCO or Regional Manager for the rate used. If you need to check about unusable time, system failures or report abnormalities, note the rate used, model of receiver, location, type of problem, date, and time occurred. This will enable the COCO or Regional Manager to quickly check the records for the period in question and to provide a more exact answer to you.

(554) **WWV and WWVH broadcasts**: Broadcasts from WWV of Fort Collins, CO and WWVH of Kekaha, Kauai, HI contain Omega and GPS information. Omega summary status and propagation anomaly notification are broadcast from WWV at 16 minutes after each hour, and from WWVH at 47 minutes after the hour. GPS information is broadcast from WWV at 14 to 15 minutes after each hour and from WWVH at 43 to 44 minutes after each hour.

(555) **NAVSAT information**: Orbital data and operational status is gathered by the Naval Satellite Operations Center (NAVSOC), Point Magu, CA and supplied to the Defense Mapping Agency (DMA) for public dissemination. For additional information contact the following:

(556) **All users**: Orbital data and operational status is available from DMA, telephone (301) 227-2495. For more information write

(557) Defense Mapping Agency Combat Support Center

(558) ATTN COCO, Mail Stop d-17

(559) 6001 MacArthur Boulevard

(560) Bethesda, MD 20816-5001.

(561) **Military/government users** with message PLADS: NAVSOC maintains AIG 51 to disseminate NAVSAT status information. Information on being added to this AIG may be obtained by writing or calling:

(562) Naval Satellite Operations Center

(563) Building 375, 661 13th Street

(564) Point Mugu, CA 93042-5013

(565) Telephone (805) 989-4284.

(566) **U.S. Naval Observatory**: The U.S. Naval Observatory (USNO) provides the following services: automated data services for Loran-C, Omega, GPS and NAVSAT information: data service (menu driven) parameters - 8 bit, no parity, 1 stop, 1200 to 2400 BAUD, access password CESIUM133. Time service: (900) 410-8463 or (202) 653-1800. General information: (202) 653-1522/5.

(567) **National Oceanographic and Atmospheric Administration**: The U.S. Department of Commerce National Oceanographic and Atmospheric Administration (NOAA), Space Environment Services Center (SESC) disseminates information regarding solar activity, radio propagation, ionospheric, and geomagnetic conditions. For more information:

(568) For general information, and information about WWV and satellite broadcasts, write or call:

(569) U.S. Department of Commerce

(570) Space Environment Services Center, R/E/SE2

(571) 325 Broadway

(572) Boulder, CO 80303

(573) Telephone (303) 497-3171.

(574) For Public Bulletin Board System (PBBS): PBBS data service (menu driven) parameters - 8 bit, no parity, 1 stop, 300 to 2400 BAUD. PBBS will prompt you for the required initial information and lead you to the main menu. Telehone (303) 497-5000.

(575) **Uniform State Waterway Marking System.**–Many bodies of water used by boatmen are located entirely within the boundaries of a State. The Uniform State Waterway Marking System (USWMS) has been developed to indicate to the small-boat operator hazards, obstructions, restricted or controlled areas, and to provide directions. Although intended primarily for waters within the State boundaries, USWMS is suited for use in all water areas, since it supplements and is generally compatible with the Coast Guard lateral system of aids to navigation. The Coast Guard is gradually using more aids bearing the USWMS geometric shapes described below.

(576) Two categories of waterway markers are used. Regulatory markers, buoys, and signs use distinctive standard shape marks to show regulatory information. The signs are white with black letters and have a wide orange border. They signify speed zones, restricted areas, danger areas, and directions to various places. Aids to navigation on State waters use red and black buoys to mark channel limits. Red and black buoys are generally used in pairs. The boat should pass between the red buoy and its companion black buoy. If the buoys are not placed in pairs, the distinctive color of the buoy indicates the direction of dangerous water from the buoy. White buoys with red tops should be passed to the S or W, indicating that danger lies to the N or E of the buoy. White buoys with black tops should be passed to the N or E. Danger lies to the S or W. Vertical red and white striped buoys indicate a boat should not pass between the buoy and the nearest shore. Danger lies inshore of the buoy.

(577) **DESTRUCTIVE WAVES.**–Unusual sudden changes in water level can be caused by tsunamis or violent storms. These two types of destructive waves have become commonly known as **tidal waves,** a name which is technically incorrect as they are not the result of tide-producing forces.

(578) **Tsunamis (seismic sea waves)** are set up by submarine earthquakes. Many such seismic disturbances do not produce sea waves and often those produced are small, but the occasional large waves can be very damaging to shore installations and dangerous to ships in harbors.

(579) These waves travel great distances and can cause tremendous damage on coasts far from their source. The wave of April 1, 1946, which originated in the Aleutian Trench, demolished nearby Scotch Cap Lighthouse and caused damages of $25 million in the Hawaiian Islands 2,000 miles away. The wave of May 22-23, 1960, which originated off southern Chile, caused widespread death and destruction in islands and countries throughout the Pacific.

(580) The speed of tsunamis varies with the depth of the water, reaching 300 to 500 knots in the deep water of the open ocean. In the open sea they cannot be detected from a ship or from the air because their length is so great, sometimes a hundred miles, as compared to their height, which is usually only a few feet (a meter or 2). Only on certain types of shelving coasts do they build up into waves of disastrous proportions.

(581) There is usually a series of waves with crests 10 to 40 minutes apart, and the highest may occur several hours after the first wave. Sometimes the first noticeable part of the wave is the trough which causes a recession of the water from shore, and people who have gone out to investigate this unusual exposure of the beach have been engulfed by the oncoming crest. Such an unexplained withdrawal of the sea should be considered as nature's warning of an approaching wave.

(582) Improvements have been made in the quick determination and reporting of earthquake epicenters, but no method has yet been perfected for determining whether a sea wave will result from a given earthquake. The Pacific Tsunami Warning Center, Oahu, Hawaii, of the National Oceanic and Atmospheric Administration is headquarters of a warning system which has field reporting stations (seismic and tidal) in most countries around the Pacific. When a warning is broadcast, waterfront areas should be vacated for higher ground, and ships in the vicinity of land should head for the deep water of the open sea.

(583) **Storm surge.**–A considerable rise or fall in the level of the sea along a particular coast may result from strong winds and

sharp change in barometric pressure. In cases where the water level is raised, higher waves can form with greater depth and the combination can be destructive to low regions, particularly at high stages of tide. Extreme low levels can result in depths which are considerably less than those shown on nautical charts. This type of wave occurs especially in coastal regions bordering on shallow waters which are subject to tropical storms.

(584) **Seiche** is a stationary vertical wave oscillation with a period varying from a few minutes to an hour or more, but somewhat less than the tidal periods. It is usually attributed to external forces such as strong winds, changes in barometric pressure, swells, or tsunamis disturbing the equilibrium of the water surface. Seiche is found both in enclosed bodies of water and superimposed upon the tides of the open ocean. When the external forces cause a short-period horizontal oscillation of the water, it is called **surge.**

(585) The combined effect of seiche and surge sometimes makes it difficult to maintain a ship in its position alongside a pier even though the water may appear to be completely undisturbed, and heavy mooring lines have been parted repeatedly under such conditions. Pilots advise taut lines to reduce the effect of the surge.

SPECIAL SIGNALS FOR CERTAIN VESSELS

(586) **Special signals for surveying vessels.**–National Oceanic and Atmospheric Administration (NOAA) vessels engaged in survey operations and limited in their ability to maneuver because of the work being performed (handling equipment over-the-side such as water sampling or conductivity-temperature-density (CTD) casts, towed gear, bottom samplers, etc., and divers working on, below or in proximity of the vessel) are required by Navigation Rules, International-Inland, Rule 27, to exhibit:

(587) (b)(i) three all-round lights in a vertical line where they can best be seen. The highest and lowest of these lights shall be red and the middle light shall be white;

(588) (ii) three shapes in a vertical line where they can best be seen. The highest and lowest of these shapes shall be balls and the middle one a diamond;

(589) (iii) when making way through the water, masthead lights, sidelights and a sternlight, in addition to the lights prescribed in subparagraph (b)(i); and

(590) (iv) when at anchor, in addition to the lights or shapes prescribed in subparagraphs (b)(i) and (ii) the light, lights or shapes prescribed in Rule 30, Anchored Vessels and Vessels Aground.

(591) The color of the above shapes is black.

(592) A NOAA vessel engaged in hydrographic survey operations (making way on a specific trackline while sounding the bottom) is not restricted in its ability to maneuver and therefore exhibits at night only those lights required for a power-driven vessel of its length.

(593) **Warning signals** for Coast Guard vessels while handling or servicing **aids to navigation** are the same as those prescribed for surveying vessels. (See Special signals for surveying vessels, this chapter.)

(594) **Inland waters (Inland Rules):**

(595) DAY, two orange and white vertically striped balls in a vertical line not less than 3 feet nor more than 6 feet apart displayed from the yardarm.

(596) NIGHT, two red lights in a vertical line not less than 3 feet nor more than 6 feet apart.

(597) Vessels, with or without tows, passing Coast Guard vessels displaying this signal shall reduce speed sufficiently to insure the safety of both vessels, and when passing within 200 feet of the Coast Guard vessel displaying this signal, their speed shall not exceed 5 miles per hour.

(598) **High seas (International Rules):**

(599) DAY, three black shapes in a vertical line at least 5 feet (1.5 meters) apart, the highest and lowest being globular shapes and the middle being a diamond shape, each not less than 2 feet (0.6 meter) in diameter. On vessels of less than 65 feet (20 meters) in length, the size of the shapes and the distance between them may be reduced in correspondence with the size of the vessel.

(600) NIGHT, three lights in a vertical line not less than 6 feet (2 meters) apart, the highest and lowest being red and the middle being white in color. On vessels of less than 65 feet (20 meters) in length, the lights shall be not less than 3 feet (1 meter) apart.

(601) **Minesweeper signals.**–U.S. vessels engaged in minesweeping operations or exercises are hampered to a considerable extent in their maneuvering powers. With a view to indicating the nature of the work on which they are engaged, these vessels will show the signals hereinafter mentioned. For the public safety, all other vessels, whether steamers or sailing craft, must endeavor to keep out of the way of vessels displaying these signals and not approach them inside the distances mentioned herein, especially remembering that it is dangerous to pass between the vessels of a pair or group sweeping together.

(602) All vessels towing sweeps are to show: **By day,** a black ball at or near the foremast head and a black ball at each end of the fore yard. **By night,** all around green lights instead of the black balls, and in a similar manner.

(603) Vessels or formations showing these signals indicate that it is dangerous for another vessel to approach within 1,000 meters (3,280 feet) of the mineclearance vessel. Under no circumstances is a vessel to pass through a formation of minesweepers. Minesweepers should be prepared to warn merchant vessels which persist in approaching too close by means of any of the appropriate signals from the International Code of Signals. In fog, mist, falling snow, heavy rainstorms, or any other condition similarily restricting visibility, whether by day or night, minesweepers while towing sweeps when in the vicinity of other vessels will sound whistle signals for a vessel towing (one prolonged blast followed by two short blasts).

(604) The United States is increasingly using helicopters to conduct minesweeping operations and exercises. When so engaged, helicopters, like vessels, are considerably hampered in their ability to maneuver. Helicopters may function at night as well as during the day and in varying types of weather. Accordingly, surface vessels approaching helicopters engaged in minesweeping operations should take precautions similar to those described above with regard to minesweeping vessels.

(605) Helicopters towing minesweeping gear, and surface escorts, if any, will use all practical means to warn approaching ships of the operations being conducted. Where practical, measures will be taken to mark or light the gear being towed. While towing, the helicopter's altitude varies from 49.2 to 311.6 feet (15 to 95 meters) above the water, and speeds vary from 0 to 30 knots.

(606) Minesweeping helicopters are equipped with a rotating beacon which has a selectable red and amber mode. The amber mode is used during towing operations to notify and warn other vessels that the helicopter is towing.

(607) **Submarine emergency identification signals.**–U.S. submarines are equipped with signal ejectors submarines are

equipped with signal ejectors which may be used to launch identification signals, including emergency signals. Two general types of signals may be used: smoke floats and flares or stars. The smoke floats, which burn on the surface, produce a dense colored smoke for a period of 15 to 45 seconds. The flares or stars are propelled to a height of 300 to 400 feet from which they descend by small parachute. The flares or stars burn for about 25 seconds. The color of the smoke or flare/star has the following meaning:

(608) **Green or black** is used under training exercise conditions only to indicate that a torpedo has been fired or that the firing of a torpedo has been simulated.

(609) **Yellow** indicates the submarine is about to rise to periscope depth. Surface craft terminate antisubmarine countérattack and clear vicinity of submarine. Do not stop propellers.

(610) **Red** indicates an emergency inside the submarine; she will try to surface immediately. Surface ships clear the area and stand by to assist. In case of repeated red signals, or if the submarine fails to surface in a reasonable time, she may be presumed disabled. Buoy the location, look for submarine buoy, and attempt to establish sonar communications. Advise U.S. Navy authorities immediately.

(611) Submarine marker buoys consist of two spheres 3 feet in diameter with connecting structure, painted international orange. The buoy has a wire cable to the submarine, to act as a downhaul line for a rescue chamber. The buoy may be accompanied by an oil slick release to attract attention. A submarine on the bottom in distress may release this buoy. If sighted, such a buoy should be investigated and reported immediately to U.S. Navy authorities.

(612) The submarine may transmit the International Distress Signal (SOS) on its sonar gear independently or in conjunction with the red signal. Submarines also may use these other means of attracting attention: release of dye marker or air bubble; ejection of oil; pounding on hull.

(613) **Vessels Constrained by their Draft.**–International Navigation Rules, Rule 28, states that a vessel constrained by her draft may, in addition to the lights prescribed for power-driven vessels in Rule 23, exhibit where they can best be seen three all-round red lights in a vertical line, or a cylinder.

NAVIGATION RESTRICTIONS AND REQUIREMENTS

(614) **Traffic Separation Schemes (Traffic Lanes).**–To increase the safety of navigation, particularly in converging areas of high traffic density, routes incorporating traffic separation have, with the approval of the International Maritime Organization (IMO), formerly the Inter-Governmental Maritime Consultative Organization (IMCO), been established in certain areas of the world. In the interest of safe navigation, it is recommended that through traffic use these schemes, as far as circumstances permit, by day and by night and in all weather conditions.

(615) General principles for navigation in Traffic Separation Schemes are as follows:

(616) 1. A ship navigating in or near a traffic separation scheme adopted by IMO shall in particular comply with Rule 10 of the 72 COLREGS to minimize the development of risk of collision with another ship. The other rules of the 72 COLREGS apply in all respects, and particularly the steering and sailing rules if risk of collision with another ship is deemed to exist.

(617) 2. Traffic separation schemes are intended for use by day and by night in all weather, in ice-free waters or under light ice conditions where no extraordinary maneuvers or assistance by icebreaker(s) are required.

(618) 3. Traffic separation schemes are recommended for use by all ships unless stated otherwise. Bearing in mind the need for adequate underkeel clearance, a decision to use a traffic separation scheme must take into account the charted depth, the possibility of changes in the seabed since the time of last survey, and the effects of meteorological and tidal conditions on water depths.

(619) 4. A deepwater route is an allied routing measure primarily intended for use by ships which require the use of such a route because of their draft in relation to the available depth of water in the area concerned. Through traffic to which the above consideration does not apply should, if practicable, avoid following deepwater routes. When using a deepwater route mariners should be aware of possible changes in the indicated depth of water due to meteorological or other effects.

(620) 5. Users of traffic separation schemes adopted by IMO will be guided by Rule 10 of the 1972 International Regulations for Preventing Collisions at Sea (72 COLREGS) as follows:

(621) (a) This Rule applies to traffic separation schemes adopted by the Organization.

(622) (b) A vessel using a traffic separation scheme shall:

(623) (i) proceed in the appropriate traffic lane in the general direction of traffic flow for that lane;

(624) (ii) so far as practicable keep clear of a traffic separation line or separation zone;

(625) (iii) normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so at as small an angle to the general direction of traffic flow as practicable.

(626) (c) A vessel shall so far as practicable avoid crossing traffic lanes, but if obliged to do so, shall cross as nearly as practicable at right angles to the general direction of traffic flow.

(627) (d) Inshore traffic zones shall not normally be used by through traffic which can safely use the appropriate traffic lane within the adjacent traffic separation scheme. However, vessels of less than 20 meters in length and sailing vessels may under all circumstances use inshore traffic zones.

(628) (e) A vessel, other than a crossing vessel, or a vessel joining or leaving a lane shall not normally enter a separation zone or cross a separation line except:

(629) (i) in cases of emergency to avoid immediate danger;

(630) (ii) to engage in fishing within a separation zone.

(631) (f) A vessel navigating in areas near the terminations of traffic separation schemes shall do so with particular caution.

(632) (g) A vessel shall so far as practicable avoid anchoring in a traffic separation scheme or in areas near its terminations.

(633) (h) A vessel not using a traffic separation scheme shall avoid it by as wide a margin as is practicable.

(634) (i) A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane.

(635) (j) A vessel of less than 20 meters (65.6 feet) in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane.

(636) (k) A vessel restricted in her ability to maneuver when engaged in an operation for the maintenance of safety of navigation in a traffic separation scheme is exempted from complying with Rule 10 to the extent necessary to carry out the operation.

(637) (l) A vessel restricted in her ability to maneuver when engaged in an operation for laying, servicing or picking up of a submarine cable, within a traffic separation scheme, is exempted from complying with this Rule to the extent necessary to carry out the operation.

(638) 6. The arrows printed on charts merely indicate the general direction of traffic; ships need not set their courses strictly along the arrows.

(639) 7. The signal "YG" meaning "You appear not to be complying with the traffic separation scheme" is provided in the International Code of Signals for appropriate use.

(640) When approved or established, traffic separation scheme details are announced in Notice to Mariners, and later depicted on appropriate charts and included in Coast Pilots and Sailing Directions.

(641) **Oil Pollution**–The Federal Water Pollution Control Act, as amended, prohibits the discharge of a harmful quantity of oil or a hazardous substance into or upon the United States navigable waters or adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act or the Deepwater Port Act of 1974, or which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States including resources under the Fishery Conservation and Management Act of 1976. Discharges that do occur must be reported to the Coast Guard (National Response Center) by the most rapid available means. To assist in swift reporting of spills, a nationwide, 24–hour, toll-free telephone number has been established (1–800–424–8802).

(642) Hazardous quantities of oil have been defined by the Environmental Protection Agency as those which violate applicable water quality standards or cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines, or cause a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. (For regulations pertaining to this Act see 40 CFR 110.3, not carried in this Pilot.)

(643) The Refuse Act of 1899 (33 U.S.C. 407) prohibits anyone from throwing, discharging or depositing any refuse matter of any kind in U.S. navigable waters or tributaries of navigable waters. The only exceptions to this prohibition are liquid sewage flowing from streets or sewers and discharges made from shore facilities under a permit granted by the U.S. Army Corps of Engineers.

(644) The Act to Prevent Pollution from Ships (33 U.S.C. 1901) is based on the International Convention for the Prevention of Pollution from Ships, as modified by the Protocol of 1978 (MARPOL 73/78). For tankers over 150 gross tons and all other ships over 400 gross tons, MARPOL 73/78 requires the installation of new equipment to control overboard discharges of oil and oily waste. This includes oily-water separating, monitoring and alarm systems for discharges from cargo areas, cargo pump rooms and machinery space bilges. New ships must have the equipment on board by October 2, 1983, while existing ships have until October 2, 1986 to comply.

(645) Ships are also required to have an International Oil Pollution Prevention Certificate verifying that the vessel is in compliance with MARPOL 73/78 and that any required equipment is on board and operational, and they must maintain a new Oil Record Book reporting all oil transfers and discharges. The Oil Record Book is available from the Government Printing Office.(See appendix for address.)

(646) **Other requirements for the protection of navigable waters.**–It is not lawful to tie up or anchor vessels or to float lografts in navigable channels in such manner as to obstruct normal navigation. When a vessel or raft is wrecked and sunk in a navigable channel it is the duty of the owner to immediately mark it with a buoy or beacon during the day and a light at night until the sunken craft is removed or abandoned.

(647) **Obligation of deck officers.**–Licensed deck officers are required to acquaint themselves with the latest information published in Notice to Mariners regarding aids to navigation.

(648) **Improper use of searchlights prohibited.**–No person shall flash or cause to be flashed the rays of a searchlight or other blinding light onto the bridge or into the pilothouse of any vessel underway. The International Code Signal "PG2" may be made by a vessel inconvenienced by the glare of a searchlight in order to apprise the offending vessel of the fact.

(649) **Use of Radar.**–Navigation Rules, International-Inland, Rule 7, states, in part, that every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist. Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(650) This rule places an additional responsibility on vessels which are equipped and manned to use radar to do so while underway during periods of reduced visibility without in any way relieving commanding officers of the responsibility of carrying out normal precautionary measures.

(651) Navigation Rules, International-Inland, Rules 6, 7, 8, and 19 apply to the use of radar.

(652) **Danger signal.**–Navigation Rules, International-Inland, Rule 34(d), states that when vessels in sight of one another are approaching each other and from any cause either vessel fails to understand the intentions or actions of the other, or is in doubt whether sufficient action is being taken by the other to avoid collision, the vessel in doubt shall immediately indicate such doubt by giving at least five short and rapid blasts on the whistle. Such signal may be supplemented by a light signal of at least five short and rapid flashes.

(653) **Narrow channels.**–Navigation Rules, International-Inland, Rule 9(b) states: A vessel of less than 65.6 feet (20 meters) in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway.

(654) **Control of shipping in time of emergency or war.**–In time of war or national emergency, merchant vessels of the United States and those foreign flag vessels, which are considered under effective U.S. control, will be subject to control by agencies of the U.S. Government. The allocation and employment of such vessels, and of domestic port facilities, equipment, and services will be performed by appropriate agencies of the War Transport Administration. The movement, routing, and diversion of merchant ships at sea will be controlled by appropriate naval commanders. The movement of merchant ships within domestic ports and dispersal anchorages will be coordinated by the U.S. Coast Guard. The commencement of naval control will be signalled by a general emergency message. (See DMAHTC Pub. 117 for emergency procedures and communication instructions.)

(655) **Exclusive Economic Zone of the United States.**–Established by a Presidential Proclamation on March 10, 1983, the Exclusive Economic Zone (EEZ) of the United States is a zone contiguous to the territorial sea, including zones contiguous to the territorial sea of the United States, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands (to the extent consistent with the Covenant and the United Nations Trusteeship Agreement), and United States overseas territories and possessions. The EEZ extends to a distance of 200 nautical miles from the baseline from which the breadth of the territorial sea is

measured. In cases where the maritime boundary with a neighboring state remains to be determined, the boundary of the EEZ shall be determined by the United States and the other state concerned in accordance with equitable principles.

(656) Within the EEZ, the United States has asserted, to the extent permitted by international law, (a) sovereign rights for the purpose of exploring, exploiting, conserving and managing natural resources, both living and nonliving, of the seabed and subsoil and the superjacent waters and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; and (b) jurisdiction with regard to the establishment and use of artificial islands, and installations and structures having economic purposes, and the protection and preservation of the marine environment.

(657) Without prejudice to the sovereign rights and jurisdiction of the United States, the EEZ remains an area beyond the territory and territorial sea of the United States in which all states enjoy the high seas freedoms of navigation, overflight, the laying of submarine cables and pipelines, and other internationally lawful uses of the sea.

(658) This Proclamation does not change existing United States policies concerning the continental shelf, marine mammals and fisheries, including highly migratory species of tuna which are not subject to United States jurisdiction and require international agreements for effective management.

(659) The United States will exercise these sovereign rights and jurisdiction in accordance with the rules of international law.

(660) The seaward limit of the EEZ is shown on the nautical chart as a line interspersed periodically with EXCLUSIVE ECONOMIC ZONE. The EEZ boundary is coincidental with that of the Fishery Conservation Zone.

(661) **U.S. Fishery Conservation Zone.–** The United States exercises exclusive fishery management authority over all species of fish, except tuna, within the fishery conservation zone, whose seaward boundary is 200 miles from the baseline from which the U.S. territorial sea is measured; all anadromous species which spawn in the United States throughout their migratory range beyond the fishery conservation zone, except within a foreign country's equivalent fishery zone as recognized by the United States; all U.S. Continental Shelf fishery resources beyond the fishery conservation zone. Such resources include American lobster and species of coral, crab, abalone, conch, clam, and sponge, among others.

(662) No foreign vessel may fish, aid, or assist vessels at sea in the performance of any activity relating to fishing including, but not limited to preparation, supply, storage, refrigeration, transportation or processing, within the fishery conservation zone, or fish for anadromous species of the United States or Continental Shelf fishery resources without having on board a permit issued in accordance with U.S. law. These permits may only be issued to vessels from countries recognizing the exclusive fishery management authority of the United States in an international agreement. The owners or operators of foreign vessels desiring to engage in fishing off U.S. coastal waters should ascertain their eligibility from their own flag state authorities. Failure to obtain a permit prior to fishing, or failure to comply with the conditions and restrictions established in the permit may subject both vessel and its owners or operators to administrative, civil and criminal penalties. (Further details concerning foreign fishing are given in **50 CFR 611.**)

(663) Reports of foreign fishing activity within the fishery conservation zone should be made to the U.S. Coast Guard. Immediate reports are particularly desired, but later reports by any means also have value. Reports should include the activity observed, the position, and as much identifying information (name, number, homeport, type, flag, color, size, shape, etc.) about the foreign vessel as possible, and the reporting party's name and address or telephone number.

(664) **BRIDGE-TO-BRIDGE RADIOTELEPHONE COMMUNICATION.–** Voice radio bridge-to-bridge communication between vessels is an effective aid in the prevention of collisions where there is restricted maneuvering room and/or visibility. VHF-FM radio is used for this purpose, due to its essentially line-of-sight characteristic and relative freedom from static. As VHF-FM has increasingly come into use for short-range communications in U.S. harbors and other high-traffic waters, so has the number of ships equipped with this gear increased.

(665) The Vessel Bridge-to-Bridge Radiotelephone Regulations, effective January 1, 1973, require vessels subject to the Act while navigating to be equipped with at least one single channel transceiver capable of transmitting and receiving on VHF-FM channel 13 (156.65 MHz), the Bridge-to-Bridge Radiotelephone frequency. Vessels with multichannel equipment are required to have an additional receiver so as to be able to guard VHF-FM channel 13 (156.65 MHz), the Bridge-to-Bridge Radiotelephone frequency, in addition to VHF-FM channel 16 (156.80 MHz), the National Distress, Safety and Calling frequency required by Federal Communications Commission regulations. (See 26.01 through 26.10, chapter 2, for Vessel Bridge-to-Bridge Radiotelephone Regulations.)

(666) Mariners are reminded that the use of bridge-to-bridge voice communications in no way alters the obligation to comply with the provisions of the Navigation Rules, International-Inland.

(667) **VHF-FM Radiotelephone.–** VHF-FM channel 16 (156.800 MHz) is the international distress, urgency, safety, calling and reply frequency for vessels and public and private coastal stations. In 1992, the Federal Communications Commission (FCC) designated VHF-FM channel 9 (156.450 MHz) for use as a general purpose calling frequency for non-commercial vessels, such as recreational boats. This move was designed to relieve congestion on VHF-FM channel 16. Non-commercial vessels are encouraged to use VHF-FM channel 9 for routine communications but distress, urgency, and safety calls should continue to be initially made on VHF-FM channel 16.

(668) The following table provides the frequency equivalents and general usage of selected VHF-FM channels which appear in the Coast Pilot. The letter "A" appended to a channel number indicates that U.S. operation of the particular channel is different than the international operation, i.e., U.S. stations transmit and receive on the same frequency and international stations use different frequencies.

(669) The information given here is extracted from the "Maritime Radio Users Handbook" published by the the Radio Technical Commission for Maritime Services. Ordering information for this valuable, comprehensive publication is included in the appendix.

(670) All channels given below are designated for both ship-to-ship and ship-to-coast communications except as noted.

Channel	Ship Frequency (MHz)		Channel Usage
	Transmit	Receive	
1A	156.050	156.050	Port operations and commercial
5A	156.250	156.250	Port operations
6	156.300	156.300	Intership safety
7A	156.350	156.350	Commercial
8	156.400	156.400	Commercial (ship-to-ship only)
9	156.450	156.450	Non-commercial
10	156.500	156.500	Commercial
11	156.550	156.550	Commercial
12	156.600	156.600	Port operations (traffic advisories, including VTS in some ports)
13	156.650	156.650	Navigational (ship-to-ship), also used at locks and bridges
14	156.700	156.700	Port operations (traffic advisories, including VTS in some ports)
16	156.800	156.800	Distress, safety and calling
17	156.850	156.850	State or local government control
18A	156.900	156.900	Commercial
19A	156.950	156.950	Commercial
20	157.000	161.600	Port operations (traffic advisories)
22A	157.100	157.100	Coast Guard Liaison
24	157.200	161.800	Public correspondence (ship-to-coast)
25	157.250	161.850	Public correspondence (ship-to-coast)
26	157.300	161.900	Public correspondence (ship-to-coast)
27	157.350	161.950	Public correspondence (ship-to-coast)
28	157.400	162.000	Public correspondence (ship-to-coast)
63A	156.175	156.175	VTS New Orleans
65A	156.275	156.275	Port operations (traffic advisories)
66A	156.325	156.325	Port operations (traffic advisories)
67	156.375	156.375	Commercial (ship-to-ship only) (used in New Orleans VTS for ship-to-ship navigational purposes)
68	156.425	156.425	Non-commercial
69	156.475	156.475	Non-commercial
71	156.575	156.575	Non-commercial
72	156.625	156.625	Non-commercial (ship-to-ship only)
73	156.675	156.675	Port operations (traffic advisories)
74	156.725	156.725	Port operations (traffic advisories)
77	156.875	156.875	Port operations (ship-to-ship, to and from pilots docking ships)
78A	156.925	156.925	Non-commercial
79A	156.975	156.975	Commercial
80A	157.025	157.025	Commercial
84	157.225	161.825	Public correspondence (ship-to-coast)
85	157.275	161.875	Public correspondence (ship-to-coast)
86	157.325	161.925	Public correspondence (ship-to-coast)
87	157.375	161.975	Public correspondence (ship-to-coast)
88	157.425	162.025	Public correspondence in Puget Sound and parts of Great Lakes
88A	157.425	157.425	Commercial, fishing (ship-to-ship) (except in parts of Great Lakes)

2. NAVIGATION REGULATIONS

(1) This chapter contains sections from the **Code of Federal Regulations** that are of most importance in the areas covered by Coast Pilot 9. Included from **Title 33, Navigation and Navigable Waters (33 CFR),** are

(2) Part 26, Vessel Bridge-to-Bridge Radiotelephone Regulations;

(3) Part 67, Aids to Navigation on Artificial Islands and Fixed Structures (in part);

(4) Part 80, COLREGS Demarcation Lines;

(5) Part 110, Anchorage Regulations;

(6) Part 160, Ports and Waterways Safety-General;

(7) Part 161, Vessel Traffic Management;

(8) Part 162, Inland Waterways Navigation Regulations;

(9) Part 164, Navigation Safety Regulations (in part);

(10) Part 165, Regulated Navigation Areas and Limited Access Areas;

(11) Part 166, Shipping Safety Fairways;

(12) Part 334, Danger Zones and Restricted Area Regulations.

(13) Included from **Title 50, Wildlife and Fisheries (50 CFR),** are

(14) Part 227–Threatened Fish and wildlife.

(15) **Note.**–These regulations can only be amended by the enforcing agency or other authority cited in the regulations. Accordingly, requests for changes to these regulations should be directed to the appropriate agency for action. In those regulations where the enforcing agency is not cited or is unclear, recommendations for changes should be directed to the following Federal agencies for action: U.S. Coast Guard (33 CFR 26, 67, 80, 110, 160, 161, 162, 164, 165, and 166); U.S. Army Corps of Engineers (33 CFR 334); National Oceanic and Atmospheric Administration (50 CFR 227).

Part 26–Vessel Bridge-to-Bridge Radiotelephone Regulations

(16) **§26.01 Purpose.**

(17) (a) The purpose of this part is to implement the provisions of the Vessel Bridge-to-Bridge Radiotelephone Act. This part–

(18) (1) Requires the use of the vessel bridge-to-bridge radiotelephone;

(19) (2) Provides the Coast Guard's interpretation of the meaning of important terms in the Act;

(20) (3) Prescribes the procedures for applying for an exemption from the Act and the regulations issued under the Act and a listing of exemptions.

(21) (b) Nothing in this part relieves any person from the obligation of complying with the rules of the road and the applicable pilot rules.

(22) **§26.02 Definitions.**

(23) For the purpose of this part and interpreting the Act–

(24) "Secretary" means the Secretary of the Department in which the Coast Guard is operating:

(25) "Act" means the "Vessel Bridge-to-Bridge Radiotelephone Act," 33 U.S.C. sections 1201-1208;

(26) "Length" is measured from end to end over the deck excluding sheer;

(27) "Power-driven vessel" means any vessel propelled by machinery; and

(28) "Towing vessel" means any commercial vessel engaged in towing another vessel astern, alongside, or by pushing ahead.

(29) "Vessel Traffic Services (VTS)" means a service implemented under Part 161 of this chapter by the United States Coast Guard designed to improve the safety and efficiency of vessel traffic and to protect the environment. The VTS has the capability to interact with marine traffic and respond to traffic situations developing in the VTS area.

(30) "Vessel Traffic Service Area or VTS Area" means the geographical area encompassing a specific VTS area of service as describedin Part 161 of this chapter. This area of service may be subdivided into sectors for the purpose of allocating responsibility to individual Vessel Traffic Centers or to identify different operating requirements.

(31) **Note:** Although regulatory jurisdiction is limited to the navigable waters of the United States, certain vessels will be encouraged or may be required, as a condition of port entry to report beyond this area to facilitate traffic management within the VTS area.

(32) **§26.03 Radiotelephone required.**

(33) (a) Unless an exemption is granted under §26.09 and except as provided in paragraph (a)(4) of this section, this part applies to:

(34) (1) Every power-driven vessel of 20 meters or over in length while navigating;

(35) (2) Every vessel of 100 gross tons and upward carrying one or more passengers for hire while navigating;

(36) (3) Every towing vessel of 26 feet or over in length while navigating; and

(37) (4) Every dredge and floating plant engaged in or near a channel or fairway in operations likely to restrict or affect navigation of other vessels except for an unmanned or intermittently manned floating plant under the control of a dredge.

(38) (b) Every vessel, dredge, or floating plant described in paragraph (a) of this section must have a radiotelephone on board capable of operation from its navigational bridge, or in the case of a dredge, from its main control station, and capable of transmitting and receiving on the frequency or frequencies within the 156-162 Mega-Hertz band using the classes of emissions designated by the Federal Communications Commission for the exchange of navigational information.

(39) (c) The radiotelephone required by paragraph (b) of this section must be carried on board the described vessels, dredges, and floating plants upon the navigable waters of the United States.

(40) (d) The radiotelephone required by paragraph (b) of this section must be capable of transmitting and receiving on VHF-FM channel 22A (157.1 MHz).

(41) (e) While transiting any of the following waters, each vessel described in paragraph (a) of this section also must have on board a radiotelephone capable of transmitting and receiving on VHF-FM channel 67 (156.375 MHZ):

(42) (1) The lower Mississippi River from the territorial sea boundary, and within either the Southwest Pass safety fairway or the South Pass safety fairway specified in 33 CFR 166.200, to mile 242.4 AHP (Above Head of Passes) near Baton Rouge;

(43) (2) The Mississippi River-Gulf Outlet from the territorial sea boundary, and within the Mississippi River-Gulf outlet Safety

Fairway specified in 33 CFR 166.200, to that channel's junction with the Inner Harbor Navigation Canal; and

(44) (3) The full length of the Inner Harbor Navigation Canal from its junction with the Mississippi River to that canal's entry to Lake Pontchartrain at the New Seabrook vehicular bridge.

(45) (f) In addition to the radiotelephone required by paragraph (b) of this section each vessel described in paragraph (a) of this section while transiting any waters within a Vessel Traffic Service Area, must have on board a radiotelephone capable of transmitting and receiving on the VTS designated frequency in Table 26.03(f) (VTS Call Signs, Designated Frequencies, and Monitoring Areas).

(46) **Note:** A single VHF-FM radio capable of scanning or sequential monitoring (often referred to as "dual watch" capability) will not meet the requirements for two radios.

(47) **§26.04 Use of the designated frequency.**

(48) (a) No person may use the frequency designated by the Federal Communications Commission under section 8 of the Act, 33 U.S.C. 1207(a), to transmit any information other than information necessary for the safe navigation of vessels or necessary tests.

(49) (b) Each person who is required to maintain a listening watch under section 5 of the Act shall, when necessary, transmit and confirm, on the designated frequency, the intentions of his vessel and any other information necessary for the safe navigation of vessels.

(50) (c) Nothing in these regulations may be construed as prohibiting the use of the designated frequency to communicate with shore stations to obtain or furnish information necessary for the safe navigation of vessels.

(51) (d) On the navigable waters of the United States, channel 13 (156.65 MHz) is the designated frequency required to be monitored in accordance with §26.05(a) except that in the area prescribed in §26.03(e), channel 67 (156.375 MHz) is the designated frequency.

(52) (e) On those navigable waters of the United States within a VTS area, the designated VTS frequency is an additional designated frequency required to be monitored in accordance with §26.05.

(53) **Note:** As stated in 47 CFR 80.148(b), a VHF watch on Channel 16 (156.800 MHz) is not required on vessels subject to the Vessel Bridge-to-Bridge Radiotelephone Act and participating in a Vessel Traffic Service (VTS) system when the watch is maintained on both the vessel bridge-to-bridge frequency and a designated VTS frequency.

(54) **§26.05 Use of radiotelephone.**

(55) Section 5 of the Act states that the radiotelephone required by this Act is for the exclusive use of the master or person in charge of the vessel, or the person designated by the master or person in charge to pilot or direct the movement of the vessel, who shall maintain a listening watch on the designated frequency. Nothing herein shall be interpreted as precluding the use of portable radiotelephone equipment to satisfy the requirements of this act.

(56) **§26.06 Maintenance of radiotelephone; failure of radiotelephone.** Section 6 of the Act states–

(57) (a) Whenever radiotelephone capability is required by this Act, a vessel's radiotelephone equipment shall be maintained in effective operating condition. If the radiotelephone equipment carried aboard a vessel ceases to operate, the master shall exercise due diligence to restore it or cause it to be restored to effective operating condition at the earliest practicable time. The failure of a vessel's radiotelephone equipment shall not, in itself, constitute a violation of this Act, nor shall it obligate the master of any vessel to moor or anchor his vessel; however, the loss of radiotelephone capability shall be given consideration in the navigation of the vessel.

(58) **§26.07 Communications.**

(59) No person may use the services of, and no person may serve as, a person required to maintain a listening watch under section 5 of the Act, 33 U.S.C. 1204, unless the person can communicate in the English language.

(60) **§26.08 Exemption procedures.**

(61) (a) Any person may petition for an exemption from any provision of the Act or this part:

(62) (b) Each petition must be submitted in writing to U.S. Coast Guard Office of Navigation Safety and Waterway Services, 2100 Second Street SW., Washington, DC 20593-0001, and must state-

(63) (1) The provisions of the Act or this part from which an exemption is requested; and

(64) (2) The reasons why marine navigation will not be adversely affected if the exemption is granted and if the exemption relates to a local communication system how that system would fully comply with the intent of the concept of the Act but would not conform in detail if the exemption is granted.

(65) **§26.09 List of exemptions.** (a) All vessels navigating on those waters governed by the navigation rules for Great Lakes and their connecting and tributary waters (33 U.S.C. 241 et seq.) are exempt from the requirements of the Vessel Bridge-to-Bridge Radiotelephone Act and this part until May 6, 1975.

(66) (b) Each vessel navigating on the Great Lakes as defined in the Inland Navigational Rules Act of 1980 (33 U.S.C. 2001 et seq.) and to which the Vessel Bridge-to-Bridge Radiotelephone Act (33 U.S.C. 1201-1208) applies is exempt from the requirements in 33 U.S.C. 1203, 1204, and 1205 and the regulations under §§26.03, 26.04, 26.05, 26.06, and 26.07. Each of these vessels and each person to whom 33 U.S.C. 1208(a) applies must comply with Articles VII, X, XI, XII, XIII, XV, and XVI and Technical Regulations 1-9 of "The Agreement Between the United States of America and Canada for Promotion of Safety on the Great Lakes by Means of Radio, 1973."

(67) **§26.10 Penalties.** Section 9 of the Act states–

(68) (a) Whoever, being the master or person in charge of a vessel subject to the Act, fails to enforce or comply with the Act or the regulations hereunder; or whoever, being designated by the master or person in charge of a vessel subject to the Act to pilot or direct the movement of a vessel fails to enforce or comply with the Act or the regulations hereunder-is liable to a civil penalty of not more than $500 to be assessed by the Secretary.

(69) (b) Every vessel navigated in violation of the Act or the regulations hereunder is liable to a civil penalty of not more than $500 to be assessed by the Secretary, for which the vessel may be proceeded against in any District Court of the United States having jurisdiction.

(70) (c) Any penalty assessed under this section may be remitted or mitigated by the Secretary, upon such terms as he may deem proper.

Table 26.03(f).—VESSEL TRAFFIC SERVICES (VTS) CALL SIGNS, DESIGNATED FREQUENCIES, AND MONITORING AREAS

Vessel traffic services[1] Call Sign	Designated frequency[2] (channel designation)	Monitoring area
		New York
New York Traffic[3]	156.700 MHz (Ch. 14)	The waters of the Lower New York Bay west of a line drawn from Norton Point to Breezy Point and north of a line drawn from Ambrose Entrance Lighted Gong Buoy #1 to Ambrose Channel Lighted Gong Buoy #9 thence to West Bank Light and thence to Great Kills Light. The waters of the Upper New York Bay, south of 40°42.40′N. (Brooklyn Bridge) and 40°43.70′N. (Holland Tunnel Ventilator Shaft); and in Newark Bay, north of 40°38.25′N. (Arthur Kill Railroad Bridge), and south of 40°41.95′N. (Lehigh Valley Draw Bridge); and the Kill Van Kull.
	156.550 MHz (Ch. 11)	The waters of Raritan Bay east of a line drawn from Great Kills Light to Point Comfort in New Jersey and south of a line drawn from Great Kills Light to West Bank Light, thence to Ambrose Channel Lighted Gong Buoy #9, and thence to Ambrose Channel Lighted Gong Buoy #1, and west of a line drawn from Ambrose Channel Lighted Gong Buoy #1 to the Sandy Hook Channel Entrance Buoys (Sandy Hook Lighted Gong Buoy #1 and Sandy Hook Lighted Bell Buoy #2).
	156.600 MHz (Ch. 12)	Each vessel at anchor within the above areas.
		Houston[3]
		The navigable waters north of 29°N., west of 94°20′W., south of 29°49′N., and east of 95°20′W.:
Houston Traffic	156.550 MHz (Ch. 11)	The navigable waters north of a line extending due west from the southern most end of Exxon Dock #1 (29°43.37′N., 95°01.27′W.)
	156.600 MHz (Ch 12)	The navigable waters south of a line extending due west from the southern most end of Exxon Dock #1 (29°43.37′N., 95°01.27′W.).
		Berwick Bay
Berwick Traffic	156.550 MHz (Ch. 11)	The navigable waters south of 29°45′N., west of 91°10′W., north of 29°37′N., and east of 91°18′W.
		St. Marys River
Soo Control	156.600 MHz (Ch. 12)	The navigable waters of the St. Marys River between 45°57′N. (De Tour Reef Light) and 46°38.7′N. (Ile Parisienne Light), except the St. Marys Falls Canal and those navigable waters east of a line from 46°04.16′N. and 46°01.57′N. (La Pointe to Sims Point in Potagannissing Bay and Worsley Bay).
		San Francisco[3]
San Francisco Traffic	156.600 MHz (Ch. 12)	The waters within a 38 nautical mile radius of Mount Tamalpais (37°55.8′N., 122°34.6′W.) excluding the San Francisco Offshore Precautionary Area.
	156.700 MHz (Ch. 14)	The waters of the San Francisco Offshore Precautionary Area eastward to San Francisco Bay including its tributaries extending to the ports of Stockton, Sacramento and Redwood City.

Vessel traffic services[1] Call Sign	Designated frequency[2] (channel designation)	Monitoring area
Puget Sound[4]		
Seattle Traffic[5]	156.700 MHz (Ch. 14)	The navigable waters of Puget Sound, Hood Canal and adjacent waters south of a line connecting Marrowstone Point and Lagoon Point in Admiralty Inlet and south of a line drawn due east from the southernmost tip of Possession Point on Whidbey Island to the shoreline.
	156.250 MHz (Ch. 5A)	The navigable waters of the Strait of Juan de Fuca east of 124°40′W. excluding the waters in the central portion of the Strait of Juan de Fuca north and east of Race Rocks; the navigable waters of the Strait of Georgia east of 122°52′W.; the San Juan Island Archipelago, Rosario Strait, Bellingham Bay; Admiralty Inlet north of a line connecting Marrowstone Point and Lagoon Point and all waters east of Whidbey Island north of a line drawn due east from the southernmost tip of Possession Point on Whidbey Island to the shoreline.
Tofino Traffic[6]	156.725 MHz (Ch. 74)	The waters west of 124°40′W. within 50 nautical miles of the coast of Vancouver Island including the waters north of 48°N., and east of 127°W.
Vancouver Traffic	156.550 MHz (Ch. 11)	The navigable waters of the Strait of Georgia west of 122°52′W., the navigable waters of the central Strait of Juan de Fuca north and east of Race Rocks, including the Gulf Island Archipelago, Boundary Pass and Haro Strait.
Prince William Sound[7]		
Valdez Traffic	156.650 MHz (Ch. 13)	The navigable waters south of 61°05′N., east of 147°20′W., north of 60°N., and west of 146°30′W.; and, all navigable waters in Port Valdez.
Louisville[7]		
Louisville Traffic	156.650 MHz (Ch. 13)	The navigable waters of the Ohio River between McAlpine Locks (Mile 606) and Twelve Mile Island (Mile 593), only when the McAlpine upper pool gauge is at approximately 13.0 feet or above.

NOTES:

[1] VTS regulations are denoted in 33 CFR Part 161. All geographic coordinates (latitude and longitude) are expressed in North American Datum of 1983 (NAD 83).

[2] In the event of a communication failure either by the vessel traffic center or the vessel or radio congestion on a designated VTS frequency, communications may be established on an alternate VTS frequency. The bridge-to-bridge navigational frequency, 156.650 MHz (Channel 13), is monitored in each VTS area; and it may be used as an alternate frequency, however, only to the extent that doing so provides a level of safety beyond that provided by other means.

[3] Designated frequency monitoring is required within U.S. navigable waters. In areas which are outside the U.S. navigable waters, designated frequency monitoring is voluntary. However, prospective VTS Users are encouraged to monitor the designatedfrequency.

[4] A Cooperative Vessel Traffic Service was established by the United States and Canada within adjoining waters. The appropriate vessel traffic center administers the rules issued by both nations; however, it will enforce only its own set of rules within its jurisdiction.

[5] Seattle Traffic may direct a vessel to monitor the other primary VTS frequency 156.250 MHz or 156.700 MHz (Channel 5A or 14) depending on traffic density, weather conditions, or other safety factors, rather than strictly adhering to the designated frequency required for each monitoring area as defined above. This does not require a vessel to monitor both primary frequencies.

[6] A portion of Tofino Sector's monitoring area extends beyond the defined CVTS area. Designated frequency monitoring is voluntary in these portions outside of VTS jurisdiction, however, prospective VTS Users are encouraged to monitor the designated frequency.

[7] The bridge-to-bridge navigational frequency, 156.650 MHz (Channel 13), is used in these VTSs because the level of radiotelephone transmissions does not warrant a designated VTS frequency. The listening watch required by §26.05 of this chapter is not limited to the monitoring area.

PART 67–AIDS TO NAVIGATION ON ARTIFICIAL ISLANDS AND FIXED STRUCTURES (in part)

SUBPART 67.01–GENERAL REQUIREMENTS

(71) **§67.01–1 Scope.**

(72) (a) The regulations in this part prescribe the obstruction lights and fog signals to be operated as privately maintained maritime aids to navigation on the artificial islands and structures which are erected on or over the seabed and subsoil of the Outer Continental Shelf and in the waters under the jurisdiction of the United States, for the purpose of exploring for, developing, removing and transporting resources therefrom.

(73) (b) Subpart 66.01 in Part 66 of this subchapter shall be applicable to all private aids to navigation erected on or over the Outer Continental Shelf in the same manner and to the same extent as they are applicable to private aids to navigation established, erected, or maintained in the waters under the jurisdiction of the United States.

(74) **§67.01–5 Definitions.**

(75) (a) Structures. The term "structures" as used in this part shall include all fixed structures, temporary or permanent, for which a Corps of Engineers' permit is issued. It shall include, but is not necessarily limited to, all drilling platforms, production platforms, quarters platforms, pipe line riser platforms, manifold platforms, loading platforms, boat landings, caissons, well protective structures, tank battery barges submerged on station, drilling barges submerged on location, breakwater barges submerged on location, artificial islands and all other piles, pile clusters, pipes, or structures erected in the waters.

(76) (b) Class "A", "B", or "C" structures. The term "Class A, B, or C structures" refers to the classification assigned to structures erected in areas in which corresponding requirements for marking are prescribed.

(77) (c) Line of demarcation. The term "line of demarcation" means the dividing line used administratively to distinguish between the areas in which structures shall conform to Class "A" and Class "B" or "C" requirements.

(78) (d) Outer Continental Shelf. The term "Outer Continental Shelf" means all submerged lands lying seaward and outside the area of lands beneath navigable waters as defined in the Submerged Lands Act (sec. 2, 67 Stat. 29, 43 U. S. C. 1301), and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control.

(79) (e) Reliable operation. The term "reliable" as used in this part shall mean that dependability which will insure to the highest degree reasonably possible the uninterrupted operation of lights and fog signals as private aids to navigation for safety of marine commerce.

(80) (f) Fog signal. The term "fog signal" as used in this part shall mean the audible sound signal, authorized as a private aid to navigation, to mark a structure for the safety of marine commerce whenever the visibility has been reduced by fog, mist, rain, falling snow, smoke, dust, or other phenomena.

(81) **§67.01–10 Authority to regulate and delegation of functions.**

(82) (a) Regulatory authority. By virtue of the Department of Transportation Act (Pub. L. 89-670, 80 Stat. 931-950, 49 U. S. C. 1651-1659), establishing the Department of Transportation, the U.S. Coast Guard together with its functions and duties under the Secretary of the Treasury was transferred to the new department. The Secretary of Transportation thereby became the "head of the Department in which the Coast Guard is operating," including the authority to promulgate and enforce regulations under the Outer Continental Shelf Lands Act (43 U.S.C. 1333). By a rule in 49 CFR 1.9 the Secretary continued in effect actions taken prior to April 1, 1967. By rules in 49 CFR 1.4 (a) (2) and (f) the Secretary of Transportation authorized the Commandant, U.S. Coast Guard, with respect to his own organization, to exercise the authority granted to the Secretary as Executive head of that department by any statute, Executive order or regulation. Section 1657 (e) of Title 49 U. S. C. provides for delegation and redelegation of powers and functions vested in the Secretary. By a rule in 49 CFR 1.4 (g) the Commandant is authorized to redelegate and authorize successive redelegations within the organization under his jurisdiction.

(83) (b) Delegation of functions. The Coast Guard District Commander is hereby delegated responsibility for performing, or having performed the inspections, enforcement, and administration of such regulations, which are or may be required. He may redelegate this authority as necessary to any person from the civilian or military branch of the Coast Guard.

(84) **§67.01–15 Classification of structures.**

(85) (a) The varied depths of water and marine commerce traffic routes which exist in the waters over the Outer Continental Shelf, and in other waters, permit the classification of structures according to their location in such waters. Those structures in the area seaward of the line of demarcation, prescribed by the regulations in this part, are designated as Class "A" structures. All structures shoreward of the line of demarcation, prescribed by the regulations in this part, are designated as either Class "B" or Class "C" structures.

(86) (b) In the event a line of demarcation is not prescribed, the District Commander shall designate a structure "A", "B", or "C" as he deems appropriate.

(87) **§67.01–20 Prescribing lines of demarcation.**

(88) In those areas where lines of demarcation are not prescribed, or where they have been prescribed and require modification, the District Commander shall submit his recommendations thereon to the Commandant for establishment or changes as required. When approved by the Commandant, and upon publication in the Federal Register, such additions or changes in lines of demarcation shall be effective for the purposes of this part.

(89) **§67.01–30 Equivalents.**

(90) The use of alternate equipment, apparatus, or installation arrangements specified in this part may be permitted by the District Commander to such extent and under such conditions as will result in achieving a degree of safety or compliance with these regulations equivalent to or above the minimum requirements set forth in this part.

SUBPART 67.05–GENERAL REQUIREMENTS FOR LIGHTS

(91) **§67.05–1 Arrangement of obstruction lights.**

(92) (a) Structures having a maximum horizontal dimension of 30 feet or less on any one side, or in diameter, shall be required to have one obstruction light visible for 360°.

(93) (b) Structures having a maximum horizontal dimension of over 30 feet, but not in excess of 50 feet, on any one side, or in diameter, shall be required to have two obstruction lights installed on diagonally opposite corners, 180° apart, or as prescribed by the District Commander, each light to have a 360° lens.

(94) (c) Structures having a horizontal dimension of over 50 feet on any one side, or in diameter, shall be required to have an obstruction light on each corner, or 90° apart in the case of circular

structures, or as prescribed by the District Commander, each light to have a 360° lens.

(95) (d) Where the overall dimensions of a structure require the installation of two or more obstruction lights, the lights shall all be mounted on the same horizontal plane within the limitations of height specified in §67.20–5, §67.25–5, or §67.30–5, as applicable.

(96) (e) Lesser structures and piles, pile clusters or flare templates, etc., will not normally be required to be marked by obstruction lights, when they are located within 100 yards of a Class "A", "B" or "C" structure marked by established obstruction lights, but they shall be marked with red or white retro-reflective material, installed as prescribed by the District Commander.

(97) (f) All obstruction lights shall be installed in a manner which will permit at least one of them to be carried in sight of the mariner, regardless of the angle of approach, until he is within 50 feet of the structure visibility permitting.

(98) **§67.05–5 Multiple obstruction lights.**

(99) When more than one obstruction light is required by this part to mark a structure, all such lights shall be operated to flash in unison.

(100) **§67.05–10 Characteristics of obstruction lights.**

(101) All obstruction lights required by this part shall be powered from a reliable power source, including auxiliary power sources as necessary. They shall display a quick-flash characteristic of approximately 60 flashes per minute, unless prescribed otherwise in the permit issued by the District Commander. Their color shall be white when marking Class "A" and "B" structures, and either white or red, as prescribed by the District Commander, when marking Class "C" structures. In determining whether white or red lights shall be authorized, the District Commander shall take into consideration matters concerning, but not necessarily limited to, the dimensions of the structure and the depth of water in which it is located; the proximity of the structure to vessel routes; the nature and amount of vessel traffic; and the effect of background lighting.

(102) **§67.05–15 Operating periods of obstruction lights.**

(103) Obstruction lights shall be displayed at all times between the hours of sunset and sunrise, local time, commencing at the time the construction of a structure is begun. During construction and until such time as a platform capable of supporting the obstruction lights is completed, the fixed lights on an attending vessel shall be used. In addition, when lights are in use for general illumination to facilitate the construction or operation of a structure, and can be seen from any angle of approach at a distance equal to that prescribed for the obstruction lights for the class of structure, the actual operation of obstruction lights also will not be required.

(104) **§67.05–20 Minimum lighting requirements.**

(105) The obstruction lighting requirements prescribed in this part are the minimum requirements only and shall not preclude the maintainer from making application for authorization to establish more lights, or lights of greater intensity than required to be visible at the distances prescribed: provided, that the prescribed characteristics of color and flash duration are adhered to.

(106) **§67.05–25 Special lighting requirements.**

(107) Whenever a structure is erected in a position on or adjacent to the edges of navigable channels and fairways, or lines of demarcation, the District Commander is authorized to require the structure to be marked by the lights which in his judgment are necessary for the safety of marine commerce, and without regard to the fact that the structure may be located in an area in which either Class "B" or Class "C" requirements are otherwise applicable. The requirements for the lights in any of these cases, shall not exceed those established for structures in the Class "A" areas.

SUBPART 67.10–GENERAL REQUIREMENTS FOR FOG SIGNALS

(108) **§67.10–1 Apparatus requirements.**

(109) The fog signal required by §§67.20–10, 67.25–10, and 67.30–10 must:

(110) (a) Have its maximum intensity at a frequency between 100 and 1,100 Hertz;

(111) (b) Sound a 2-second blast every 20 seconds (2 seconds sound, 18 seconds silence) unless otherwise authorized by the District Commander;

(112) (c) Have the range required by §67.20–10, §67.25–10, or §67.30–10;

(113) (d) Have a height not exceeding 25 feet;

(114) (e) Have not more than eight sound sources;

(115) (f) Be approved by the Coast Guard under §67.10–15; and

(116) (g) Be permanently marked with:

(117) (l) The date of Coast Guard approval;

(118) (2) The manufacturer and date of manufacture;

(119) (3) A model designation;

(120) (4) The approved range; and

(121) (5) The power necessary to comply with the provisions of paragraph (c) of this section.

(122) **§67.10–5 Location requirements.**

(123) The fog signal required by §§67.20–10, 67.25–10, and 67.30–10 must:

(124) (a) Be located on the structure so that the sound signal produced is audible over 360° in a horizontal plane at all ranges up to and including the required range; and

(125) (b) Be located at least 10 feet but not more than 150 feet above mean high water.

(126) **§67.10–10 Operating requirements.**

(127) (a) Fog signals required by §§67.20–10, 67.25–10 and 67.30–10 must be operated continuously, regardless of visibility, unless the fog signal is controlled:

(128) (1) By an attendant on the structure;

(129) (2) Remotely by an attendant on a nearby structure; or

(130) (3) By a fog detection device capable of activating the fog signal when the visibility in any direction is reduced to the range at which fog signal operation is required by this part.

(131) (b) During construction and until such time as a fog signal is installed and operating on a platform, the whistle of an attending vessel moored alongside the platform may be used to sound the signal required for the structure by this part.

(132) **§67.10–15 Approval of fog signals.**

(133) (a) The Coast Guard approves a fog signal if:

(134) (1) It meets the requirements for fog signals in §67.10–1(a), (b), (c), (d), and (e) when tested under §67.10–20; or

(135) (2) It is similar to a fog signal which was tested and approved under the provisions of this section and the Coast Guard has approved all variations in design, construction, production, and manufacture from the fog signal tested.

(136) (b) A fog signal that is an identical production model of a fog signal which has been approved under paragraph (a) of this section is a Coast Guard approved fog signal.

Part 80–COLREGS Demarcation Lines

(137) **§80.01 General basis and purpose of demarcation lines.** (a) The regulations in this part establish the lines of demar-

cation delineating those waters upon which mariners shall comply with the International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) and those waters upon which mariners shall comply with the Inland Navigation Rules.

(138) (b) The waters inside of the lines are Inland Rules waters. The waters outside the lines are COLREGS waters.

(139) (c) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

(140) **§80.1705 Alaska**

(141) The 72 COLREGS shall apply on all the sounds, bays, harbors, and inlets of Alaska.

Part 110.–Anchorage Regulations

(142) **§110.1 General.** (a) The areas described in Subpart A of this part are designated as special anchorage areas pursuant to the authority contained in an act amending laws for preventing collisions of vessels approved April 22, 1940 (54 Stat. 150); Article 11 of section 1 of the act of June 7, 1897, as amended (30 Stat. 98; 33 U.S.C. 180), Rule 9 of section 1 of the act of February 8, 1895, as amended (28 Stat. 647; 33 U.S.C. 258), and Rule Numbered 13 of section 4233 of the Revised Statutes as amended (33 U.S.C. 322). Vessels not more than 65 feet in length, when at anchor in any special anchorage area, shall not be required to carry or exhibit the white anchor lights required by the Navigation Rules.

(143) (b) The anchorage grounds for vessels described in Subpart B of this part are established, and the rules and regulations in relation thereto adopted, pursuant to the authority contained in section 7 of the act of March 4, 1915, as amended (38 Stat. 1053; 33 U.S.C. 471).

(144) (c) All bearings in this part are referred to true meridian.

(145) (d) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

Subpart A–Special Anchorage Areas (None applicable to this Coast Pilot.)

Subpart B–Anchorage Grounds

(146) **§110.233 Prince William Sound, Alaska.** (a) The anchorage grounds. In Prince William Sound, Alaska, beginning at a point at latitude 60°40′00″N., longitude 146°40′00″W.; thence south to

(147) 60°38′00″N., 146°40′00″W.; thence east to

(148) 60°38′00″N., 146°30′00″W.; thence north to

(149) 60°39′00″N., 146°30′00″W.; thence northwesterly to the beginning point.

(150) (b) The regulations. (1) This anchorage area is for the temporary use of vessels during:

(151) (i) Adverse weather or tidal conditions;

(152) (ii) Vessel equipment failure; or

(153) (iii) Delays at Port Valdez;

(154) (2) No vessel may anchor in this anchorage without notifying the vessel traffic center in Valdez; and

(155) (3) Each vessel anchored shall notify the vessel traffic center in Valdez when it weighs anchor.

Part 160–Ports and Waterways Safety-General

Subpart A–General

(156) **§160.1 Purpose.**

(157) (a) This subchapter contains regulations implementing the Ports and Waterways Safety Act (33 U.S.C. 1221) and related statutes.

(158) **§160.3 Definitions.**

(159) For the purposes of this subchapter:

(160) "Bulk" means material in any quantity that is shipped, stored, or handled without the benefit of package, label, mark or count and carried in integral or fixed independent tanks.

(161) "Captain of the Port" means the Coast Guard officer designated by the Commandant to command a Captain of the Port Zone as described in part 3 of this chapter.

(162) "Commandant" means the Commandant of the United States Coast Guard.

(163) "Commanding Officer, Vessel Traffic Services" means the Coast Guard officer designated by the Commandant to command a Vessel Traffic Service (VTS) as described in part 161 of this chapter.

(164) "Deviation" means any departure from any rule in this subchapter.

(165) "District Commander" means the Coast Guard officer designated by the Commandant to command a Coast Guard District as described in part 3 of this chapter.

(166) "ETA" means estimated time of arrival.

(167) "Length of Tow" means, when towing with a hawser, the length in feet from the stern of the towing vessel to the stern of the last vessel in tow. When pushing ahead or towing alongside, length of tow means the tandem length in feet of the vessels in tow excluding the length of the towing vessel.

(168) "Person" means an individual, firm, corporation, association, partnership, or governmental entity.

(169) "State" means each of the several States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Trust Territories of the Pacific Islands, the Commonwealth of the Northern Marianas Islands, and any other commonwealth, territory, or possession of the United States.

(170) "Tanker" means a self-propelled tank vessel constructed or adapted primarily to carry oil or hazardous materials in bulk in the cargo spaces.

(171) "Tank Vessel" means a vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue.

(172) "Vehicle" means every type of conveyance capable of being used as a means of transportation on land.

(173) "Vessel" means every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

(174) "Vessel Traffic Services (VTS)" means a service implemented under Part 161 of this chapter by the United States Coast Guard designed to improve the safety and efficiency of vessel traffic and to protect the environment. The VTS has the capability to interact with marine traffic and respond to traffic situations developing in the VTS area.

(175) "Vessel Traffic Service Area or VTS Area" means the geographical area encompassing a specific VTS area of service as described in Part 161 of this chapter. This area of service may be subdivided into sectors for the purpose of allocating responsibility to individual Vessel Traffic Centers or to identify different operating requirements.

(176) **Note:** Although regulatory jurisdiction is limited to the navigable waters of the United States, certain vessels will be encouraged or may be required, as a condition of port entry, to report beyond this area to facilitate traffic management within the VTS area.

(177) "VTS Special Area" means a waterway within a VTS area in which special operating requirements apply.

(178) **§160.5 Delegations.**

(179) (a) District Commanders and Captains of the Ports are delegated the authority to establish safety zones.

(180) (b) Under the provisions of 33 CFR 6.04-1 and 6.04-6, District Commanders and Captains of the Ports have been delegated authority to establish security zones.

(181) (c) Under the provisions 33 CFR §1.05-1, District Commanders have been delegated authority to establish regulated navigation area.

(182) (d) Subject to the supervision of the cognizant Captain of the Port and District Commander, Commanding Officers, Vessel Traffic Services are delegated authority under 33 CFR 1.01-30 to discharge the duties of the Captain of the Port that involve directing the operation, movement, and anchorage of vessels within a Vessel Traffic Service area including management of vessel traffic within anchorages, regulated navigation areas and safety zones, and to enforce Vessel Traffic Service and ports and waterways safety regulations. This authority may be exercised by Vessel Traffic Center personnel. The Vessel Traffic Center may, within the Vessel Traffic Service Area, provide information, make recommendations, or, to a vessel required under Part 161 of this chapter to participate in a Vessel Traffic Service, issue an order, including an order to operate or anchor as directed; required the vessel to comply with orders issued; specify times of entry, movement or departing; restrict operations as necessary for safe operation under the circumstances; or take other action necessary for control of the vessel and the safety of the port or of the marine environment.

(183) **§160.7 Appeals.**

(184) (a) Any person directly affected by a safety zone or an order or direction issued under this subchapter (33 CFR Subchapter P) may request reconsideration by the official who issued it or in whose name it was issued. This request may be made orally or in writing, and the decision of the official receiving the request may be rendered orally or in writing.

(185) (b) Any person directly affected by the establishment of a safety zone or by an order or direction issued by, or on behalf of, a Captain of the Port may appeal to the District Commander through the Captain of the Port. The appeal must be in writing, except as allowed under paragraph (d) of this section, and shall contain complete supporting documentation and evidence which the appellant wishes to have considered. Upon receipt of the appeal, the District Commander may direct a representative to gather and submit documentation or other evidence which would be necessary or helpful to a resolution of the appeal. A copy of this documentation and evidence is made available to the appellant. The appellant is afforded five working days from the date of receipt to submit rebuttal materials. Following submission of all materials, the District Commander issues a ruling, in writing, on the appeal. Prior to issuing the ruling, the District Commander may, as a matter of discretion, allow oral presentation on the issues.

(186) (c) Any person directly affected by the establishment of a safety zone or by an order or direction issued by a District Commander, or who receives an unfavorable ruling on an appeal taken under paragraph (b) of this section, may appeal through the District Commander to the Chief, Office of Marine Safety, Security and Environmental Protection, U.S. Coast Guard, Washington, D.C. 20593. The appeal must be in writing, except as allowed under paragraph (d) of this section. The District Commander forwards the appeal, all the documents and evidence which formed the record upon which the order or direction was issued or the ruling under paragraph (b) of this section was made, and any comments which might be relevant, to the Chief, Office of Marine Safety, Security and Environmental Protection. A copy of this documentation and evidence is made available to the appellant. The appellant is afforded five working days from the date of receipt to submit rebuttal materials to the Chief, Office of Marine Safety, Security and Environmental Protection. The decision of the Chief, Office of Marine Safety, Security and Environmental Protection is based upon the materials submitted, without oral argument or presentation. The decision of the Chief, Office of Marine Safety, Security and Environmental Protection is issued in writing and constitutes final agency action.

(187) (d) If the delay in presenting a written appeal would have significant adverse impact on the appellant, the appeal under paragraphs (b) and (c) of this section may initially be presented orally. If an initial presentation of the appeal is made orally, the appellant must submit the appeal in writing within five days of the oral presentation to the Coast Guard official to whom the presentation was made. The written appeal must contain, at a minimum, the basis for the appeal and a summary of the material presented orally. If requested, the official to whom the appeal is directed may stay the effect of the action while the ruling is being appealed.

Subpart B–Control of Vessel and Facility Operations

(188) **§160.101 Purpose.**

(189) This subpart describes the authority exercised by District Commanders and Captains of the Ports to insure the safety of vessels and waterfront facilities, and the protection of the navigable waters and the resources therein. The controls described in this subpart are directed to specific situations and hazards.

(190) **§160.103 Applicability.**

(191) (a) This subpart applies to any-

(192) (1) Vessel on the navigable waters of the United States, except as provided in paragraphs (b) and (c) of this section;

(193) (2) Bridge or other structure on or in the navigable waters of the United States; and

(194) (3) Land structure or shore area immediately adjacent to the navigable waters of the United States.

(195) (b) This subpart does not apply to any vessel on the Saint Lawrence Seaway.

(196) (c) Except pursuant to international treaty, convention, or agreement, to which the United States is a party, this subpart does not apply to any foreign vessel that is not destined for, or departing from, a port or place subject to the jurisdiction of the United States and that is in-

(197) (1) Innocent passage through the territorial sea of the United States;

(198) (2) Transit through the navigable waters of the United States which form a part of an international strait.

(199) **§160.105 Compliance with orders.**

(200) Each person who has notice of the terms of an order issued under this subpart must comply with that order.

(201) **§160.107 Denial of entry.**

(202) Each District Commander or Captain of the Port, subject to recognized principles of international law, may deny entry into the navigable waters of the United States or to any port or place under the jurisdiction of the United States, and within the district or zone of that District Commander or Captain of the Port, to any vessel not in compliance with the provisions of the Port and Tanker Safety Act (33 U.S.C. 1221-1232) or the regulations issued thereunder.

(203) **§160.109 Waterfront facility safety.**

(204) (a) To prevent damage to, or destruction of, any bridge or other structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters, and to protect the navigable waters and the resources therein from harm resulting from vessel or structure damage, destruction, or loss, each District Commander or Captain of the Port may-

(205) (1) Direct the handling, loading, unloading, storage, stowage, and movement (including the emergency removal, control, and disposition) of explosives or other dangerous articles and substances, including oil or hazardous material as those terms are defined in Section 4417a of the Revised Statutes, as amended, (46 U.S.C. 391a) on any structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters; and

(206) (2) Conduct examinations to assure compliance with the safety equipment requirements for structures.

(207) **§160.111 Special orders applying to vessel operations.**

(208) Each District Commander or Captain of the Port may order a vessel to operate or anchor in the manner directed when–

(209) (a) The District Commander or Captain of the Port has reasonable cause to believe that the vessel is not in compliance with any regulation, law or treaty;

(210) (b) The District Commander or Captain of the Port determines that the vessel does not satisfy the conditions for vessel operation and cargo transfers specified in §160.113; or

(211) (c) The District Commander or Captain of the Port has determined that such order is justified in the interest of safety by reason of weather, visibility, sea conditions, temporary port congestion, other temporary hazardous circumstances, or the condition of the vessel.

(212) **§160.113 Prohibition of vessel operation and cargo transfers.**

(213) (a) Each District Commander or Captain of the Port may prohibit any vessel subject to the provisions of section 4417a of the Revised Statutes (46 U.S.C. 391a) from operating in the navigable waters of the United States, or from transferring cargo or residue in any port or place under the jurisdiction of the United States, and within the district or zone of that District Commander or Captain of the Port, if the District Commander or the Captain of the Port determines that the vessel's history of accidents, pollution incidents, or serious repair problems creates reason to believe that the vessel may be unsafe or pose a threat to the marine environment.

(214) (b) The authority to issue orders prohibiting operation of the vessels or transfer of cargo or residue under paragraph (a) of this section also applies if the vessel:

(215) (1) Fails to comply with any applicable regulation;

(216) (2) Discharges oil or hazardous material in violation of any law or treaty of the United States;

(217) (3) Does not comply with applicable vessel traffic service requirements;

(218) (4) While underway, does not have at least one licensed deck officer on the navigation bridge who is capable of communicating in the English language.

(219) (c) When a vessel has been prohibited from operating in the navigable waters of the United States under paragraphs (a) or (b) of this section, the District Commander or Captain of the Port may allow provisional entry into the navigable waters of the United States, or into any port or place under the jurisdiction of the United States and within the district or zone of that District Commander or Captain of the Port, if the owner or operator of such vessel proves to the satisfaction of the District Commander or Captain of the Port, that the vessel is not unsafe or does not pose a threat to the marine environment, and that such entry is necessary for the safety of the vessel or the persons on board.

(220) (d) A vessel which has been prohibited from operating in the navigable waters of the United States, or from transferring cargo or residue in a port or place under the jurisdiction of the United States under the provisions of paragraph (a) or (b)(1), (2) or (3) of this section, may be allowed provisional entry if the owner or operator proves, to the satisfaction of the District Commander or Captain of the Port that has jurisdiction, that the vessel is no longer unsafe or a threat to the environment, and that the condition which gave rise to the prohibition no longer exists.

(221) **§160.115 Withholding of clearance.**

(222) (a) Each District Commander or Captain of the Port may request the Secretary of the Treasury, or the authorized representative thereof, to withhold or revoke the clearance required by 46 U.S.C. 91 of any vessel, the owner or operator of which is subject to any penalties under 33 U.S.C. 1232.

Subpart C–Notifications of Arrivals, Departures, Hazardous Conditions, and Certain Dangerous Cargoes

(223) **§160.201 Applicability and exceptions to applicability.**

(224) (a) This subpart prescribes notification requirements for U.S. and foreign vessels bound for or departing from ports or places in the United States.

(225) (b) This part does not apply to recreational vessels under 46 U.S.C. 4301 et seq. and, except §160.215, does not apply to passenger and supply vessels when they are employed in the exploration for or in the removal of oil, gas, or mineral resources on the continental shelf.

(226) (c) Sections 160.207 and 160.209 do not apply to the following:

(227) (1) Each vessel of less than 1600 gross tons, except foreign vessels of less than 1600 gross tons entering ports or places in the Miami Captain of the Port Zone as described in §3.35-10(b) of this chapter.

(228) (2) Each vessel operating exclusively within a Captain of the Port zone.

(229) (3) Each vessel operating upon a route that is described in a schedule that is submitted to the Captain of the Port for each port or place of destination listed in the schedule at least 24 hours in advance of the first date and time of arrival listed on the schedule and contains–

(230) (i) Name, country of registry, and call sign or official number of the vessel;

(231) (ii) Each port or place of destination; and

(232) (iii) Dates and times of arrivals and departures at those ports or places.

(233) (4) Each vessel arriving at a port or place under force majeure.

(234) (5) Each vessel entering a port of call in the United States in compliance with the Automated Mutual Assistance Vessel Rescue System (AMVER).

(235) (6) Each vessel entering a port of call in the United States in compliance with the U.S. Flag Merchant Vessel Locator Filing System (USMER).

(236) (7) Each barge.

(237) (8) Each public vessel.

(238) (9) United States or Canadian flag vessels, except tank vessels or vessels carrying certain dangerous cargo, which operate solely on the Great Lakes.

(239) (d) Sections 160.207, 160.211, and 160.213 apply to each vessel upon the waters of the Mississippi River between its mouth and mile 235, Lower Mississippi River, above Head of Passes. Sections 160.207, 160.211, and 160.213 do not apply to each vessel upon the waters of the Mississippi River between its sources and mile 235, above Head of Passes, and all the tributaries emptying thereinto and their tributaries, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway, and the Red River of the North.

(240) **§160.203 Definitions.**

(241) As used in this subpart:

(242) "Agent" means any person, partnership, firm, company or corporation engaged by the owner or charterer of a vessel to act in their behalf in matters concerning the vessel.

(243) "Carried in bulk" means a commodity that is loaded or carried on board a vessel without containers or labels and received and handled without mark or count.

(244) "Certain dangerous cargo" includes any of the following:

(245) (a) Class A explosives, as defined in 46 CFR 146.20–7 and 49 CFR 173.53.

(246) (b) Oxidizing materials or blasting agents for which a permit is required under 49 CFR 176.415.

(247) (c) Highway route controlled quantity radioactive material, as defined in 49 CFR 173.403(l), or Fissile Class III shipments of fissile radioactive material, as defined in 49 CFR 173.455(a)(3).

(248) (d) Each cargo under Table 1 of 46 CFR Part 153 when carried in bulk.

(249) (e) Any of the following when carried in bulk:

(250) Acetaldehyde

(251) Ammonia, anhydrous

(252) Butadiene

(253) Butane

(254) Butene

(255) Butylene Oxide

(256) Chlorine

(257) Ethane

(258) Ethylene

(259) Ethylene Oxide

(260) Methane

(261) Methyl Acetylene, Propadiene Mixture, Stablized

(262) Methyl Bromide

(263) Methyl Chloride

(264) Phosphorous, elemental

(265) Propane

(266) Propylene

(267) Sulfur Dioxide

(268) Vinyl Chloride

(269) "Great Lakes" means Lakes Superior, Michigan, Huron, Erie, and Ontario, their connecting and tributary waters, the Saint Lawrence River as far east as Saint Regis, and adjacent port areas.

(270) "Hazardous condition" means any condition that could adversely affect the safety of any vessel, bridge, structure, or shore area or the environmental quality of any port, harbor, or navigable water of the United States. This condition could include but is not limited to, fire, explosion, grounding, leakage, damage, illness of a person on board, or a manning shortage.

(271) "Port or place of departure" means any port or place in which a vessel is anchored or moored.

(272) "Port or place of destination" means any port or place to which a vessel is bound to anchor or moor.

(273) "Public vessel" means a vessel owned by and being used in the public service of the United States. This definition does not include a vessel owned by the United States and engaged in a trade or commercial service or a vessel under contract or charter to the United States.

(274) **§160.205 Waivers.**

(275) The Captain of the Port may waive, within that Captain of the Port's designated zone, any of the requirement of this subpart for any vessel or class of vessels upon finding that the vessel, route, area of operations, conditions of the voyage, or other circumstances are such that application of this subpart is unnecessary or impractical for purposes of safety, environmental protection, or national security.

(276) **§160.207 Notice of arrival: vessels bound for ports or places in the United States.**

(277) (a) The owner, master, agent or person in charge of a vessel on a voyage of 24 hours or more shall report under paragraph (c) of this section at least 24 hours before entering the port or place of destination.

(278) (b) The owner, master, agent, or person in charge of a vessel on a voyage of less than 24 hours shall report under paragraph (c) of this section before departing the port or place of departure.

(279) (c) The Captain of the Port of the port or place of destination in the United States must be notified of:

(280) (1) The name, country of registry, and call sign or official number of the vessel;

(281) (2) The name of the port or place of departure.

(282) (3) The name of the port or place of destination; and

(283) (4) The estimated time of arrival at the port or place.

(284) If the estimated time of arrival changes by more than six hours from the latest reported time, the Captain of the port must be notified of the correction as soon as the change is known.

(285) (5) The International Maritime Organization (IMO) international number of each foreign flag vessel of 5,000 gross tons or more, which is constructed or adapted to carry, or that carries, oil in bulk as cargo or cargo residue.

(286) **§160.209 [Reserved]**

(287) **§160.211 Notice of arrival: vessels carrying certain dangerous cargo.**

(288) (a) The owner, master, agent, or person in charge of a vessel, except a barge, bound for a port or place in the United States carrying certain dangerous cargo shall notify the Captain of the Port of the port or place of destination at least 24 hours before entering that port or place of–

(289) (1) The name, country of registry, and call sign or official number of the vessel;

(290) (2) The location of the vessel at the time of the report;

(291) (3) The name of each certain dangerous cargo carried;

(292) (4) The amount of each certain dangerous cargo carried;

(293) (5) The stowage location of each certain dangerous cargo;

(294) (6) The operational condition of the equipment under 33 CFR 164.35;

(295) (7) The name of the port or place of destination; and

(296) (8) The estimated time of arrival at that port or place. If the estimated time of arrival changes by more than six hours from the latest reported time, the Captain of the port must be notified of the correction as soon as the change is known.

(297) (b) The owner, master, agent or person in charge of a barge bound for a port or place in the United States carrying certain dangerous cargo shall report the information required in paragraph (a)(1) through (a)(8) of this section to the Captain of the Port of the port or place of destination at least 4 hours before entering that port or place.

(298) **§160.213 Notice of departure; vessels carrying certain dangerous cargo.**

(299) (a) The owner, master, agent, or person in charge of a vessel, except a barge, departing from a port or place in the United States for any other port or place and carrying certain dangerous cargo shall notify the Captain of the Port or place of departure at least 24 hours before departing, unless this notification was made within 2 hours after the vessel's arrival, of–

(300) (1) The name, country of registry, and call sign or official number of the vessel;

(301) (2) The name of each certain dangerous cargo carried;

(302) (3) The amount of each certain dangerous cargo carried;

(303) (4) The stowage location of each certain dangerous cargo carried;

(304) (5) The operational condition of the equipment under 33 CFR 164.35;

(305) (6) The name of the port or place of departure; and

(306) (7) The estimated time of departure from the port or place.

(307) If the estimated time of departure changes by more than six hours from the latest reported time, the Captain of the Port must be notified of the correction as soon as the change is known.

(308) (b) The owner, master, agent, or person in charge of a barge departing from a port or place in the United States for any other port or place and carrying certain dangerous cargo shall report the information required in paragraph (a)(1) through (a)(7) of this section to the Captain of the Port of the port or place of departure at least 4 hours before departing, unless this report was made within 2 hours after the barge's arrival.

(309) **§160.215 Notice of hazardous conditions.**

(310) Whenever there is a hazardous condition on board a vessel, the owner, master, agent or person in charge shall immediately notify the Captain of the Port of the port or place of destination and the Captain of the Port of the port or place in which the vessel is located of the hazardous condition.

Part 161 Vessel Traffic Management

Subpart A–Vessel Traffic Services

(311) **General Rules**

(312) **§161.1 Purpose and Intent.**

(313) (a) The purpose of this part is to promulgate regulations implementing and enforcing certain sections of the Ports and Waterways Safety Act (PWSA) setting up a national system of Vessel Traffic Services that will enhance navigation, vessel safety, and marine environmental protection and promote safe vessel movement by reducing the potential for collisions, rammings, and groundings, and the loss of lives and property associated with these incidents within VTS areas established hereunder.

(314) (b) Vessel Traffic Services provide the mariner with information related to the safe navigation of a waterway. This information, coupled with the mariner's compliance with the provisions set forth in this part, enhances the safe routing of vessels through congested waterways or waterways of particular hazard. Under certain circumstances, a VTS may issue directions to control the movement of vessels in order to minimize the risk of collision between vessels, or damage to property or the environment.

(315) (c) The owner, operator, charterer, master, or person directing the movement of a vessel remains at all times responsible for the manner in which the vessel is operated and maneuvered, and is responsible for the safe navigation of the vessel under all circumstances. Compliance with these rules or with a direction of the VTS is at all times contingent upon the exigencies of safe navigation.

(316) (d) Nothing in this part is intended to relieve any vessel, owner, operator, charterer, master, or person directing the movement of a vessel from the consequences of any neglect to comply with this part or any other applicable law or regulations (e.g., the International Regulations for Prevention of Collisions at Sea, 1972 (72 COLREGS) or the Inland Navigation Rules) or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

(317) **§161.2 Definitions.**

(318) For the purposes of this part:

(319) "Cooperative Vessel Traffic Services (CVTS)" means the system of vessel traffic management established and jointly operated by the United States and Canada within adjoining waters. In addition, CVTS facilitates traffic movement and anchorages, avoids jurisdictional disputes, and renders assistance in emergencies in adjoining United States and Canadian waters.

(320) "Hazardous Vessel Operating Condition" means any condition related to a vessel's ability to safely navigate or maneuver, and includes, but is not limited to:

(321) (1) The absence or malfunction of vessel operating equipment, such as propulsion machinery, steering gear, radar system, gyrocompass, depth sounding device, automatic radar plotting aid (ARPA), radiotelephone, automated dependent surveillance equipment, navigational lighting, sound signaling devices or similar equipment.

(322) (2) Any condition on board the vessel likely to impair navigation, such as lack of current nautical charts and publications, personnel shortage, or similar condition.

(323) (3) Vessel characteristics that affect or restrict maneuverability, such as cargo arrangement, trim, loaded condition, underkeel clearance, speed, or similar characteristics.

(324) "Precautionary Area" means a routing measure comprising an area within defined limits where vessels must navigate with particular caution and within which the direction of traffic may be recommended.

(325) "Towing Vessel" means any commercial vessel engaged in towing another vessel astern, alongside, or by pushing ahead.

(326) "Vessel Movement Reporting System (VMRS)" is a system used to manage and track vessel movements within a VTS area. This is accomplished by a vessel providing information under established procedures as set forth in this part, or as directed by the VTS.

(327) "Vessel Movement Reporting System (VMRS) User" means a vessel, or an owner, operator, charterer, master, or person directing the movement of a vessel, that is required to participate in a VMRS within a VTS area. VMRS participation is required for:

(328) (1) Every power-driven vessel of 40 meters (approximately 131 feet) or more in length, while navigating;

(329) (2) Every towing vessel of 8 meters (approximately 26 feet) or more in length, while navigating; or

(330) (3) Every vessel certificated to carry 50 or more passengers for hire, when engaged in trade.

(331) "Vessel Traffic Center (VTC)" means the shore-based facility that operates the vessel traffic service for the Vessel Traffic Service area or sector within such an area.

(332) "Vessel Traffic Services (VTS)" means a service implemented by the United States Coast Guard designed to improve the safety and efficiency of vessel traffic and to protect the environment. The VTS has the capability to interact with marine traffic and respond to traffic situations developing in the VTS area.

(333) "Vessel Traffic Service Area or VTS Area" means the geographical area encompassing a specific VTS area of service. This area of service may be subdivided into sectors for the purpose of allocating responsibility to individual Vessel Traffic Centers or to identify different operating requirements.

(334) **Note:** Although regulatory jurisdiction is limited to the navigable waters of the United States, certain vessels will be encouraged or may be required, as a condition of port entry, to report beyond this area to facilitate traffic management within the VTS area.

(335) "VTS Special Area" means a waterway within a VTS area in which special operating requirements apply.

(336) "VTS User" means a vessel, or an owner, operator, charterer, master, or person directing the movement of a vessel, that is:

(337) (a) Subject to the Vessel Bridge-to-Bridge Radiotelephone Act; or

(338) (b) Required to participate in a VMRS within a VTS area (VMRS User).

(339) "VTS User's Manual" means the manual established and distributed by the VTS to provide the mariner with a description of the services offered and rules in force for that VTS. Additionally, the manual may include chartlets showing the area and sector boundaries, general navigational information about the area, and procedures, radio frequencies, reporting provisions and other information which may assist the mariner while in the VTS area.

(340) **§161.3 Applicability.**

(341) The provisions of this subpart shall apply to each VTS User and may also apply to any vessel while underway or at anchor on the navigable waters of the United States within a VTS area, to the extent the VTS considers necessary.

(342) **§161.4 Requirement to carry the rules.**

(343) Each VTS User shall carry on board and maintain for ready reference a copy of these rules.

(344) **Note:** These rules are contained in the applicable U.S. Coast Pilot, the VTS User's Manual which may be obtained by contacting the appropriate VTS, and periodically published in the Local Notice to Mariners. The VTS User's Manual and the World VTS Guide, an International Maritime Organization (IMO) recognized publication, contain additional information which may assist the prudent mariner while in the appropriate VTS area.

(345) **§161.5 Deviations from the rules.**

(346) (a) Requests to deviate from any provision in this part, either for an extended period of time or if anticipated before the start of a transit, must be submitted in writing to the appropriate District Commander. Upon receipt of the written request, the District Commander may authorize a deviation if it is determined that such a deviation provides a level of safety equivalent to that provided by the required measure or is a maneuver considered necessary for safe navigation under the circumstances. An application for an authorized deviation must state the need and fully describe the proposed alternative to the required measure.

(347) (b) Requests to deviate from any provision in this part due to circumstances that develop during a transit or immediately preceding a transit, may be made verbally to the appropriate VTS Commanding Officer. Requests to deviate shall be made as far in advance as practicable. Upon receipt of the request, the VTS Commanding Officer may authorize a deviation if it is determined that, based on vessel handling characteristics, traffic density, radar contacts, environmental conditions and other relevant information, such a deviation provides a level of safety equivalent to that provided by the required measure or is a maneuver considered necessary for safe navigation under the circumstances.

(348) **Services, VTS Measures, and Operating Requirements**

(349) **§161.10 Services.**

(350) To enhance navigation and vessel safety, and to protect the marine environment, a VTS may issue advisories, or respond to vessel requests for information, on reported conditions within the VTS area, such as:

(351) (a) Hazardous conditions or circumstances;

(352) (b) Vessel congestion;

(353) (c) Traffic density;

(354) (d) Environmental conditions;

(355) (e) Aids to navigation status;

(356) (f) Anticipated vessel encounters;

(357) (g) Another vessel's name, type, position, hazardous vessel operating conditions, if applicable, and intended navigation movements, as reported;

(358) (h) Temporary measures in effect;

(359) (i) A description of local harbor operations and conditions, such as ferry routes, dredging, and so forth;

(360) (j) Anchorage availability; or

(361) (k) Other information or special circumstances.

(362) **§161.11 VTS measures.**

(363) (a) A VTS may issue measures or directions to enhance navigation and vessel safety and to protect the marine environment, such as, but not limited to:

(364) (1) Designating temporary reporting points and procedures;

(365) (2) Imposing vessel operating requirements; or

(366) (3) Establishing vessel traffic routing schemes.

(367) (b) During conditions of vessel congestion, restricted visibility, adverse weather, or other hazardous circumstances, a VTS may control, supervise, or otherwise manage traffic, by specifying times of entry, movement, or departure to, from, or within a VTS area.

(368) **§161.12 Vessel operating requirements.**

(369) (a) Subject to the exigencies of safe navigation, a VTS User shall comply with all measures established or directions issued by a VTS.

(370) (1) If, in a specific circumstance, a VTS User is unable to safely comply with a measure or direction issued by the VTS, the VTS User may deviate only to the extent necessary to avoid endangering persons, property or the environment. The deviation shall be reported to the VTS as soon as is practicable.

(371) (b) When not exchanging communications, a VTS User must maintain a listening watch as required by §26.04(e) of this chapter on the VTS frequency designated in Table 161.12(b) (VTS Call Signs, Designated Frequencies, and Monitoring Areas). In

addition, the VTS User must respond promptly when hailed and communicate in the English language.

(372) **Note:** As stated in 47 CFR 80.148(b), a VHF watch on Channel 16 (156.800 MHz) is not required on vessels subject to the Vessel Bridge-to-Bridge Radiotelephone Act and participating in a Vessel Traffic Service (VTS) system when the watch is maintained on both the vessel bridge-to-bridge frequency and a designated VTS frequency.

Table161.12(b)—VESSEL TRAFFIC SERVICES (VTS) CALL SIGNS, DESIGNATED FREQUENCIES, AND MONITORING AREAS

Vessel traffic services (call sign)	Designated frequency[1] (channel designation)	Monitoring area
	New York	
New York Traffic[2]	156.700 MHz (Ch. 14)	The waters of the Lower New York Bay west of a line drawn from Norton Point to Breezy Point and north of a line drawn from Ambrose Entrance Lighted Gong Buoy #1 to Ambrose Channel Lighted Gong Buoy #9 thence to West Bank Light and thence to Great Kills Light. The waters of the Upper New York Bay, south of 40°42.40′N. (Brooklyn Bridge) and 40°43.70′N. (Holland Tunnel Ventilator Shaft); and in Newark Bay, north of 40°38.25′N. (Arthur Kill Railroad Bridge), and south of 40°41.95′N. (Lehigh Valley Draw Bridge); and the Kill Van Kull.
	156.550 MHz (Ch. 11)	The waters of Raritan Bay east of a line drawn from Great Kills Light to Point Comfort in New Jersey and south of a line drawn from Great Kills Light to West Bank Light, thence to Ambrose Channel Lighted Gong Buoy #9, and thence to Ambrose Channel Lighted Gong Buoy #1, and west of a line drawn from Ambrose Channel Lighted Gong Buoy #1 to the Sandy Hook Channel Entrance Buoys (Sandy Hook Lighted Gong Buoy #1 and Sandy Hook Lighted Bell Buoy #2).
	156.600 MHz (Ch. 12)	Each vessel at anchor within the above areas.
	Houston[2]	
Houston Traffic		The navigable waters north of 29°N., west of 94°20′W., south of 29°49′N., and east of 95°20′W.:
	156.550 MHz (Ch. 11)	The navigable waters north of a line extending due west from the southern most end of Exxon Dock #1 (29°43.37′N., 95°01.27′W.)
	156.600 MHz (Ch 12).....	The navigable waters south of a line extending due west from the southern most end of Exxon Dock #1 (29°43.37′N., 95°01.27′W.).
	Berwick Bay	
Berwick Traffic	156.550 MHz (Ch. 11)	The navigable waters south of 29°45′N., west of 91°10′W., north of 29°37′N., and east of 91°18′W.
	St. Marys River	
Soo Control	156.600 MHz (Ch. 12)	The navigable waters of the St. Marys River between 45°57′N. (De Tour Reef Light) and 46°38.7′N. (Ile Parisienne Light), except the St. Marys Falls Canal and those navigable waters east of a line from 46°04.16′N. and 46°01.57′N. (La Pointe to Sims Point in Potagannissing Bay and Worsley Bay).

San Francisco[2]		
San Francisco Traffic ..	156.600 MHz (Ch. 12).....	The waters within a 38 nautical mile radius of Mount Tamalpais (37°55.8′N., 122°34.6′W.) excluding the San Francisco Offshore Precautionary Area.
	156.700 MHz (Ch. 14).....	The waters of the San Francisco Offshore Precautionary Area eastward to San Francisco Bay including its tributaries extending to the ports of Stockton, Sacramento and Redwood City.
Puget Sound[3]		
Seattle Traffic[4]	156.700 MHz (Ch. 14).....	The navigable waters of Puget Sound, Hood Canal and adjacent waters south of a line connecting Marrowstone Point and Lagoon Point in Admiralty Inlet and south of a line drawn due east from the southernmost tip of Possession Point on Whidbey Island to the shoreline.
	156.250 MHz (Ch. 5A)	The navigable waters of the Strait of Juan de Fuca east of 124°40′W. excluding the waters in the central portion of the Strait of Juan de Fuca north and east of Race Rocks; the navigable waters of the Strait of Georgia east of 122°52′W.; the San Juan Island Archipelago, Rosario Strait, Bellingham Bay; Admiralty Inlet north of a line connecting Marrowstone Point and Lagoon Point and all waters east of Whidbey Island north of a line drawn due east from the southernmost tip of Possession Point on Whidbey Island to the shoreline.
Tofino Traffic[5].....	156.725 MHz (Ch. 74).....	The waters west of 124°40′W. within 50 nautical miles of the coast of Vancouver Island including the waters north of 48°N., and east of 127°W.
Vancouver Traffic	156.550 MHz (Ch. 11).....	The navigable waters of the Strait of Georgia west of 122°52′W., the navigable waters of the central Strait of Juan de Fuca north and east of Race Rocks, including the Gulf Island Archipelago, Boundary Pass and Haro Strait.
Prince William Sound[6]		
Valdez Traffic	156.650 MHz (Ch. 13).....	The navigable waters south of 61°05′N., east of 147°20′W., north of 60°N., and west of 146°30′W.; and, all navigable waters in Port Valdez.
Louisville[6]		
Louisville Traffic.....	156.650 MHz (Ch. 13).....	The navigable waters of the Ohio River between McAlpine Locks (Mile 606) and Twelve Mile Island (Mile 593), only when the McAlpine upper pool gauge is at approximately 13.0 feet or above.

NOTES:

[1] In the event of a communication failure either by the vessel traffic center or the vessel or radio congestion on a designated VTS frequency, communications may be established on an alternate VTS frequency. The bridge-to-bridge navigational frequency, 156.650 MHz (Channel 13), is monitored in each VTS area; and it may be used as an alternate frequency, however, only to the extent that doing so provides a level of safety beyond that provided by other means.

[2] Designated frequency monitoring is required within U.S. navigable waters. In areas which are outside the U.S. navigable waters, designated frequency monitoring is voluntary. However, prospective VTS Users are encouraged to monitor the designatedfrequency.

[3] A Cooperative Vessel Traffic Service was established by the United States and Canada within adjoining waters. The appropriate vessel traffic center administers the rules issued by both nations; however, it will enforce only its own set of rules within its jurisdiction.

[4] Seattle Traffic may direct a vessel to monitor the other primary VTS frequency 156.250 MHz or 156.700 MHz (Channel 5A or 14) depending on traffic density, weather conditions, or other safety factors, rather than strictly adhering to the designated frequency required for each monitoring area as defined above. This does not require a vessel to monitor both primary frequencies.

[5] A portion of Tofino Sector's monitoring area extends beyond the defined CVTS area. Designated frequency monitoring is voluntary in these portions outside of VTS jurisdiction, however, prospective VTS Users are encouraged to monitor the designated frequency.

[6] The bridge-to-bridge navigational frequency, 156.650 MHz (Channel 13), is used in these VTSs because the level of radiotelephone transmissions does not warrant a designated VTS frequency. The listening watch required by §26.05 of this chapter is not limited to the monitoring area.

(373) (c) As soon as practicable, a VTS User shall notify the VTS of any of the following:

(374) (1) A marine casualty as defined in 46 CFR 4.05-1;

(375) (2) Involvement in the ramming of a fixed or floating object;

(376) (3) A pollution incident as defined in §151.15 of this chapter:

(377) (4) A defect or discrepancy in an aid to navigation;

(378) (5) A hazardous condition as defined in §160.203 of this chapter;

(379) (6) Improper operation of vessel equipment required by Part 164 of this chapter;

(380) (7) A situation involving hazardous materials for which a report is required by 49 CFR 176.48; and

(381) (8) A hazardous vessel operating condition as defined in §161.2.

(382) **§161.13 VTS Special Area Operating Requirements.**

(383) The following operating requirements apply within a VTS Special Area:

(384) (a) A VTS User shall, if towing astern, do so with as short a hawser as safety and good seamanship permits.

(385) (b) A VMRS User shall:

(386) (1) Not enter or get underway in the area without prior approval of the VTS;

(387) (2) Not enter a VTS Special Area if a hazardous vessel operating condition or circumstance exists;

(388) (3) Not meet, cross, or overtake any other VMRS User in the area without prior approval of the VTS; and

(389) (4) Before meeting, crossing, or overtaking any other VMRS User in the area, communicate on the designated vessel bridge-to-bridge radiotelephone frequency, intended navigation movements, and any other information necessary in order to make safe passing arrangements. This requirement does not relieve a vessel of any duty prescribed by the International Regulations for Prevention of Collisions at Sea, 1972 (72 COLREGS) or the Inland Navigation Rules.

(390) **Subpart B–Vessel Movement Reporting System**

(391) **§161.15 Purpose and Intent.**

(392) (a) A Vessel Movement Reporting System (VMRS) is a system used to manage and track vessel movements within a VTS area. This is a accomplished by requiring that vessels provide information under established procedures as set forth in this part, or as directed by the VTS.

(393) (b) To avoid imposing an undue reporting burden or unduly congesting radiotelephone frequencies, reports shall be limited to information which is essential to achieve the objectives of the VMRS. These reports are consolidated into four reports (sailing plan, position, sailing plan deviation and final).

(394) **§161.16 Applicability.**

(395) The provisions of this subpart shall apply to the following VMRS Users:

(396) (a) Every power-driven vessel of 40 meters (approximately 131 feet) or more in length, while navigating;

(397) (b) Every towing vessel of 8 meters (approximately 26 feet) or more in length, while navigating; or

(398) (c) Every vessel certificated to carry 50 or more passengers for hire, when engaged in trade.

(399) **§161.17 Definitions.**

(400) As used in this subpart: Published means available in a widely-distributed and publicly available medium (e.g., VTS User's Manual, ferry schedule, Notice to Mariners).

(401) **§161.18 Reporting requirements.**

(402) (a) A VTS may: (1) Direct a vessel to provide any of the information set forth in Table 161.18(a) (IMO Standard Ship Reporting System);

(403) (2) Establish other means of reporting for those vessels unable to report on the designated frequency; or

(404) (3) Require reports from a vessel in sufficient time to allow advance vessel traffic planning.

(405) (b) All reports required by this part shall be made as soon as is practicable on the frequency designated in Table 161.12(b) (VTS Call Signs, Designated Frequencies, and Monitoring Areas).

(406) (c) When not exchanging communications, a VMRS User must maintain a listening watch as described in §26.04(e) of this chapter on the frequency designated in Table 161.12(b) (VTS Call Signs, Designated Frequencies, and Monitoring Areas). In addition, the VMRS User must respond promptly when hailed and communicate in the English language.

(407) **Note:** As stated in 47 CFR 80.148(b), a VHF watch on Channel 16 (156.800 MHz) is not required on vessels subject to the Vessel Bridge-to-Bridge Radiotelephone Act and participating in a Vessel Traffic Service (VTS) system when the watch is maintained on both the vessel bridge-to-bridge frequency and a designated VTS frequency.

(408) (d) When reports required by this part include time information, such information shall be given using the local time zone in effect and the 24-hour military clock system.

(409) **§161.19 Sailing Plan (SP).**

(410) Unless otherwise stated, at least 15 minutes before navigating a VTS area, a vessel must report the:

(411) (a) Vessel name and type;

(412) (b) Position;

(413) (c) Destination and ETA;

(414) (d) Intended route;

(415) (e) Time and point of entry; and

(416) (f) Dangerous cargo on board or in its tow, as defined in §160.203 of this chapter, and other required information as set out in §160.211 and §160.213 of this chapter, if applicable.

(417) **§161.20 Position Report (PR).**

(418) A vessel must report its name and position:

(419) (a) Upon point of entry into a VTS area;

(420) (b) At designated reporting points as set forth in subpart C; or

(421) (c) When directed by the VTC.

(422) **Note:** Notice of temporary reporting points, if established, may be published via Local Notices to Mariners, general broadcast or the VTS User's Manual.

(423) **§161.21 Sailing Plan Deviation Report (DR).**

(424) A vessel must report:

(425) (a) When its ETA to a destination varies significantly from a previously reported ETA;

(426) (b) Any intention to deviate from a VTS issued measure or vessel traffic routing system; or

(427) (c) Any significant deviation from previously reported information.

(428) **§161.22 Final Report (FR).**

(429) A vessel must report its name and position:

(430) (a) On arrival at its destination; or

(431) (b) When leaving a VTS area.

(432) **§161.23 Reporting exemptions.**

(433) (a) Unless otherwise directed, the following vessels are exempted from providing Position and Final Reports due to the nature of their operation:

TABLE 161.18(a).—THE IMO STANDARD SHIP REPORTING SYSTEM

A	ALPHA	Ship	Name, call sign or ship station identity, and flag.
B	BRAVO	Dates and time of event	A 6 digit group giving day of month (first two digits), hours and minutes (last four digits). If other than UTC state time zone used.
C	CHARLIE	Position	A 4 digit group giving latitude in degrees and minutes suffixed with N (north) or S (south) and a 5 digit group giving longitude in degrees and minutes suffixed with E (east) or W (west); or,
D	DELTA	Position	True bearing (first 3 digits) and distance (state distance) in nautical miles from a clearly identified landmark (state landmark).
E	ECHO	True course	A 3 digit group.
F	FOXTROT	Speed in knots and tenths of knots	A 3 digit group.
G	GOLF	Ports of Departure	Name of last port of call.
H	HOTEL	Date, time and point of entry system.	Entry time expressed as in (B) and into the entry position expressed as in (C) or (D).
I	INDIA	Destination and expected time of arrival.	Name of port and date time group expressed as in (B).
J	JULIET	Pilot	State whether a deep sea or local pilot is on board.
K	KILO	Date, time and point of exit from system.	Exit time expressed as in (B) and exit position expressed as in (C) or (D).
L	LIMA	Route information	Intended track.
M	MIKE	Radio	State in full names of communications stations/ frequencies guarded.
N	NOVEMBER	Time of next report	Date time group expressed as in (B).
O	OSCAR	Maximum present static draught in meters.	4 digit group giving meters and centimeters.
P	PAPA	Cargo on board	Cargo and brief details of any dangerous cargoes as well as harmful substances and gases that could endanger persons or the environment.
Q	QUEBEC	Defects, damage, deficiencies or limitations.	Brief detail of defects, damage, deficiencies or other limitations.
R	ROMEO	Description of pollution or dangerous goods lost.	Brief details of type pollution (oil, chemicals, etc) or dangerous goods lost overboard; position expressed as in (C) or (D).
S	SIERRA	Weather conditions	Brief details of weather and sea conditions prevailing.
T	TANGO	Ship's representative and/or owner.	Details of name and particulars of ship's representative and/or owner for provision of information.
U	UNIFORM	Ship size and type	Details of length, breadth, tonnage, and type, etc., as required.
V	VICTOR	Medical personnel	Doctor, physician's assistant, nurse, no medic.
W	WHISKEY	Total number of persons on board.	State number.
X	XRAY	Miscellaneous	Any other information as appropriate. (i.e., a detailed description of a planned operation, which may include: its duration; effective area; any restrictions to navigation; notification procedures for approaching vessels; in addition, for a towing operation; configuration, length of the tow, available horsepower, etc.; for a dredge or floating plant: configuration of pipeline, mooring configuration, number of assist vessels, etc.)

(434) (1) Vessels on a published schedule and route;

(435) (2) Vessels operating within an area of a radius of three nautical miles or less; or

(436) (3) Vessels escorting another vessel or assisting another vessel in maneuvering procedures.

(437) (b) A vessel described in paragraph (a) of this section must:

(438) (1) Provide a Sailing Plan at least 5 minutes but not more than 15 minutes before navigating within the VTS area; and

(439) (2) If it departs from its promulgated schedule by more than 15 minutes or changes its limited operating area, make the established VMRS reports, or report as directed.

(440) (c) In those VTS areas capable of receiving automated position reports from Automated Dependent Surveillance Shipborne Equipment (ADSSE) as required by §164.43 of this chapter and where ADSSE is required, vessels equipped with an operating ADSSE are not required to make voice radio position reports at designated reporting points as required by §161.20(b) of this part, unless otherwise directed by the VTC.

(441) (1) Whenever an ADSSE becomes non-operational as defined in §164.43(c) of this chapter, before entering or while underway in a VTS area, a vessel must:

(442) (i) Notify the VTC;

(443) (ii) Make voice radio position reports at designated reporting points as required by §161.20(b) of this part;

(444) (iii) Make other voice radio reports as directed; and

(445) (iv) Restore the ADSSE to operating condition as soon as possible.

(446) (2) Whenever an ADSSE becomes non-operational due to a loss of position correction information (i.e., the U.S. Coast Guard differential global positioning system (dGPS) cannot provide the required error correction messages) a vessel must:

(447) (i) Make required voice radio position reports at designated reporting points required by §161.20(b) of this part; and

(448) (ii) Make other voice radio reports as directed.

(449) **Note:** Regulations pertaining to ADSSE required capabilities are set forth in §164.43 of this chapter.

Subpart C–Vessel Traffic Service Areas, Cooperative Vessel Traffic Service Area, Vessel Traffic Service Special Areas and Reporting Points.

(450) **Note:** All geographic coordinates contained in part 161 (latitude and longitude) are expressed in North American Datum of 1983 (NAD 83).

(451) **§161.50 Vessel Traffic Service San Francisco.**

(452) (a) The VTS area consists of all the navigable waters of San Francisco Bay Region south of the Mare Island Causeway Bridge and the Petaluma River Entrance Channel Daybeacon 19 and Petaluma River Entrance Channel Light 20 and north of the Dunbarton Bridge; its seaward approaches within a 38 nautical mile radius of Mount Tamalpais (37°55.8′N., 122°34.6′W.); and its navigable tributaries as far east as the port of Stockton on the San Joaquin River, as far north as the port of Sacramento on the Sacramento River.

(453) **§161.55 Vessel Traffic Service Puget Sound and the Cooperative Vessel Traffic Service for the Juan de Fuca Region.**

(454) The Vessel Traffic Service Puget Sound area consists of the navigable waters of the United States bounded by a line drawn from the Washington State coastline at 48°23′08″N., 124°43′37″W. on Cape Flattery to the Cape Flattery Light at 48°23′30″N., 124°44′12″W. on Tatoosh Island, due west to the U.S. Territorial Sea Boundary; thence northward along the U.S. Territorial Sea Boundary to its intersection with the U.S./Canada International Boundary; thence east along the U.S./Canada International Boundary through the waters known as the Strait of Juan de Fuca, Haro Strait, Boundary Pass, and the Strait of Georgia to the Washington State coastline at 49°00′06″N., 122°45′18″W. (International Boundary Range C Rear Light). This area includes: Puget Sound, Hood Canal, Possession Sound, the San Juan Island Archipelago, Rosario Strait, Guemes Channel, Bellingham Bay, the U.S. waters of the Strait of Juan de Fuca and the Strait of Georgia, and all waters adjacent to the above.

(455) (b) Vessel Traffic Service Puget Sound participates in a U.S./Canadian Cooperative Vessel Traffic Service (CVTS) to jointly manage vessel traffic in the Juan de Fuca Region. The CVTS for the Juan de Fuca Region consists of all waters of the Strait of Juan de Fuca and its offshore approaches, southern Georgia Strait, the Gulf and San Juan Archipelagos, Rosario Strait, Boundary Pass and Haro Strait, bounded on the northwest by 48°35′45″N.; and on the southwest by 48°23′30″N.; and on the west by the rhumb line joining 48°35′45″N., 124°47′30″W. with 48°23′30″N., 124°48′37″W.; and on the northeast in the Strait of Georgia, by a line drawn along 49°N. from Vancouver Island to Semiahmoo Bay; and on the southeast, by a line drawn from McCurdy Point on the Quimper Peninsula to Point Partridge on Whidbey Island. Canadian and United States Vessel Traffic Centers (Tofino, B.C., Canada, Vancouver, BC, Canada and Seattle, WA) manage traffic within the CVTS area irrespective of the International Boundary.

(456) (c) VTS Special Areas.

(457) (1) The Rosario Strait VTS Special Area consists of those waters bounded to the south by the center of Precautionary Area "RB" (a circular area of 2,500 yards radius centered at 48°26′24″N., 122°45′12″W.), and to the north by the center of Precautionary Area "C" (a circular area of 2,500 yards radius centered at 48°40′34″N., 122°42′44″W.; Lighted Buoy "C"); and

(458) **Note:** The center of precautionary area "RB" is not marked by a buoy. All precautionary areas are depicted on National Oceanic and Atmospheric Administration (NOAA) nautical charts.

(459) (2) The Guemes Channel VTS Special Area consists of those waters bounded to the west by Shannon Point on Fidalgo Island and to the east by Southeast Point on Guemes Island.

(460) (d) Additional VTS Special Area Operating Requirements. The following additional requirements are applicable in the Rosario Strait and Guemes Channel VTS Special Areas:

(461) (1) A vessel engaged in towing shall not impede the passage of a vessel of 40,000 dead weight tons or more.

(462) (2) A vessel of less than 40,000 dead weight tons is exempt from the provision set forth in §161.13(b)(1) of this part.

(463) (3) A vessel of less than 100 meters in length is exempt from the provisions set forth in §161.13(b)(3) of this part. Approval will not be granted for:

(464) (i) A vessel of 100 meters or more in length to meet or overtake; or cross or operate within 2,000 yards (except when crossing astern) of a vessel of 40,000 dead weight tons or more; or

(465) (ii) A vessel of 40,000 dead weight tons or more to meet or overtake; or cross or operate within 2,000 yards (except when crossing astern) of a vessel of 100 meters or more in length.

(466) (e) Reporting Point. Inbound vessels in the Strait of Juan de Fuca upon crossing 124°W.

TABLE 161.60(d)—VTS PRINCE WILLIAM SOUND REPORTING POINTS

Designator	Geographic name	Geographic description	Latitude/ Longitude	Notes
1A	Cape Hinchinbrook	Cape Hinchinbrook	60°16′18″N 146°45′30″W	Northbound Only.
1B	Schooner Rock	Schooner Rock	60°18′42″N 146°51′36″W	Southbound Only.
2A	Naked Island	Naked Island	60°40′00″N 147°01′24″W	Northbound Only.
2B	Naked Island	Naked Island	60°40′00″N 147°05′00″W	Southbound Only.
3A	Bligh Reef	Bligh Reef Light (Pilot Embark)	60°50′36″N 146°57′30″W	Northbound Only.
3B	Bligh Reef	Bligh Reef Light (Pilot Disembark)	60°51′00″N 147°01′24″W	Southbound Only.
4A	Rocky Point	Rocky Point	60°57′48″N 146°47′30″W	Northbound Only.
4B	Rocky Point	Rocky Point	60°57′48″N 146°50′00″W	Southbound Only.
5	Entrance Island	Entrance Island Light	61°05′24″N 146°37′30″W	

(467) **§161.60 Vessel Traffic Service Prince William Sound.**

(468) (a) The VTS area consists of the navigable waters of the United States north of a line drawn from Cape Hinchinbrook Light to Schooner Rock Light, comprising that portion of Prince William Sound between 146°30′W. and 147°20′W. and includes Valdez Arm, Valdez Narrows and Port Valdez.

(469) (b) The Valdez Narrows VTS Special Area consists of those waters of Valdez Arm, Valdez Narrows, and Port Valdez northeast of a line bearing 307° True from Tongue Point at 61°02′06″N., 146°40′W.; and southwest of a line bearing 307° True from Entrance Island Light at 61°05′06″N., 146°36′42″W.

(470) (c) Additional VTS Special Area Operating Requirements. The following additional requirements are applicable in the Valdez Narrows VTS Special Area:

(471) (1) No VMRS User shall proceed north of 61°N. without prior approval of the VTS.

(472) (2) For a vessel listed in paragraph (c)(3) of this section–

(473) (i) Approval to enter this area will not be granted to a vessel when a tank vessel of more than 20,000 deadweight tons is navigating therein;

(474) (ii) A northbound vessel shall remain south of 61°N. until the VTS has granted permission to proceed; and

(475) (iii) A southbound vessel shall remain in Port Valdez east of 146°35′W. and north of 61°06′N. until the VTS has granted permission to proceed.

(476) (3) Paragraph (c)(2) of this section applies to–

(477) (i) A vessel of 1,600 gross tons or more; and

(478) (ii) A towing vessel of 8 meters or more in length, except for a vessel performing duties as an escort vessel as defined in 33 CFR Part 168.

(479) (d) Reporting Points.

Part 162–Inland Waterways Navigation Regulations

(480) **§162.1 General.**

(481) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

(482) **§162.245 Kenai River, Kenai, Alaska; use, administration, and navigation.** (a) The area. The main channel area of the river, having a width of 150 feet, beginning at a point directly offshore from the centerline of the city dock and extending about 2,200 feet upstream to a point 200 feet upstream from the Inlet Co. dock.

(483) (b) The regulations. (1) Vessels may navigate, anchor, or moor within the area until such times as notification is received or observation is made of intended passage to or from the docking areas.

(484) (2) Notice of anticipated passage of towboats and barges shall be indicated 24 hours in advance by display of a red flag by the Inlet Co. from its warehouse.

Part 164–Navigation Safety Regulations (in part). For a complete description of this part see 33 CFR 164.

(485) **§164.01 Applicability.**

(486) (a) This part (except as specifically limited herein) applies to each self-propelled vessel of 1600 or more gross tons (except foreign vessels described in §164.02) when it is operating in the navigable waters of the United States except the St. Lawrence Seaway.

(487) **§164.02 Applicability exception for foreign vessels.**

(488) (a) This part (including §§ 164.38 and 164.39) does not apply to vessels that:

(489) (1) Are not destined for, or departing from, a port or place subject to the jurisdiction of the United States; and

(490) (2) Are in:

(491) (i) Innocent passage through the territorial sea of the United States; or

(492) (ii) Transit through navigable waters of the United States which form a part of an international strait.

(493) **§164.03 Incorporation by reference.**

(494) (a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in paragraph (b) of this section, the Coast Guard must publish notice of change in the Federal Register and the material must be available to the public. All approved material is on file at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC, and at the U.S. Coast Guard, Marine Environmental Protection Division (G-MEP), room 2100, 2100 Second Street, SW., Washington, DC 20593-0001 and is available from the sources indicated in paragraph (b) of this section.

(495) (b) The materials approved for incorporation by reference in this part, and the sections affected, are:

(496) Radio Technical Commission for Marine Services, P.O. Box 19087, Washington, DC 20036, Paper 12/78/DO-100 Minimum Performance Standards, Loran C Receiving Equipment, 1977-164.41.

(497) International Maritime Organization, 4 Albert Embankment, London SE1 7SR U.K., IMO Resolution A.342(IX), Recommendation on Performance Standards for Automatic Pilots, adopted November 12, 1975-164.13.

(498) **§164.11 Navigation under way: General.**

(499) The owner, master, or person in charge of each vessel underway shall ensure that:

(500) (a) The wheelhouse is constantly manned by persons who–

(501) (1) Direct and control the movement of the vessel; and

(502) (2) Fix the vessel's position;

(503) (b) Each person performing a duty described in paragraph (a) of this section is competent to perform that duty;

(504) (c) The position of the vessel at each fix is plotted on a chart of the area and the person directing the movement of the vessel is informed of the vessel's position;

(505) (d) Electronic and other navigational equipment, external fixed aids to navigation, geographic reference points, and hydrographic contours are used when fixing the vessel's position;

(506) (e) Buoys alone are not used to fix the vessel's position;

(507) Note: Buoys are aids to navigation placed in approximate positions to alert the mariner to hazards to navigation or to indicate the orientation of a channel. Buoys may not maintain an exact position because strong or varying currents, heavy seas, ice, and collisions with vessels can move or sink them or set them adrift. Although buoys may corroborate a position fixed by other means, buoys cannot be used to fix a position: however, if no other aids are available, buoys alone may be used to establish an estimated position.

(508) (f) The danger of each closing visual or each closing radar contact is evaluated and the person directing the movement of the vessel knows the evaluation;

(509) (g) Rudder orders are executed as given;

(510) (h) Engine speed and direction orders are executed as given;

(511) (i) Magnetic variation and deviation and gyrocompass errors are known and correctly applied by the person directing the movement of the vessel;

(512) (j) A person whom he has determined is competent to steer the vessel is in the wheelhouse at all times (See also 46 U.S.C. 8702(d), which requires an able seaman at the wheel on U.S. vessels of 100 gross tons or more in narrow or crowded waters during low visibility);

(513) (k) If a pilot other than a member of the vessel's crew is employed, the pilot is informed of the draft, maneuvering characteristics, and peculiarities of the vessel and of any abnormal circumstances on the vessel that may affect its safe navigation.

(514) (l) Current velocity and direction for the area to be transited are known by the person directing the movement of the vessel;

(515) (m) Predicted set and drift are known by the person directing movement of the vessel;

(516) (n) Tidal state for the area to be transited is known by the person directing movement of the vessel;

(517) (o) The vessel's anchors are ready for letting go;

(518) (p) The person directing the movement of the vessel sets the vessel's speed with consideration for–

(519) (1) The prevailing visibility and weather conditions;

(520) (2) The proximity of the vessel to fixed shore and marine structures;

(521) (3) The tendency of the vessel underway to squat and suffer impairment of maneuverability when there is small underkeel clearance;

(522) (4) The comparative proportions of the vessel and the channel;

(523) (5) The density of marine traffic;

(524) (6) The damage that might be caused by the vessel's wake;

(525) (7) The strength and direction of the current; and

(526) (8) Any local vessel speed limit;

(527) (q) The tests required by §164.25 are made and recorded in the vessel's log; and

(528) (r) The equipment required by this part is maintained in operable condition.

(529) (s) Upon entering U.S. waters, the steering wheel or lever on the navigating bridge is operated to determine if the steering equipment is operating properly under manual control, unless the vessel has been steered under manual control from the navigating bridge within the preceding 2 hours, except when operating on the Great Lakes and their connecting and tributary waters.

(530) (t) At least two of the steering-gear power units on the vessel are in operation when such units are capable of simultaneous operation, except when the vessel is sailing on the Great Lakes and their connecting and tributary waters, and except as required by paragraph (u) of this section.

(531) (u) On each passenger vessel meeting the requirements of the International Convention for the Safety of Life at Sea, 1960 (SOLAS 60) and on each cargo vessel meeting the requirements of SOLAS 74 as amended in 1981, the number of steering-gear power units necessary to move the rudder from 35° on either side to 30° on the other in not more than 28 seconds must be in simultaneous operation.

(532) **§164.13 Navigation underway: tankers.**

(533) (a) As used in this section, "tanker" means a self-propelled tank vessel, including integrated tug barge combinations,

constructed or adapted primarily to carry oil or hazardous material in bulk in the cargo spaces and inspected and certificated as a tanker.

(534) (b) Each tanker must have an engineering watch capable of monitoring the propulsion system, communicating with the bridge, and implementing manual control measures immediately when necessary. The watch must be physically present in the machinery spaces or in the main control space and must consist of at least a licensed engineer.

(535) (c) Each tanker must navigate with at least two licensed deck officers on watch on the bridge, one of whom may be a pilot. In waters where a pilot is required, the second officer, must be an individual licensed and assigned to the vessel as master, mate, or officer in charge of a navigational watch, who is separate and distinct from the pilot.

(536) (d) Except as specified in paragraph (e) of this section, a tanker may operate with an auto pilot engaged only if all of the following conditions exist:

(537) (1) The operation and performance of the automatic pilot conforms with the standards recommended by the International Maritime Organization in IMO Resolution A.342(IX).

(538) (2) A qualified helmsman is present at the helm and prepared at all times to assume manual control.

(539) (3) The tanker is not operating in any of the following areas:

(540) (i) The areas of the traffic separation schemes specified in subchapter P of this chapter.

(541) (ii) The portions of a shipping safety fairway specified in part 166 of this chapter.

(542) (iii) An anchorage ground specified in part 110 of this chapter.

(543) (iv) An area within one-half nautical mile of any U.S. shore.

(544) **§164.15 Navigation bridge visibility.**

(545) (a) The arrangement of cargo, cargo gear, and trim of all vessels entering or departing from U.S. ports must be such that the field of vision from the navigation bridge conforms as closely as possible to the following requirements:

(546) (1) From the conning position, the view of the sea surface must not be obscured by more than the lesser of two ship lengths or 500 meters (1640 feet) from dead ahead to 10 degrees on either side of the vessel. Within this arc of visibility and blind sector caused by cargo, cargo gear, or other permanent obstruction must not exceed 5 degrees.

(547) (2) From the conning position, the horizontal field of vision must extend over an arc from at least 22.5 degrees abaft the beam on one side of the vessel, through dead ahead, to at least 22.5 degrees abaft the beam on the other side of the vessel. Blind sectors forward of the beam caused by cargo, cargo gear, or other permanent obstruction must not exceed 10 degrees each, nor total more than 20 degrees, including any blind sector within the arc of visibility described in paragraph (a)(1) of this section.

(548) (3) From each bridge wing, the field of vision must extend over an arch from at least 45 degree on the opposite bow, through dead ahead, to at least dead astern.

(549) (4) From the main steering position, the field of vision must extend over an arc from dead ahead to at least 60 degrees on either side of the vessel.

(550) (b) A clear view must be provided through at least two front windows at all times regardless of weather conditions.

(551) **§164.19 Requirements for vessels at anchor.**

(552) The master or person in charge of each vessel that is anchored shall ensure that–

(553) (a) A proper anchor watch is maintained;

(554) (b) Procedures are followed to detect a dragging anchor; and

(555) (c) Whenever weather, tide, or current conditions are likely to cause the vessel's anchor to drag, action is taken to ensure the safety of the vessel, structures, and other vessels, such as being ready to veer chain, let go a second anchor, or get underway using the vessel's own propulsion or tug assistance.

(556) **§164.25 Tests before entering or getting underway.**

(557) (a) Except as provided in paragraphs (b) and (c) of this section no person may cause a vessel to enter into or get underway on the navigable waters of the United States unless no more than 12 hours before entering or getting underway, the following equipment has been tested:

(558) (1) Primary and secondary steering gear. The test procedure includes a visual inspection of the steering gear and its connecting linkage, and, where applicable, the operation of the following:

(559) (i) Each remote steering gear control system.

(560) (ii) Each steering position located on the navigating bridge.

(561) (iii) The main steering gear from the alternative power supply, if installed.

(562) (iv) Each rudder angle indicator in relation to the actual position of the rudder.

(563) (v) Each remote steering gear control system power failure alarm.

(564) (vi) Each remote steering gear power unit failure alarm.

(565) (vii) The full movement of the rudder to the required capabilities of the steering gear.

(566) (2) All internal vessel control communications and vessel control alarms.

(567) (3) Standby or emergency generator, for as long as necessary to show proper functioning, including steady state temperature and pressure readings.

(568) (4) Storage batteries for emergency lighting and power systems in vessel control and propulsion machinery spaces.

(569) (5) Main propulsion machinery, ahead and astern.

(570) (b) Vessels navigating on the Great Lakes and their connecting and tributary waters, having once completed the test requirements of this sub-part, are considered to remain in compliance until arriving at the next port of call on the Great Lakes.

(571) (c) Vessels entering the Great Lakes from the St. Lawrance Seaway are considered to be in compliance with this sub-part if the required tests are conducted preparatory to or during the passage of the St. Lawrence Seaway or within one hour of passing Wolfe Island.

(572) (d) No vessel may enter, or be operated on the navigable waters of the United States unless the emergency steering drill described below has been conducted within 48 hours prior to entry and logged in the vessel logbook, unless the drill is conducted and logged on a regular basis at least once every three months. This drill must include at a minimum the following:

(573) (1) Operation of the main steering gear from within the steering gear compartment.

(574) (2) Operation of the means of communications between the navigating bridge and the steering compartment.

(575) (3) Operation of the alternative power supply for the steering gear if the vessel is so equipped.

(576) **§164.30 Charts, publications, and equipment: General.**

(577) No person may operate or cause the operation of a vessel unless the vessel has the marine charts, publications, and equipment as required by §§164.33 through 164.41 of this part.

(578) **§164.33 Charts and publications.**

(579) (a) Each vessel must have the following:

(580) (1) Marine charts of the area to be transited, published by the National Ocean Service, U.S. Army Corps of Engineers, or a river authority that–

(581) (i) Are of a large enough scale and have enough detail to make safe navigation of the area possible; and

(582) (ii) Are currently corrected.

(583) (2) For the area to be transited, a currently corrected copy of, or applicable currently corrected extract from, each of the following publications:

(584) (i) U.S. Coast Pilot.

(585) (ii) Coast Guard Light List.

(586) (3) For the area to be transited, the current edition of, or applicable current extract from:

(587) (i) Tide tables published by the National Ocean Service.

(588) (ii) Tidal current tables published by the National Ocean Service, or river current publication issued by the U.S. Army Corps of Engineers, or a river authority.

(589) (b) As an alternative to the requirements for paragraph (a) of this section, a marine chart or publication, or applicable extract, published by a foreign government may be substituted for a U.S. chart and publication required by this section. The chart must be of large enough scale and have enough detail to make safe navigation of the area possible, and must be currently corrected. The publication, or applicable extract, must singly or in combination contain similar information to the U.S. Government publication to make safe navigation of the area possible. The publication, or applicable extract must be currently corrected, with the exceptions of tide and tidal current tables, which must be the current editions.

(590) (c) As used in this section, "currently corrected" means corrected with changes contained in all Notices to Mariners published by Defense Mapping Agency Hydrographic/Topographic Center, or an equivalent foreign government publication, reasonably available to the vessel, and that is applicable to the vessel's transit.

(591) **§164.35 Equipment: All vessels.**

(592) Each vessel must have the following:

(593) (a) A marine radar system for surface navigation.

(594) (b) An illuminated magnetic steering compass, mounted in a binnacle, that can be read at the vessel's main steering stand.

(595) (c) A current magnetic compass deviation table or graph or compass comparison record for the steering compass, in the wheelhouse.

(596) (d) A gyrocompass.

(597) (e) An illuminated repeater for the gyrocompass required by paragraph (d) of this section that is at the main steering stand, unless that gyrocompass is illuminated and is at the main steering stand.

(598) (f) An illuminated rudder angle indicator in the wheelhouse.

(599) (g) The following maneuvering information prominently displayed on a fact sheet in the wheelhouse:

(600) (1) A turning circle diagram to port and starboard that shows the time and distance and advance and transfer required to alter course 90 degrees with maximum rudder angle and constant power settings, for either full and half speeds, or for full and slow speeds. For vessels whose turning circles are essentially the same for both directions, a diagram showing a turning circle in one direction, with a note on the diagram stating that turns to port and starboard are essentially the same, may be substituted.

(601) (2) The time and distance to stop the vessel from either full and half speeds, or from full and slow speeds, while maintaining approximately the initial heading with minimum application of rudder.

(602) (3) For each vessel with a fixed propeller, a table of shaft revolutions per minute for a representative range of speeds.

(603) (4) For each vessel with a controllable pitch propeller, a table of control settings for a representative range of speeds.

(604) (5) For each vessel that is fitted with an auxiliary device to assist in maneuvering, such as a bow thruster, a table of vessel speeds at which the auxiliary device is effective in maneuvering the vessel.

(605) (6) The maneuvering information for the normal load and normal ballast condition for–

(606) (i) Calm weather-wind 10 knots or less, calm sea;

(607) (ii) No current;

(608) (iii) Deep water conditions-water depth twice the vessel's draft or greater; and

(609) (iv) Clean hull.

(610) (7) At the bottom of the fact sheet, the following statement:

(611) **Warning.**

(612) The response of the (name of the vessel) may be different from that listed above if any of the following conditions, upon which the maneuvering information is based, are varied:

(613) (1) Calm weather-wind 10 knots or less, calm sea;

(614) (2) No current;

(615) (3) Water depth twice the vessel's draft or greater;

(616) (4) Clean hull; and

(617) (5) Intermediate drafts or unusual trim.

(618) (h) An echo depth sounding device.

(619) (i) A device that can continuously record the depth readings of the vessel's echo depth sounding device, except when operating on the Great Lakes and their connecting and tributary waters.

(620) (j) Equipment on the bridge for plotting relative motion.

(621) (k) Simple operating instructions with a block diagram, showing the changeover procedures for remote steering gear control systems and steering gear power units, permanently displayed on the navigating bridge and in the steering gear compartment.

(622) (l) An indicator readable from the centerline conning position showing the rate of revolution of each propeller, except when operating on the Great Lakes and their connecting and tributary waters.

(623) (m) If fitted with controllable pitch propellers, an indicator readable from the centerline conning position showing the pitch and operational mode of such propellers, except when operating on the Great Lakes and their connecting and tributary waters.

(624) (n) If fitted with lateral thrust propellers, an indicator readable from the centerline conning position showing the direction and amount of thrust of such propellers, except when operating on the Great Lakes and their connecting and tributary waters.

(625) (o) A telephone or other means of communication for relaying headings to the emergency steering station. Also, each vessel of 500 gross tons and over and constructed on or after June 9, 1991 must be provided with arrangements for supplying visual compass-readings to the emergency steering station.

(626) **§164.37 Equipment: Vessels of 10,000 gross tons or more.**

(627) (a) Each vessel of 10,000 gross tons or more must have, in addition to the radar system under §164.35(a), a second marine radar system that operates independently of the first.

(628) Note: Independent operation means two completely separate systems, from separate branch power supply circuits or distribution panels to antennas, so that failure of any component of one system will not render the other system inoperative.

(629) (b) On each tanker of 10,000 gross tons or more that is subject to Section 5 of the Port and Tanker Safety Act of 1978 (46 U.S.C. 391a), the dual radar system required by this part must have a short range capability and a long range capability and each radar must have true north features consisting of a display that is stabilized in azimuth.

(630) **§164.38 Automatic radar plotting aids (ARPA).** (See 33 CFR 164.)

(631) **§164.39 Steering gear: Foreign tankers.**

(632) (a) This section applies to each foreign tanker of 10,000 gross tons or more, except a public vessel, that–

(633) (1) Transfers oil at a port or place subject to the jurisdiction of the United States; or

(634) (2) Otherwise enters or operates in the navigable waters of the United States, except a vessel described by §164.02 of this part.

(635) (b) *Definitions.* The terms used in this section are as follows:

(636) *Constructed* means the same as in Chapter II-1, Regulations 1.1.2 and 1.1.3.1, of SOLAS 74.

(637) *Existing tanker* means a tanker–

(638) (1) For which the building contract is placed on or after June 1, 1979;

(639) (2) In the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after January 1, 1980;

(640) (3) The delivery of which occurs on or after June 1, 1982; or

(641) (4) That has undergone a major conversion contracted for on or after June 1, 1979; or construction of which was begun on or after January 1, 1980, or completed on or after June 1, 1982.

(642) *Public vessel, oil hazardous materials, and foreign vessel* mean the same as in 46 U.S.C. 2101.

(643) *SOLAS 74* means the International Convention for the Safety of Life at Sea, 1974, as amended.

(644) *Tanker* means a self-propelled vessel defined as a tanker by 46 U.S.C. 2101(38) or as a tank vessel by 46 U.S.C. 2101(39).

(645) (c) Each tanker constructed on or after September 1, 1984, must meet the applicable requirements of Chapter II-1, Regulations 29 and 30, of SOLAS 74.

(646) (d) Each tanker constructed before September 1, 1984, must meet the requirements of Chapter II-1, Regulation 29.19, of SOLAS 74.

(647) (e) Each tanker of 40,000 gross tons or more, constructed before September 1, 1984, that does not meet the single-failure criterion of Chapter II-1, Regulation 29.16, of SOLAS 74, must meet the requirements of Chapter II-1, Regulation 29.20, of SOLAS 74.

(648) (f) Each tanker constructed before September 1, 1984, must meet the applicable requirements of Chapter II-1, Regulations 29.14 and 29.15, of SOLAS 74.

(649) **§164.40 Devices to indicate speed and distance.**

(650) (a) Each vessel required to be fitted with an Automatic Radar Plotting Aid (ARPA) under §164.38 must be fitted with a device to indicate speed and distance of the vessel either through the water, or over the ground. Vessels constructed prior to September 1, 1984, must have this equipment according to the following schedule:

(651) (1) Each tank vessel constructed before September 1, 1984, operating on the navigable waters of the United States-

(652) (i) If of 40,000 gross tons or more, by January 1, 1985;

(653) (ii) If of 10,000 gross tons or more but less than 40,000 gross tons, by January 1, 1986.

(654) (2) Each self-propelled vessel constructed before September 1, 1984, that is not a tank vessel, operating on the navigable waters of the United States-

(655) (i) If of 40,000 gross tons or more, by September 1, 1986;

(656) (ii) If of 20,000 gross tons or more, but less than 40,000 gross tons, by September 1, 1987;

(657) (iii) If of 15,000 gross tons or more, but less than 20,000 gross tons, by September 1, 1988.

(658) (b) The device must meet the following specifications:

(659) (1) The display must be easily readable on the bridge by day or night.

(660) (2) Errors in the indicated speed, when the vessel is operating free from shallow water effect, and from the effects of wind, current, and tide, should not exceed 5 percent of the speed of the vessel, or 0.5 knot, whichever is greater.

(661) (3) Errors in the indicated distance run, when the vessel is operating free from shallow water effect, and from the effects of wind, current, and tide, should not exceed 5 percent of the distance run of the vessel in one hour or 0.5 nautical mile in each hour, whichever is greater.

(662) **§164.41 Electronic position fixing devices.**

(663) (a) Each vessel calling at a port in the continental United States, including Alaska south of Cape Prince of Wales, except each vessel owned or bareboat chartered and operated by the United States, or by a state or its political subdivision, or by a foreign nation, and not engaged in commerce, must have one of the following:

(664) (1) A Type I or II LORAN C receiver as defined in Section 1.2(e), meeting Part 2 (Minimum Performance Standards) of the Radio Technical Commission for Marine Services (RTCM) Paper 12-78/D0-100 dated December 20, 1977, entitled "Minimum Performance Standards (MPS) Marine Loran-C Receiving Equipment". Each receiver installed on or after June 1, 1982, must have a label with the information required under paragraph (b) of this section. If the receiver is installed before June 1, 1982, the receiver must have the label with the information required under paragraph (b) by June 1, 1985.

(665) (2) A satellite navigation receiver with:

(666) (i) Automatic acquisition of satellite signals after initial operator settings have been entered; and

(667) (ii) Position updates derived from satellite information during each usable satellite pass.

(668) (3) A system that is found by the Commandant to meet the intent of the statements of availability, coverage, and accuracy for the U.S. Coastal Confluence Zone (CCZ) contained in the U.S. "Federal Radionavigation Plan" (Report No. DOD-NO 4650.4-P, I or No. DOT-TSC-RSPA-80-16, I). A person desiring a finding by the Commandant under this subparagraph must submit a written application describing the device to the Office of Navigation Safety and Waterway Services, 2100 Second Street SW., Washington, DC 20593-0001. After reviewing the application, the Com-

mandant may request additional information to establish whether or not the device meets the intent of the Federal Radionavigation Plan.

(669) **Note.**–The Federal Radionavigation Plan is available from the National Technical Information Service, Springfield, Va. 22161, with the following Government Accession Numbers:

(670) Vol 1, ADA 116468

(671) Vol 2, ADA 116469

(672) Vol 3, ADA 116470

(673) Vol 4, ADA 116471

(674) (b) Each label required under paragraph (a)(1) of this section must show the following:

(675) (1) The name and address of the manufacturer.

(676) (2) The following statement by the manufacturer:

(677) This receiver was designed and manufactured to meet Part 2 (Minimum Performance Standards) of the RTCM MPS for Marine Loran-C Receiving Equipment.

(678) **§164.42 Rate of turn indicator.**

(679) Each vessel of 100,000 gross tons or more constructed on or after September 1, 1984, shall be fitted with a rate of turn indicator.

(680) **§164.43 Automated Dependent Surveillance Shipborne Equipment.**

(681) (a) Each vessel required to provide automated position reports to a Vessel Traffic Service (VTS) must do so by an installed Automated Dependent Surveillance Shipborne Equipment (ADSSE) system consisting of a:

(682) (1) Twelve-channel all-in-view Differential Global Positioning System (dGPS) receiver;

(683) (2) Marine band Non-Directional Beacon receiver capable of receiving dGPS error correction messages;

(684) (3) VHF-FM transceiver capable of Digital Selective Calling (DSC) on the designated DSC frequency; and

(685) (4) Control unit.

(686) (b) An ADSSE must have the following capabilities:

(687) (1) Use dGPS to sense the position of the vessel and determine the time of the position using Universal Coordinated Time (UTC);

(688) (2) Fully use the broadcast type 1, 2, 3, 5, 6, 7, 9, and 16 messages, as specified in RTCM Recommended Standards for Differential NAVSTAR GPS Service in determining the required information;

(689) (3) Achieve a position error which is less than ten meters (32.8 feet) 2 distance root mean square (2 drms) from the true North American Datum of 1983 (NAD 83) in the position information transmitted to a VTS;

(690) (4) Achieve a course error of less than 0.5 degrees from true course over ground in the course information transmitted to a VTS;

(691) (5) Achieve a speed error of less than 0.05 knots from true speed over ground in the speed information transmitted to a VTS;

(692) (6) Receive and comply with commands broadcast from a VTS as DSC messages on the designated DSC frequency;

(693) (7) Receive and comply with RTCM messages broadcast as minimum shift keying modulated medium frequency signals in the marine radiobeacon band, and supply the messages to the dGPS receiver;

(694) (8) Transmit the vessel's position, tagged with the UTC at position solution, course over ground, speed over ground, and Lloyd's identification number to a VTS;

(695) (9) Display a visual alarm to indicate to shipboard personnel when a failure to receive or utilize the RTCM messages occurs;

(696) (10) Display a separate visual alarm which is triggered by a VTS utilizing a DSC message to indicate to shipboard personnel that the U.S. Coast Guard dGPS system cannot provide the required error correction messages; and

(697) (11) Display two RTCM type 16 messages, one of which must display the position error in the position error broadcast.

(698) (c) An ADSSE is considered non-operational if it fails to meet the requirements of paragraph (b) of this section.

(699) **Note:** Vessel Traffic Service (VTS) areas and operating procedures are set forth in Part 161 of this chapter.

(700) **§164.51 Deviations from rules: Emergency.**

(701) Except for the requirements of §164.53(b), in an emergency, any person may deviate from any rule in this part to the extent necessary to avoid endangering persons, property, or the environment.

(702) **§164.53 Deviations from rules and reporting: Non-operating equipment.**

(703) (a) If during a voyage any equipment required by this part stops operating properly, the person directing the movement of the vessel may continue to the next port of call, subject to the directions of the District Commander or the Captain of the Port, as provided by 33 CFR 160.

(704) (b) If the vessel's radar, radio navigation receivers, gyrocompass, echo depth sounding device, or primary steering gear stops operating properly, the person directing the movement of the vessel must report or cause to be reported that it is not operating properly to the nearest Captain of the Port, District Commander, or, if participating in a Vessel Traffic Service, to the Vessel Traffic Center, as soon as possible.

(705) **§164.55 Deviations from rules: Continuing operation or period of time.**

(706) The Captain of the Port, upon written application, may authorize a deviation from any rule in this part if he determines that the deviation does not impair the safe navigation of the vessel under anticipated conditions and will not result in a violation of the rules for preventing collisions at sea. The authorization may be issued for vessels operating in the waters under the jurisdiction of the Captain of the Port for any continuing operation or period of time the Captain of the Port specifies.

(707) **§164.61 Marine casualty reporting and record retention.**

(708) When a vessel is involved in a marine casualty as defined in 46 CFR 4.03–1, the master or person in charge of the vessel shall–

(709) (a) Ensure compliance with 46 CFR 4.05, "Notice of Marine Casualty and Voyage Records," and

(710) (b) Ensure that the voyage records required by 46 CFR 4.05–15 are retained for–

(711) (1) 30 days after the casualty if the vessel remains in the navigable waters of the United States; or

(712) (2) 30 days after the return of the vessel to a United States port if the vessel departs the navigable waters of the United States within 30 days after the marine casualty.

Part 165–Regulated Navigation Areas and Limited Access Areas

Subpart A–General

(713) **§165.1 Purpose of part.**

(714) The purpose of this part is to–

(715) (a) Prescribe procedures for establishing different types of limited or controlled access areas and regulated navigation areas;

(716) (b) Prescribe general regulations for different types of limited or controlled access areas and regulated navigation areas;

(717) (c) Prescribe specific requirements for established areas; and

(718) (d) List specific areas and their boundaries.

(719) **§165.5 Establishment procedures.**

(720) (a) A safety zone, security zone, or regulated navigation area may be established on the initiative of any authorized Coast Guard official.

(721) (b) Any person may request that a safety zone, security zone, or regulated navigation area be established. Except as provided in paragraph (c) of this section, each request must be submitted in writing to either the Captain of the Port or District Commander having jurisdiction over the location as described in 33 CFR 3, and include the following:

(722) (1) The name of the person submitting the request;

(723) (2) The location and boundaries of the safety zone, security zone, or regulated navigation area;

(724) (3) The date, time, and duration that the safety zone, security zone, or regulated navigation area should be established;

(725) (4) A description of the activities planned for the safety zone, security zone, or regulated navigation area;

(726) (5) The nature of the restrictions or conditions desired; and

(727) (6) The reason why the safety zone, security zone, or regulated navigation area is necessary.

(728) (Requests for safety zones, security zones, and regulated navigation areas are approved by the Office of Management and Budget under control numbers 2115–0076, 2115–0219, and 2115–0087.)

(729) (c) Safety Zones and Security Zones. If, for good cause, the request for a safety zone or security zone is made less than 5 working days before the zone is to be established, the request may be made orally, but it must be followed by a written request within 24 hours.

(730) **§165.7 Notification.**

(731) (a) The establishment of these limited access areas and regulated navigation areas is considered rulemaking. The procedures used to notify persons of the establishment of these areas vary depending upon the circumstances and emergency conditions. Notification may be made by marine broadcasts, local notice to mariners, local news media, distribution in leaflet form, and on-scene oral notice, as well as publication in the **Federal Register.**

(732) (b) Notification normally contains the physical boundaries of the area, the reasons for the rule, its estimated duration, and the method of obtaining authorization to enter the area, if applicable, and special navigational rules, if applicable.

(733) (c) Notification of the termination of the rule is usually made in the same form as the notification of its establishment.

(734) **§ 165.8 Geographic coordinates.**

(735) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

Subpart B–Regulated Navigation Areas

(736) **§165.10 Regulated navigation area.**

(737) A regulated navigation area is a water area within a defined boundary for which regulations for vessels navigating within the area have been established under this part.

(738) **§165.11 Vessel operating requirements (regulations).**

(739) Each District Commander may control vessel traffic in an area which is determined to have hazardous conditions, by issuing regulations–

(740) (a) Specifying times of vessel entry, movement, or departure to, from, within, or through ports, harbors, or other waters;

(741) (b) Establishing vessel size, speed, draft limitations, and operating conditions; and

(742) (c) Restricting vessel operation, in a hazardous area or under hazardous conditions, to vessels which have particular operating characteristics or capabilities which are considered necessary for safe operation under the circumstances.

(743) **§165.13 General regulations.**

(744) (a) The master of a vessel in a regulated navigation area shall operate the vessel in accordance with the regulations contained in Subpart F.

(745) (b) No person may cause or authorize the operation of a vessel in a regulated navigation area contrary to the regulations in this Part.

Subpart C–Safety Zones

(746) **§165.20 Safety zones.**

(747) A Safety Zone is a water area, shore area, or water and shore area to which, for safety or environmental purposes, access is limited to authorized persons, vehicles, or vessels. It may be stationary and described by fixed limits or it may be described as a zone around a vessel in motion.

(748) **§165.23 General regulations.**

(749) Unless otherwise provided in this part–

(750) (a) No person may enter a safety zone unless authorized by the COTP or the District Commander.

(751) (b) No person may bring or cause to be brought into a safety zone any vehicle, vessel, or object unless authorized by the COTP or the District Commander.

(752) (c) No person may remain in a safety zone or allow any vehicle, vessel, or object to remain in a safety zone unless authorized by the COTP or the District Commander; and

(753) (d) Each person in a safety zone who has notice of a lawful order or direction shall obey the order or direction of the COTP or District Commander issued to carry out the purposes of this subpart.

Subpart D–Security Zones

(754) **§165.30 Security zones.**

(755) (a) A security zone is an area of land, water, or land and water which is so designated by the Captain of the Port or District Commander for such time as is necessary to prevent damage or injury to any vessel or waterfront facility, to safeguard ports, harbors, territories, or waters of the United States or to secure the observance of the rights and obligations of the United States.

(756) (b) The purpose of a security zone is to safeguard from destruction, loss, or injury from sabotage or other subversive acts, accidents, or other causes of a similar nature–

(757) (1) Vessels,.

(758) (2) Harbors,

(759) (3) Ports and

(760) (4) Waterfront facilities– in the United States and all territory and water, continental or insular, that is subject to the jurisdiction of the United States.

(761) **§165.33 General regulations.**

(762) Unless otherwise provided in the special regulations in Subpart F of this part–

(763) (a) No person or vessel may enter or remain in a security zone without the permission of the Captain of the Port;

(764) (b) Each person and vessel in a security zone shall obey any direction or order of the Captain of the Port;

(765) (c) The Captain of the Port may take possession and control of any vessel in the security zone;

(766) (d) The Captain of the Port may remove any person, vessel, article, or thing from a security zone;

(767) (e) No person may board, or take or place any article or thing on board, any vessel in a security zone without the permission of the Captain of the Port; and

(768) (f) No person may take or place any article or thing upon any waterfront facility in a security zone without the permission of the Captain of the Port.

Subpart E–Restricted Waterfront Areas

(769) **§165.40 Restricted Waterfront Areas.**

(770) The Commandant, may direct the COTP to prevent access to waterfront facilities, and port and harbor areas, including vessels and harbor craft therein. This section may apply to persons who do not possess the credentials outlined in 33 CFR 125.09 when certain shipping activities are conducted that are outlined in 33 CFR 125.15.

Subpart F–Specific Regulated Navigation Areas and Limited Access Areas

(771) **§165.1303 Puget Sound and adjacent waters, WA-regulated navigation areas.**

(772) (a) The following is a regulated navigation area: the waters of the United States east of a line extending from Discovery Island Light to New Dungeness Light and all points in the Puget Sound area north and south of these lights.

(773) (b) Regulations.

(774) (1) Tank vessel navigation restrictions: Tank vessels larger than 125,000 deadweight tons bound for a port or place in the United States may not operate in the regulated navigation area.

(775) (2) A vessel in a precautionary area which is depicted on National Oceanic and Atmospheric Administration (NOAA) nautical charts, except precautionary area "BB" (a circular area of 2,500 yards radius centered at 48°26′24″N., 122°15′12″W.), must keep the center of the precautionary area to port.

(776) **Note:** The center of precautionary area "RB" is not marked by a buoy.

(777) **§165.1701 Port Valdez, Valdez, Alaska-safety zone.**

(778) The waters within the following boundaries are a safety zone-The area within 200 yards of any waterfront facility at the Trans-Alaska Pipeline Valdez Terminal complex or vessels moored or anchored at the Trans-Alaska Pipeline Valdez Terminal complex and the area within 200 yards of any tank vessel manuevering to approach, moor, unmoor, or depart the Trans-Alaska Pipeline Valdez Terminal complex.

(779) **§ 165.1703 Ammunition Island, Port Valdez, Alaska.**

(780) (a) The waters within the following boundaries is a safety zone-the area within 1330 yards of Ammunition Island, latitude 61°07.5′N., longitude 146°18′W., and the vessel moored or anchored at Ammunition Island.

(781) (b) The area 200 yards off the vessel navigating the Vessel Traffic System from abeam of Naked Island, maneuvering to approach, moor, unmoor at Ammunition Island, or the departure of the Vessel from Ammunition Island.

(782) (c) Special regulation. (1) §165.2312 does not apply to paragraph (a) of this section, except when the vessel is moored to Ammunition Island.

(783) (d) Effective August 25, 1987 Notice of vessels arrival will be made in the Notice to Mariners, Local Notice to Mariners and in the Local Valdez newspaper, prior to the vessel arrival.

(784) **165.1704 Prince William Sound, Alaska-regulated navigation area.**

(785) (a) The following is a regulated navigation area: The navigable waters of the United States north of a line drawn from Cape Hinchinbrook Light to Schooner Rock Light, comprising that portion of Prince William Sound between 146°30′W. and 147°20′W. and includes Valdez Arm, Valdez Narrows, and Port Valdez.

(786) (b) Within the regulated navigation area described in paragraph (a) of this section, §161.60 of this chapter establishes a VTS Special Area for the waters of Valdez Arm, Valdez Narrows, and Port Valdez northeast of a line bearing 307° True from Tongue Point at 61°02′06″N., 146°10′W.; and southwest of a line bearing 307° True from Entrance Island Light at 61°05′06″N., 146°36′42″W.

(787) (c) Regulations. In addition to the requirements set forth in §161.13 and §161.60(c) of this chapter, a tank vessel of 20,000 deadweight tons or more that intends to navigate within the regulated navigation area must:

(788) (1) Report compliance with Part 164 of this chapter, to the Vessel Traffic Center (VTC);

(789) (2) Have at least two radiotelephones capable of operating on the designated VTS frequency, one of which is capable of battery operation;

(790) (3) When steady wind conditions in the VTS Special Area or Port Valdez exceed, or are anticipated to exceed 40 knots, proceed as directed by the VTC (entry into the VTS Special Area and Port Valdez is prohibited);

(791) (4) When steady wind conditions, at the designated anchorage (Knowles Head), in Prince William Sound exceed:

(792) (i) 40 knots: not anchor within Prince William Sound, or if at anchor, must strictly adhere to §164.19 of this chapter, including maintaining a constant bridge watch and placing the entire main propulsion system on immediate standby;

(793) (ii) 45 knots or any dragging of the anchor occurs: weigh anchor and proceed as directed by the VTC;

(794) (5) When transiting the VTS Special Area, limit speed to 12 knots;

(795) (6) If laden and intending to navigate the VTS Special Area, limit speed to 12 knots except between Middle Rock and Potato Point where the speed limit shall be 6 knots; and

(796) (7) Not later than July 1, 1994, have an operating Automated Dependent Surveillance Shipborne Equipment (ADSSE) system installed.

(797) (i) The designated digital selective calling frequency (DSC) in Prince William Sound is 156.525 MHz (VHF Channel 70).

(798) (ii) ADSSE equipped vessels will not be required to make voice radio position reports at designated reporting points required by §161.20(b), unless otherwise directed by the VTC.

(799) (iii) Whenever a vessel's ADSSE becomes non-operational, as defined in §164.43(c) of this chapter, before entering or while underway in the VTS area, a vessel must:

(800) (A) Notify the VTC;

(801) (B) Make the required voice radio position reports as set forth in §161.60 and required by §161.20 (b) of this chapter;

(802) (C) Make other voice radio reports as required by the VTS; and

(803) (D) Restore the ADSSE to operating condition as soon as possible.

(804) (iv) Whenever a vessel's ADSSE becomes non-operational due to a loss of position correction information (i.e., the U.S. Coast Guard dGPS system cannot provide the required error correction messages) a vessel must:

(805) (A) Make the required voice radio position reports as set forth in §161.60 and required by §160.20(b) of this chapter; and

(806) (B) Make other voice radio reports as required by the VTS.

(807) (v) Whenever a vessel's ADSSE becomes non-operational before getting underway in the VTS area, permission to get underway must be obtained from the VTC.

(808) **Note:** Regulations pertaining to Automated Dependent Surveillance Shipborne Equipment (ADSSE) required capabilities are set forth in Part 164 of this chapter.

Part 166–Shipping Safety Fairways

Subpart A–General

(809) **§166.10 Purpose.** The purpose of these regulations is to establish and designate shipping safety fairways and fairway anchorages to provide unobstructed approaches for vessels using U.S. ports.

(810) **§166.10 Geographic Coordinates.**

(811) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

(812) **§166.10 Definitions.** (a) "Shippings safety fairway" or "fairway" means a lane or corridor in which no artificial island or fixed structure, whether temporary or permanent, will be permitted. Temporary underwater obstacles may be permitted under certain conditions described for specific areas in Subpart B. Aids to navigation approved by the U.S. Coast Guard may be established in a fairway.

(813) (b) "Fairway anchorage" means an anchorage area contiguous to and associated with a fairway, in which fixed structures may be permitted within certain spacing limitations, as described for specific areas in Subpart B.

(814) **§166.110 Modification of areas.** Fairways are subject to modification in accordance with 33 U.S.C. 1223(c); 92 Stat. 1473.

Subpart B-Designations of Fairways

(815) **§166.400 Areas along the coast of Alaska.**

(816) (a) Purpose. Fairways, as described in this section, are established to control the erection of structures therein to provide safe vessel routes along the coast of Alaska.

(817) **(b) Designated Areas. (1) Prince William Sound Safety Fairway.** (i) Hinchinbrook Entrance Safety Fairway. The area enclosed by rhumb lines joining points at:

(818) 59°59′00″N., 145°27′24″W.

(819) 60°13′18″N., 146°38′06″W.

(820) 60°11′24″N., 146°47′00″W.

(821) 59°55′00″N., 145°42′00″W.

(822) (ii) Gulf to Hinchinbrook Safety Fairway (recommended for inbound vessel traffic). The area enclosed by rhumb lines joining points at:

(823) 59°15′42″N., 144°02′07″W.

(824) 59°59′00″N., 145°27′24″W.

(825) 59°58′00″N., 145°32′12″W.

(826) 59°14′18″N., 144°04′53″W.

(827) (iii) Hinchinbrook to Gulf Safety Fairway (recommended for outbound vessel traffic). The area enclosed by rhumb lines joining points at:

(828) 59°15′41″N., 144°23′35″W.

(829) 59°56′00″N., 145°37′39″W.

(830) 59°55′00″N., 145°42′00″W.

(831) 59°14′19″N., 144°26′25″W.

(832) **(2) Unimak Pass Safety Fairway.** (i) East/West Safety Fairway. The area enclosed by rhumb lines joining points at:

(833) 54°25′58″N., 165°42′24″W.

(834) 54°22′50″N., 165°06′54″W.

(835) 54°22′10″N., 164°59′29″W.

(836) 54°07′58″N., 162°19′25″W.

(837) 54°04′02″N., 162°20′35″W.

(838) 54°22′02″N., 165°43′36″W.

(839) (ii) North/South Safety Fairway. The area enclosed by rhumb lines joining points at:

(840) 54°42′28″N., 165°16′19″W.

(841) 54°43′32″N., 165°09′41″W;

(842) 54°22′50″N., 165°06′54″W.

(843) 54°22′10″N., 164°59′29″W.

PART 168–ESCORT REQUIREMENTS FOR CERTAIN TANKERS.

(844) **§168.01 Purpose.**

(845) (a) This part prescribes regulations in accordance with section 4116(c) of the Oil Pollution Act of 1990 (OPA 90) (Pub. L. 101-380). The regulations will reduce the risk of oil spills from laden, single hull tankers over 5,000 GT by requiring that these tankers be escorted by at least two suitable escort vessels. The escort vessels will be immediately available to influence the tankers' speed and course in the event of a steering or propulsion equipment failure, thereby reducing the possibility of groundings or collisions.

(846) (b) The regulations in this part establish minimum escort vessel requirements. Nothing in these regulations should be construed as relieving the master of a tanker from the duty to operate the vessel in a safe and prudent manner, taking into account the navigational constraints of the waterways to be traversed, other vessel traffic, and anticipated weather, tide, and sea conditions, which may require reduced speeds, greater assistance from escort vessels, or other operational precautions.

(847) **§168.05 Definitions.**

(848) As used in this part –

(849) "Disabled tanker" means a tanker experiencing a loss of propulsion or steering control.

(850) "Escort transit" means that portion of the tanker's voyage through waters where escort vessels are required.

(851) "Escort vessel" means any vessel that is assigned and dedicated to a tanker during the escort transit, and that is fendered and outfitted with towing gear as appropriate for its role in an emergency response to a disabled tanker.

(852) "Laden" means transporting in bulk any quantity of applicable cargo, except for clingage and residue in otherwise empty cargo tanks.

(853) "Single hull tanker" means any self-propelled tank vessel that is not constructed with both double bottom and double sides in accordance with the provision of 33 CFR 157.10d.

(854) "Tanker master" means the licensed onboard person in charge of the tanker.

(855) "Tanker owner or operator" means the owner or shoreside organization (individual, corporation, partnership, or association), including a demise charterer, responsible for the overall management and operation of the tanker.

(856) **§168.10 Responsibilities.**

(857) (a) The tanker owner or operator shall:

(858) (1) select escort vessels that can meet the performance requirements of this part; and

(859) (2) inform the tanker master of the performance capabilities of the selected escort vessels. This information must be provided to the master before beginning the escort transit.

(860) (b) The tanker master shall operate the tanker within the performance capabilities of the escort vessels, taking into account speed, sea and weather conditions, navigational considerations, and other factors that may change or arise during the escort transit.

(861) (c) In an emergency, the tanker master may deviate from the requirements of this part to the extent necessary to avoid endangering persons, property, or the environment, but shall immediately report the deviation to the cognizant Coast Guard Captain of the Port (COTP).

(862) **§168.20 Applicable vessels.**

(863) The requirements of this part apply to laden, single hull tankers of 5,000 gross tons or more.

(864) **§168.30 Applicable cargoes.**

(865) The requirements of this part apply to any petroleum oil listed in 46 CFR Table 30.25—1 as a pollution category I cargo.

(866) **§168.40 Applicable waters and number of escort vessels.**

(867) The requirements of this part apply to the following waters:

(868) (a) Prince William Sound: Each tanker to which this part applies must be escorted by at least two escort vessels in those navigable waters of the United States within Prince William Sound, Alaska, and the adjoining tributaries, bays, harbors, and ports, including the navigable waters of the United States within a line drawn from Cape Hinchinbrook Light, to Seal Rocks Light, to a point on Montague Island at 60°14.6′N., 146°59′W., and the waters of Montague Strait east of a line between Cape Puget and Cape Cleare.

(869) (b) Puget Sound and certain associated waters: Each tanker to which this part applies must be escorted by at least two escort vessels in those navigable waters of the United States and Washington State east of a line connecting New Dungeness Light with Discovery Island Light and all points in the Puget Sound area north and south of these lights. This area includes all the navigable waters of the United States within Haro Strait, Rosario Strait, the Strait of Georgia, Puget Sound, and Hood Canal, as well as those portions of the Strait of Juan de Fuca east of the New Dungeness-Discovery Island line.

(870) **§168.50 Performance and operational requirements.**

(871) (a) Except as provided in paragraph (c) of §168.10, at all times during the escort transit each tanker to which this part applies:

(872) (1) Must be accompanied by escort vessels that meet the performance requirements of paragraph (b) of this section (but not less than the number of escorts required by §168.40).

(873) (2) Must have the escort vessels positioned relative to the tanker such that timely response to a propulsion or steering failure can be effected.

(874) (3) Must not exceed a speed beyond which the escort vessels can reasonably be expected to safely bring the tanker under control within the navigational limits of the waterway, taking into consideration ambient sea and weather conditions, surrounding vessel traffic, hazards, and other factors that may reduce the available sea room.

(875) (b) The escort vessels, acting singly or jointly in any combination as needed, and considering their applied force vectors on the tanker's hull, must be capable of –

(876) (1) Towing the tanker at 4 knots in calm conditions, and holding it in steady position against a 45-knot headwind;

(877) (2) Stopping the tanker within the same distance that it could crash-stop itself from a speed of 6 knots using its own propulsion system;

(878) (3) Holding the tanker on a steady course against a 35-degree locked rudder at a speed of 6 knots; and

(879) (4) Turning the tanker 90 degrees, assuming a free-swinging rudder and a speed of 6 knots, within the same distance (advance and transfer) that it could turn itself with a hard-over rudder.

(880) **§168.60 Pre-escort conference.**

(881) (a) Before commencing an escort transit, the tanker master shall confer, by radio or in person, with the tanker pilot and the masters of the escort vessels regarding the escort operation.

(882) (b) The purpose of the pre-escort conference is for all parties to plan and discuss particulars of the escort transit.

(883) (c) At a minimum, the following topics must be addressed during the pre-escort conference:

(884) (1) The destination, route, planned speed, other vessel traffic, anticipated weather, tide, and sea conditions, and other navigational considerations;

(885) (2) The type and operational status of communication, towing, steering, and propulsion equipment on the tanker and escort vessels;

(886) (3) The relative positioning and reaction time for the escort vessels to move into assist positions, including, if appropriate, pre-tethering the escort vessels at crucial points along the route;

(887) (4) The preparations required on the tanker and escort vessels, and the methods employed in making an emergency towline connection, including stationing of deck crews, preparation of messenger lines, bridles, and other towing gear, and energizing appropriate deck equipment;

(888) (5) The manner in which an emergency towline connection would be made (which escort vessel will respond, how messengers and towlines will be passed, etc.);

(889) (6) Other relevant information provided by the tanker master, pilot or escort vessel masters.

Part 334–Danger Zones and Restricted Area Regulations

(890) **§334.1 Purpose.**

(891) The purpose of this part is to:

(892) (a) Prescribe procedures for establishing, amending and disestablishing danger zones and restricted area;

(893) (b) List the specific danger zones and restricted areas and their boundaries; and

(894) (c) Prescribe specific requirements, access limitations and controlled activities within the danger zones and restricted areas.

(895) **§334.2 Definitions**

(896) (a) Danger zone. A defined water area (or areas) used for target practice, bombing, rocket firing or other especially hazardous operations, normally for the armed forces. The danger zones may be closed to the public on a full-time or intermittent basis, as stated in the regulations.

(897) (b) Restricted area. A defined water area for the purpose of prohibiting or limiting public access to the area. Restricted areas generally provide security for Government property and/or protection to the public from the risks of damage or injury arising from the Government's use of that area.

(898) **§334.3 Special policies.**

(899) (a) General. The general regulatory policies stated in 33 CFR part 320 will be followed as appropriate. In addition, danger zone and restricted area regulations shall provide for public access to the area to the maximum extent practicable.

(900) (b) Food fishing industry. The authority to prescribe danger zone and restricted area regulations must be exercised so as not to unreasonably interfere with or restrict the food fishing industry. Whenever the proposed establishment of a danger zone or restricted area may affect fishing operations, the District Engineer will consult with the Regional Director, U.S. Fish and Wildlife Service, Department of the Interior and the Regional Director, National Marine Fisheries Service, National Oceanic & Atmospheric Administration (NOAA),

(901) (c) Temporary, occasional or intermittent use. If the use of the water area is desired for a short period of time, not exceed thirty days in duration, and that planned operations can be conducted safely without imposing unreasonable restrictions on navigation, and without promulgating restricted area regulations in accordance with the regulations in this section, applicants may be informed that formal regulations are not required. Activities of this type shall not reoccur more often than biennially (every other year), unless danger zone/restricted area rules are promulgated under this Part. Proper notices for mariners requesting that vessels avoid the area will be issued by the Agency requesting such use of the water area, or if appropriate, by the District Engineer, to all known interested persons. Copies will also be sent to appropriate State agencies, the Commandant, U.S. Coast Guard, Washington, DC 20590, and Director, Defense Mapping Agency, Hydrographic Center, Washington, DC 20390, ATTN: Code NS 12. Notification to all parties and Agencies shall be made at least two weeks prior to the planned event, or earlier, if required for distribution of Local Notice to Mariners by the Coast Guard.

(902) **§334.4 Establishment and amendment procedures.**

(903) (a) Application. Any request for the establishment, amendment or revocation of a danger zone or restricted area must contain sufficient information for the District Engineer to issue a public notice, and as a minimum must contain the following:

(904) (1) Name, address and telephone number of requestor including the identity of the command and DoD facility and the identity of a point of contact with phone number.

(905) (2) Name of waterway and if a small tributary, the name of a larger connecting waterbody.

(906) (3) Name of closest city or town, county/parish and state.

(907) (4) Location of proposed or existing danger zone or restricted area with a map showing the location, if possible.

(908) (5) A brief statement of the need for the area, its intended use and detailed description of the times, dates and extent of restriction.

(909) (b) Public notice. (1) The Corps will normally publish public notices and **Federal Register** documents concurrently. Upon receipt of a request for the establishment, amendment or revocation of a danger zone or restricted area, the District Engineer should forward a copy of the request with his/her recommendation, a copy of the draft public notice and a draft **Federal Register** document to the Office of the Chief of Engineers, ATTN: CECW-OR. The Chief of Engineers will publish the proposal in the **Federal Register** concurrent with the public notice issued by the District Engineer.

(910) (2) Content. The public notice and **Federal Register** documents must include sufficient information to give a clear understanding of the proposed action and should include the following items of information:

(911) (i) Applicable statutory authority or authorities; (40 Stat. 266; 33 U.S.C. 1) and (40 Stat. 892; 33 U.S.C. 3)

(912) (ii) A reasonable comment period. The public notice should fix a limiting date within which comments will be received, normally a period not less than 30 days after publication of the notice.

(913) (iii) The address of the District Engineer as the recipient of any comments received.

(914) (iv) The identity of the applicant/proponent;

(915) (v) The name or title, address and telephone number of the Corps employee from whom additional information concerning the proposal may be obtained;

(916) (vi) The location of the proposed activity accompanied by a map of sufficient detail to show the boundaries of the area(s) and its relationship to the surrounding area.

(917) (3) Distribution. Public notice will be distributed in accordance with 33 CFR 325.3(d)(1). In addition to this general distribution, public notices will be sent to the following Agencies:

(918) (i) The Federal Aviation Administration (FAA) where the use of airspace is involved.

(919) (ii) The Commander, Service Force, U.S. Atlantic Fleet, if a proposed action involves a danger zone off the U.S. Atlantic coast.

(920) (iii) Proposed danger zones on the U.S. Pacific coast must be coordinated with the applicable commands as follows:

(921) Alaska, Oregon and Washington:

(922) Commander, Naval Base, Seattle

(923) California:

(924) Commander, Naval Base, San Diego

(925) Hawaii and Trust Territories:

(926) Commander, Naval Base, Pearl Harbor

(927) (c) Public hearing. The District Engineer may conduct a public hearing in accordance with 33 CFR part 327.

(928) (d) Environmental documentation. The District Engineer shall prepare environmental documentation in accordance with appendix B to 33 CFR part 325.

(929) (e) District Engineer's recommendation. After closure of the comment period, and upon completion of the District Engineer's review he/she shall forward the case through channels to the Office of the Chief of Engineers, ATTN: CECW-OR with a recommendation of whether or not the danger zone or restricted area regulation should be promulgated. The District Engineer shall include a copy of environmental documentation prepared in accordance with appendix B to 33 CFR part 325, the record of any public hearings, if held, a summary of any comments received and

a response thereto, and a draft of the regulation as it is to appear in the **Federal Register.**

(930) (f) Final decision. The Chief of Engineers will notify the District Engineer of the final decision to either approve or disapprove the regulations. The District Engineer will notify the applicant/proponent and publish a public notice of the final decision. Concurrent with issuance of the public notice the Office of the Chief of Engineers will publish the final decision in the **Federal Register** and either withdraw the proposed regulation or issue the final regulation as appropriate. The final rule shall become effective no sooner than 30 days after publication in the **Federal Register** unless the Chief of Engineers finds that sufficient cause exists and publishes that rationale with the regulations.

(931) **§334.5 Disestablishment of a danger zone.**

(932) (a) Upon receipt of a request from any agency for the disestablishment of a danger zone, the District Engineer shall notify that agency of its responsibility for returning the area to a condition suitable for use by the public. The agency must either certify that it has not used the area for a purpose that requires cleanup or that it has removed all hazardous materials and munitions, before the Corps will disestablish the area. The agency will remain responsible for the enforcement of the danger zone regulations to prevent unauthorized entry into the area until the area is deemed safe for use by the public and the area is disestablished by the Corps.

(933) (b) Upon receipt of the certification required in paragraph (a) of this section, the District shall forward the request for disestablishment of the danger zone through channels to CECW-OR, with its recommendations. Notice of proposed rulemaking and public procedures as outlined in §334.4 are not normally required before publication of the final rule revoking a restricted area or danger zone regulation. The disestablishment/revocation of the danger zone or restricted area regulation removes a restriction on a waterway.

(934) **§334.6 Datum.**

(935) (a) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose reference horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being used.

(936) (b) For further information on NAD 83 and National Service nautical charts please contact:

(937) Director, Coast Survey (N/CG2)

(938) National Ocean Service, NOAA

(939) 1315 East-West Highway, Station 6147

(940) Silver Spring, MD 20910-3282.

(941) **§334.1280 Bristol Bay, Alaska; air-to-air weapon range, Alaskan Air Command, U.S. Air Force.** (a) The danger zone. An area in Bristol Bay beginning at latitude 58°24′N., longitude 159°10′W.; thence to latitude 57°58′N., longitude 158°30′W.; thence to latitude 57°07′N., longitude 160°20′W.; thence to latitude 58°02′N., longitude 161°40′W.; and thence to the point of beginning.

(942) (b) The regulations. (1) Intermittent firing will be conducted over two to three day periods about 2 hours a day between the hours of 10:00 a.m. and 4:00 p.m. during the months of May through August.

(943) (2) The fact that practice firing is to take place over the designated area shall be advertised to the public 72 hours in advance through the usual media for the dissemination of such information. Notice to the U.S. Coast Guard and NOTAM shall be issued at least 48 hours before firing is to be conducted on the range. Information as to the dates, time, and characteristics of the firing shall be advertised in advance of each session of firing.

(944) (3) Prior to conducting each practice firing, the danger zone shall be patrolled by aircraft to note the location of all vessels within the area. The practice firing exercise shall be conducted in the portion of the danger zone not occupied by surface craft.

(945) (4) This section shall be enforced by the Commander, Alaskan Air Command, U.S. Air Force, Seattle, Washington, or such agencies as he may designate.

(946) **§334.1290 In Bering Sea, Shemya Island Area, Alaska; meteorological rocket launching facility, Alaskan Air Command, U.S. Air Force.** (a) The danger zone. An arc of a circle with a 45-nautical-mile radius of the launch point centered at latitude 52°43′30″N., longitude 174°06′05″E. extending clockwise from 110° true bearing to 200° true bearing.

(947) (b) The regulation. (1) Rockets will normally be launched one each day Monday through Friday between 9 a.m. and 3 p.m. Rocket hardware will discharge into the sea 22.5 to 37.5 nautical miles off the launchsite. The instrument package with parachute will impact about 1½ hours later at an undetermined area, depending on weather conditions.

(948) (2) All mariners entering the area will do so at their own risk and are cautioned to take evasive action as necessary.

(949) (3) The regulation in this section shall be enforced by the Department of the Air Force, Headquarters 6th Weather Wing (MAC), Andrews Air Force Base, Washington, D.C. 20331.

(950) **§334.1300 Blying Sound area, Gulf of Alaska, Alaska; air-to-air gunnery practice area, Alaskan Air Command, U.S. Air Force.** (a) The danger zone. A rhomboidal area beginning at

(951) 59°51′30″N., 148°42′00″W.; thence to

(952) 59°22′30″N., 147°00′00″W.; thence to

(953) 58°52′00″N., 148°03′00″W.; thence to

(954) 59°20′00″N., 149°45′00″W., and thence to point of beginning.

(955) (b) The regulations. (1) 20-mm. cannon will be fired at towed targets in the air. One firing mission will be conducted every 2 weeks during daylight hours only and weather permitting.

(956) (2) The fact that practice firing is to take place over the designated area shall be advertised to the public 7 days in advance through the usual media for the dissemination of such information. Notice to the U.S. Coast Guard and NOTAM shall be issued at least 48 hours before firing is to be conducted on the range. Information as to the dates, time, and characteristics of the firing shall be advertised in advance of each session of firing.

(957) (3) Prior to conducting each practice firing, the danger zone shall be patrolled by aircraft to note the location of all vessels within the area. The practice firing exercise shall be conducted in the portion of the danger zone not occupied by surface craft.

(958) (4) The regulations in this section shall be enforced by the Commander, Alaskan Air Command, U.S. Air Force, Anchorage, Alaska, or such agencies as he may designate.

(959) **§334.1320 Kuluk Bay, Adak, Alaska; naval restricted area.**

(960) (a) The area. The northwest portion of Kuluk Bay bounded as follows: Beginning on shore at

(961) 51°55′00″N., 176°33′09″W.; thence due east to

(962) 51°55′00″N., 176°33′09″W.; thence due south to

(963) 51°51′55″N., 176°31′09″W.; thence due west to the shore at

(964) 51°51′00″N., 176°37′43″W.; thence along the shoreline to the point of beginning.

(965) (b) The regulations. (1) Except in great emergency, no vessel shall anchor in the restricted area described above.

(966) (2) The dragging of anchors in or across the restricted area is prohibited and no object attached to a vessel shall be placed on or near the bottom.

(967) (3) Fishing and trawling activities in the restricted area are prohibited.

(968) (4) The regulation of this restricted area shall be enforced by the Commander, Patrol Wing, U.S. Pacific Fleet, Naval Air Station Moffett Field, California, and such agencies and he/she may designate.

(969) **§334.1330 Bering Strait, Alaska; naval restricted area off Cape Prince of Wales.** (a) The area. An area 2,000 feet wide extending from a point on Cape Prince of Wales marked by a triangular cable marker located approximately midway between the village of Wales and Cape Prince of Wales Light to a point four statute miles due west of the cable marker with the axis of the area passing through the two points.

(970) (b) The regulations. (1) No vessel shall anchor in the restricted area described in paragraph (a) of this section.

(971) (2) Dragging of anchors in or across the restricted area is prohibited and no object attached to a vessel shall be placed on or near the bottom.

(972) (3) The regulations in this section shall be enforced by the Commander, Third Fleet, Pearl Harbor, Hawaii, and such agencies as he may designate.

(973) **Title 50, Wildlife and Fisheries**

(974) **Part 227–Threatened Fish and Wildlife**

(975) **Subpart B–Threatened Marine Mammals**

(976) **§227.12 Steller sea lion.**

(977) (a) Prohibitions-(1) No discharge of firearms. Except as provided in paragraph (b) of this section, no person subject to the jurisdiction of the United States may discharge a firearm at or within 100 yards (91.4 meters) of a Steller sea lion. A firearm is any weapon, such as a pistol or rifle, capable of firing a missile using an explosive charge as a propellant.

(978) (2) No approach in buffer areas. Except as provided in paragraph (b) of this section:

(979) (i) No owner or operator of a vessel may allow the vessel to approach within 3 nautical miles (5.5 kilometers) of a Steller sea lion rookery site listed in paragraph (a)(3) of this section;

(980) (ii) No person may approach on land not privately owned within one-half statutory miles (0.8 kilometers) or within sight of a Steller sea lion rookery site listed in paragraph (a)(3) of this section, whichever is greater, except on Marmot Island; and

(981) (iii) No person may approach on land not privately owned within one and one-half statutory miles (2.4 kilometers) or within sight of the eastern shore of Marmot Island, including the Steller sea lion rookery site listed in paragraph (a)(3) of this section, whichever is greater.

(982) (3) Listed sea lion rookery sites. Listed Steller sea lion rookery sites consist of the rookeries in the Aleutian Islands and the Gulf of Alaska listed in Table 1.

(983) (4) Quota. If the Assistant Administrator determines and publishes notice that 675 Steller sea lions has been killed incidentally in the course of commercial fishing operations in Alaskan waters and adjacent areas of the U.S. Exclusive Economic Zone (EEZ) west of 141°W longitude during any calendar year, then it will be unlawful to kill any additional Steller sea lions in this area. In order to monitor this quota, the Director, Alaska Region, National Marine Fisheries Service, may require the placement of an observer on any fishing vessel. If data indicate that the quota is being approached, the Assistant Administrator will issue emergency rules to establish closed areas, allocate the remaining quota among fisheries, or take other action(s) to ensure that commercial fishing operations do not exceed the quota.

(984) (b) Exceptions-(1) Permits. The Assistant Administrator may issue permits authorizing activities that would otherwise be prohibited under paragraph (a) of this section in accordance with and subject to the provisions of 50 CFR part 222, subpart C-Endangered Fish or Wildlife Permits.

(985) (2) Official activities. Paragraph (a) of this section does not prohibit or restrict a Federal, state or local government official, or his or her designee, who is acting in the course of official duties from:

(986) (i) Taking a Steller sea lion in a humane manner, if the taking is for the protection or welfare of the animal, the protection of the public health and welfare, or the nonlethal removal of nuisance animals; or

(987) (ii) Entering the buffer areas to perform activities that are necessary for national defense, or the performance of other legitimate governmental activities.

(988) (3) Subsistence takings by Alaska natives. Paragraph (a) of this section does not apply to the taking of Steller sea lions for subsistence purposes under section 10(e) of the Act.

(989) (4) Emergency situations. Paragraph (a)(2) of this section does not apply to an emergency situation in which compliance with that provision presents a threat to the health, safety, or life of a person or presents a significant threat to the vessel or property.

(990) (5) Exemptions. Paragraph (a)(2) of this section does not apply to any activity authorized by a prior written exemption from the Director, Alaska Region, National Marine Fisheries Service. Concurrently with the issuance of any exemption, the Assistant Administrator will publish notice of the exemption in the FEDERAL REGISTER. An exemption may be granted only if the activity will not have a significant adverse affect on Steller sea lions, the activity has been conducted historically or traditionally in the buffer zones, and there is not readily available and acceptable alternative to or site for the activity.

(991) (c) Penalties. (1) Any person who violates this section or the Act is subject to the penalties specified in section 11 of the Act, and any other penalties provided by law.

(992) (2) Any vessel used in violation of this section or the Endangered Species Act is subject to forfeiture under section 11(e)(4)(B) of the Act.

Listed Steller Sea Lion Rookery Sites[1]

Island	From		To		NOAA chart	Notes
	Lat.	Long.	Lat.	Long.		
1. Outer I	59°20.5 N	150°23.0 W	59°21.0 N	150°24.5 W	16681	S quadrant.
2. Sugarloaf I	58°53.0 N	150°02.0 W			16580	Whole island.
3. Marmot I	58°14.5 N	151°47.5 W	58°10.0 N	151°51.0 W	16580	SE quadrant.
4. Chirikof I	55°46.5 N	155°39.5 W	55°46.5 N	155°43.0 W	16580	S quadrant.
5. Chowiet I	56°00.5 N	156°41.5 W	56°00.5 N	156°42.0 W	16013	S quadrant.
6. Atkins I	55°03.5 N	159°18.5 W			16540	Whole island.
7. Chernabura I	54°47.5 N	159°31.0 W	54°45.5 N	159°35.5 W	16540	SE corner.
8. Pinnacle Rock	54°46.0 N	161°46.0 W			16540	Whole island.
9. Clubbing Rks (N)	54°43.0 N	162°26.5 W			16540	Whole island.
Clubbing Rks (S)	54°42.0 N	162°26.5 W			16540	Whole island.
10. Sea Lion Rks	55°28.0 N	163°12.0 W			16520	Whole island.
11. Ugamak I	54°14.0 N	164°48.0 W	54°13.0 N	164°48.8 W	16520	E end of island.
12. Akun I	54°18.0 N	165°32.5 W	54°18.0 N	165°31.5 W	16547	Billings Head Bight.
13. Akutan I	54°03.5 N	166°00.0 W	54°05.5 N	166°05.0 W	16520	SW corner, Cape Morgan.
14. Bogoslof I	53°56.0 N	168°02.0 W			16500	Whole island.
15. Ogchul I	53°00.0 N	168°24.0 W			16500	Whole island.
16. Adugak I	52°55.0 N	169°10.5 W			16500	Whole island.
17. Yunaska I	52°42.0 N	170°38.5 W	52°41.0 N	170°34.5 W	16500	NE end.
18. Seguam I	52°21.0 N	172°35.0 W	52°21.0 N	172°33.0 W	16480	N coast, Saddleridge Pt.
19. Agligadak I	52°06.5 N	172°54.0 W			16480	Whole island.
20. Kasatochi I	52°10.0 N	175°31.5 W	52°10.5 N	175°29.0 W	16480	N half of island.
21. Adak I.	51°36.5 N	176°59.0 W	51°38.0 N	176°59.5 W	16460	SW point, Lake Point.
22. Gramp rock	51°29.0 N	178°20.5 W			16460	Whole island.
23. Tag I	51°33.5 N	178°34.5 W			16460	Whole island.
24. Ulak I	51°20.0 N	178°57.0 W	51°18.5 N	178°59.5 W	16460	SE corner, Hasgox Pt.
25. Semisopochnoi	51°58.5 N	179°45.5 E	51°47.0 N	179°46.0 E	16440	E quadrant, Pochnoi Pt.
Semsopochnoi	52°01.5 N	179°37.5 E	52°01.5 N	179°39.0 E	16440	N quadrant, Petrel Pt.
26. Amchitka I	51°22.5 N	179°28.0 E	51°21.5 N	179°25.0 E	16440	East Cape.
27. Amchitka I	51°32.5 N	178°49.5 E			16440	Column Rocks
28. Ayugadak Pt	51°45.5 N	178°24.5 E			16440	SE coast of Rat island.
29. Kiska I	51°57.5 N	177°21.0 E	51°56.5 N	177°20.0 E	16640	W central, Lief Cove.
30. Kiska I	51°52.5 N	177°13.0 E	51°53.5 N	177°12.0 E	16440	Cape St. Stephen.
31. Walrus I	57°11.0 N	169°56.0 W			16380	Whole island.
32. Buldir I	52°20.5 N	175°57.0 E	52°23.5 N	175°51.0 E	16420	SE point to NW point.
33. Agattu I	52°24.0 N	173°21.5 E			16420	Gillion Point.
34. Agattu I	52°23.5 N	173°43.5 E	52°22.0 N	173°41.0 E	16420	Cape Sabak.
35. Attu I	52°54.5 N	172°28.5 E	52°57.5 N	172°31.5 E	16681	S Quadrant.

[1] Each site extends in a clockwise direction from the first set of geographic coordinates along the shoreline at mean lower low water to the second set of coordinates; or, if only one set of geographic coordinates is listed, the site extends around the entire shoreline of the island at mean lower low water

3. CAPE SPENCER TO BEAUFORT SEA

(1) **Alaska,** the largest of the United States, occupies the NW part of the North American continent. The State is bordered on the E and S by Canada and on the W and N by the Pacific and Arctic Oceans. The northernmost point of Alaska is Point Barrow (71°23′N., 156°28′W.); the westernmost point is Cape Wrangell (52°55′N., 172°26′E.) on Attu Island; and the southernmost point is Nitrof Point (51°13.0′N., 179°07.7′W.), on Amatignak Island. Cape Muzon (54°40′N., 132°41′W.) is on the historic parallel which is the coastal boundary between Alaska and Canada's British Columbia. Cape Muzon is on the N side of Dixon Entrance and is 480 miles NW of Cape Flattery, Washington; between the two United States capes is the coastal area of British Columbia.

(2) Alaska was purchased from Russia in 1867 and became an organized territory of the United States in 1912. By Presidential proclamation of January 3, 1959, Alaska officially became the 49th of the United States. Principal resources are oil, timber, fish, and coal. Alaska has a general ocean coastline of 5,770 nautical miles and a tidal shoreline of 29,462 miles. The State is so huge that its description requires two complete volumes of the National Ocean Service's nine-volume series of United States Coast Pilots.

(3) Coast Pilot 9 deals with the Pacific and Arctic coasts of Alaska from Cape Spencer to Beaufort Sea; general ocean coastline totals 5,520 nautical miles, and tidal shoreline totals 18,377 miles. Included are the Gulf of Alaska coast and islands, the Alaska Peninsula, the Aleutian Islands, and the United States coasts and islands of the Bering Sea, Chukchi Sea, and Beaufort Sea.

(4) Between Cape Spencer and Cape St. Elias, the coast is fairly regular. Along this stretch are Lituya Bay, Yakutat Bay, and Icy Bay. The great Malaspina Glacier comes to within 3 miles of the ocean W of Yakutat Bay.

(5) From Cape St. Elias to Cook Inlet, the characteristic formation is generally rocky; the waters are mostly deep, but there are also great variations in depth. The visible topographic features, such as the mountains and the rugged islands, probably are duplicated underwater.

(6) In Cook Inlet, the characteristic formation is the result of glacial action. The shores are strewn with boulders, some of great size, and soundings indicate the existence underwater of similar boulders, particularly in areas of hard bottom where the boulders have not been buried by silt.

(7) W from Cook Inlet, and throughout the islands off the SE side of the Alaska Peninsula, rock formation is again found. The principal harbors are Kodiak on Kodiak Island, Sand Point in the Shumagin Islands, and King Cove and False Pass on the SE side of the Peninsula.

(8) The Aleutian Islands are rugged and mountainous, with numerous off-lying islets, rocks, and reefs. Some of the larger islands provide more or less sheltered anchorage.

(9) The Bering Sea is characterized in general by shallow waters, with extensive sand and mud flats along the shores, particularly in the approaches to the various bays and rivers. There is little rock formation, and its occurrence, where found, is limited in area.

(10) The Arctic coast is mostly low, especially to the N of Cape Lisburne. The principal landing places are Kotzebue and Barrow.

(11) **Disposal Sites** and **Dumping Grounds.**–These areas are rarely mentioned in the Coast Pilot, but are shown on the nautical charts. (See Disposal Sites and Dumping Grounds, chapter 1, and charts for limits.)

(12) **Aids to navigation.**–Lights, although infrequent along much of this coast, do mark the important headlands and passages; fog signals are at most of the principal lights. Many of the buoys in the important passages are equipped with radar reflectors, which greatly increase the range at which the buoys may be detected. Many of the aids to navigation in Alaska are seasonal. There are aerolights in Alaska that are useful for navigation purposes, but these should not be confused with marine lights. (See the Light List for a complete description of navigational aids.)

(13) **Electronic navigation.**–Radar, loran, radar beacons (Racons), and the radio direction finder have given the navigator means of determining his position in any weather. The mariner should, however, appreciate the limitations and sources of error of the various systems. Radar should be properly calibrated and tuned. Radio direction finders must be calibrated, and the operator should become experienced in the use of the equipment. Radar, radio direction finder, and loran equipment are subject to malfunctions which may not be immediately apparent to the operator, and there are conditions when loran or radio signals may be subject to error when the shipboard receiver is operating properly. Soundings should always be taken in critical places, and the position should be checked by visual bearings when possible.

(14) Except for the Arctic Coast of Alaska, where radar beacons (Racons) are seasonally maintained, navigation by **radar** is facilitated along the remainder of the coast of Alaska and in the various passages by the generally high relief of the coastline. The rugged coast provides many points, headland, large offshore rocks and islands which give accurate radar ranges and bearings. Radar ranges are more accurate than radar bearings. When two or more suitable targets can be positively identified, a better fix is obtained by radar ranges alone than by radar ranges and bearings. When visibility permits, visual bearings should always be taken. When positioning by a bearing and a radar range of a single object, the identification of the target must be positive. Floating aids to navigation should not be used as targets for fixing position.

(15) Radiobeacons are limited in the area of this Coast Pilot. Radio direction finder equipment is subject to several kinds of errors. Bearings obtained at twilight or at night or bearings which are almost parallel to the coast should be accepted with reservations, due to "night effect" and to the distortion of the radio waves if traveling overland. Other sources of error in the system may be avoided by the proper calibration of the shipboard receiver.

(16) **Loran** provides good coverage from several stations along the North Pacific Ocean. These stations provide vessels generally good fixes when sailing along the coast or approaching the coast from seaward.

(17) The frequent occurrence of fog along this coast makes radar an invaluable aid in detecting other traffic and obtaining a line of position and/or fix. Bridge-to-bridge radio communication (VHF-FM) is another useful aid, regardless of weather, in waters where maneuvering room is limited or restricted. The use of VHF-FM equipment for short-range communication is increasing, and so are the number of vessels equipped with this equipment. The

primary advantages of this radio system are its line-of-sight characteristic and relative freedom from static interference.

(18) **Radar beacons (Racons)** have been established in the area of this Coast Pilot as additional aids to navigation. Most are along the U.S. Arctic Coast of Alaska from Point Lay (69°44.1′N., 163°00.6′W.) to Brownlow Point (70°09.6′N., 145°50.6′W.). **Racons** are generally seasonally maintained from July 1 to September 15. (See Racons, chapter 1, for additional information.)

(19) **COLREGS Demarcation Lines.**–The International Regulations for Preventing Collisions at Sea, 1972 (72 COLREGS) apply on all the sounds, bays, harbors, and inlets of Alaska. (See **Part 80,** chapter 2.)

(20) **Shipping Safety Fairways.**–A system of shipping safety fairways has been established in the approaches to Prince William Sound and through Unimak Pass. The Prince William Sound Safety Fairway, extending SE from Hinchinbrook Entrance, has separate inbound and outbound traffic lanes that merge in the NW part. The Unimak Pass Safety Fairway is comprised of an E-W fairway with a connecting N-S fairway in the W section. (See **166.100 through 166.110 and 166.400**, chapter 2, for limits and regulations.)

(21) **Ports and Waterways Safety.**–(See **Part 160**, chapter 2, for regulations governing vessel operations and requirements for notification of arrivals, departures, hazardous conditions, and certain dangerous cargoes to the Captain of the Port.)

(22) A **Traffic Separation Scheme (Traffic Lanes)** has been established in Prince William Sound. (See chapter 4, for details.)

(23) A **Vessel Traffic Service (VTS)** has been established in the Prince William Sound area. The Service has been established to prevent collisions and groundings, and to protect the navigable waters from environmental harm.

(24) The Vessel Traffic Service provides for a **Vessel Traffic Center (VTC)** that regulates the routing and movement of vessels by radar surveillance, movement reports of vessels, VHF-FM radio communications, and specific reporting points. The system consists of traffic lanes, a separation zone, and reporting points.

(25) The Service is mandatory. (See **161.301** through **161.387,** chapter 2, for rules and regulations, and chapter 4 for details.)

(26) **Anchorages.**–Many of the harbors in the mountainous areas are subject to violent williwaws. These severe gusts may come from any direction and should be considered when selecting an anchorage.

(27) **Dangers.**–Offshore drilling and exploration operations are increasing in the waters of Alaska, especially in Cook Inlet.

(28) Obstructions in these waters consist of submerged wells and oil well structures (platforms), including appurtenances thereto, such as mooring piles, anchor and mooring buoys, pipes, and stakes.

(29) In general, the oil well structures (platforms), depending on their size, depth of water in which located, proximity of vessel routes, nature and amount of vessel traffic, and the effect of background lighting, may be marked in one of the following ways:

(30) Quick flashing white light(s) visible at least 5 miles: fog signal sounded when visibility is less than 5 miles.

(31) Quick flashing white light(s) visible at least 3 miles: fog signal sounded when visibility is less than 3 miles.

(32) Quick flashing white or red lights visible at least 1 mile: may or may not be equipped with fog signal.

(33) Structures on or adjacent to the edges of navigable channels and fairways, regardless of location, may be required to display lights and fog signals for the safety of navigation.

(34) Associated structures within 100 yards of the main structure, regardless of location, are not normally lighted but are marked with red or white retro-reflective material. Mariners are cautioned that uncharted submerged pipelines and cables may exist in the vicinity of these structures, or between such structures and the shore.

(35) During construction of a well or during drilling operations, and until such time as the platform is capable of supporting the required aids, fixed white lights on the attending vessel or drilling rig may be shown in lieu of the required quick flashing lights on the structure. The attending vessel's foghorn may also be used as a substitute.

(36) Submerged wells may or may not be marked depending on their location and depth of water over them.

(37) All obstruction lights and fog signals, used to mark the various structures, are operated as privately maintained aids to navigation. (See **33 CFR 67**, for detailed regulations for the marking of offshore structures.)

(38) Information concerning the establishment, change, or discontinuance of offshore oil-well structures and their appurtenances is published in the Local Notice to Mariners or by Broadcast Notice. Additional information may also be obtained from the Coast Guard Commander. Mariners are advised to navigate with caution in the vicinity of these structures and in those waters where oil exploration is in progress, and to use the latest and largest scale chart of the area.

(39) During the continuing program of establishing, changing, and discontinuing oil-well structures, special caution should be exercised when navigating the inshore and offshore waters of the affected areas in order to avoid collision with any of the structures.

(40) Information concerning seismographic operations is not published in Notice to Mariners unless such operations create a menace to navigation in waters used by general navigation. Where seismographic operations are being conducted, casings (pipes), buoys, stakes, and detectors are installed. Casings are marked with flags by day and fixed red lights by night; buoys are colored international orange and white horizontal bands; and stakes are marked with flags.

(41) **Pipelaying barges.**–With the increased number of pipeline laying operations, operators of all types of vessels should be aware of the dangers of passing close aboard, close ahead, or close astern of a jetbarge or pipelaying barge. Pipelaying barges and jetbarges usually move at 0.5 knot or less and have anchors which extend out about 3,500 to 5,000 feet in all directions and which may be marked by lighted anchor buoys. The exposed pipeline behind the pipelaying barge and the area in the vicinity of anchors are hazardous to navigation and should be avoided. The pipeline and anchor cables also represent a submerged hazard to navigation. It is suggested, if safe navigation permits, for all types of vessels to pass well ahead of the pipelaying barge or well astern of the jetbarge. The pipelaying barge, jetbarge, and attending vessels may be contacted on VHF-FM channel 16 for passage instructions.

(42) **Kelp** grows on nearly every danger with a rocky bottom and is particularly heavy in many places in the Aleutian Islands. It will be seen on the surface of the water during the summer and autumn; during the winter and spring it is not always to be seen, especially where it is exposed to a heavy sea. Many rocks are not marked by kelp, because a heavy sea will occasionally tear it away and a moderate current will draw it under water so that it will not be seen. When passing on the side of a kelp patch from which the stems stream away with the current, care should be taken to give it

a good berth. Dead, detached kelp, floats on the water curled in masses, while live kelp, attached to rocks, streams away level with the surface. Live kelp is usually an indication of depths less than 10 fathoms.

(43) **Logs and deadheads.**–Mariners are cautioned that a large number of logs and deadheads are adrift in the navigable waters of Alaska at all times particularly after storms and unusually high tides. Mariners are urged to be alert for the presences of such logs and deadheads, as they constitute a serious menace to craft of small and moderate size.

(44) **Danger zones** and **Restricted areas** are along the Alaskan coast. (See **Part 334**, chapter 2, for limits and regulations.)

(45) **Tides.**–The greatest diurnal range of tide in the United States is the 33.3 feet in Turnagain Arm, Cook Inlet. In contrast, Point Barrow has a diurnal range of only 0.4 foot. (See the Tide Tables for more detailed information.)

(46) **Caution.**–In using the Tide Tables, high or low water should not be confused with slack water. For ocean stations there is usually little difference between the time of high or low water and the beginning of ebb or flood currents; but for places in narrow channels, landlocked harbors, or on tidal rivers the time of slack water may differ by several hours from the time of high or low water stand. The relation of the times of high and low water to the turning of the current depends upon a number of factors, hence no simple rule can be given. (See the Tidal Current Tables for predicted times of slack water or strength of current.)

(47) **Currents.**–The nontidal current that sets N and W along the coasts of British Columbia and Alaska is greatly affected by strong winds and may reach velocities of 1.5 knots; the offshore extent of this current is not known but it is believed to be strongest between the 100-fathom curve and the coast. (See the Tidal Current Tables for more detailed information on currents.)

(48) **Tide rips** and **Swirls** in regions of strong currents usually are encountered in the vicinities of shoals, islands, or points and are, therefore, generally positive indications of danger. The backwash from seas striking steep cliffs often is felt at a considerable distance. In thick weather, any change in the feel of a moving vessel should be considered a warning of possible danger.

(49) **Earthquakes.**–The March 27, 1964, earthquake had wide effect on Prince William Sound, Cook Inlet, and Kodiak Island. Post-earthquake tidal observations indicate bottom changes ranging from a sinkage of 6 feet to a rise of 32 feet. Caution is advised in the affected areas because many of the depths and rocks yet to be resurveyed may be considerably different than represented on the nautical charts or in this Coast Pilot.

(50) **Tsunamis (seismic sea waves).**–There is no record of any destructive seismic sea wave along the Bering Sea coast of the Alaska mainland. The rest of Alaska, especially the area from Attu Island to Cape Spencer, occasionally is subject to severe waves which cause widespread damage to waterfront areas and shipping. Loss of life and property can be reduced by correct response to warning that such waves are imminent. (See chapter 1 for details about these waves.)

(51) One of the world's most active seismic belts parallels the S sides of the Aleutian Islands and the Alaska Peninsula. Another active belt parallels southeast Alaska and Canada. Earthquakes are frequent in both these areas but only a very few generate seismic waves. The National Oceanic and Atmospheric Administration has the Alaska Tsunami Warning Center at Palmer, Alaska, which will issue warnings of tsunamis generated in the Gulf of Alaska and the Aleutian Islands. Because of extensive telemetry nets, it is anticipated that this center will be able to issue tsunami warnings, based on seismic evidence, within 15 minutes of the occurrence of the generating earthquake. Warnings will be disseminated by the National Weather Service on NOAA Weather Radio and through Civil Defense and military authorities.

(52) Because of the long length of Alaskan coastline and the vulnerability of communication facilities to major earthquakes, any unexplained withdrawal or advance of the sea within an hour or so after an earthquake is felt should be considered nature's warning of an approaching wave.

(53) When a warning is received, persons should vacate waterfront areas and seek high ground. The safest procedure for ships will depend on the amount of time available, and this may not always be known. A ship well out at sea would ride such waves safely, and hence if time is available to put to sea, that would be the safest action. On the other hand, the crew of a ship in harbor may have a difficult time averting serious damage. The ship may be washed ashore by incoming waves or grounded because of excessive withdrawal of water between crests. Much of the damage in the Los Angeles area during the 1960 Chilean tsunami was caused by rapid currents and the swift rise and fall of the water level that parted mooring lines and set floating docks and ships adrift.

(54) **Weather.**–Dates of ice breakup and freezeup, climatological tables for coastal locations and meteorological tables for the coastal ocean area covered in this volume follow the appendix. The tables for the ocean area were compiled from observations made by ships in passage. Listed in the appendix are National Weather Service offices and radio stations which transmit weather information.

(55) Marine Weather Services Charts published by the National Weather Service show radio stations that transmit marine weather broadcasts and additional information of interest to mariners. These charts are for sale by the National Ocean Service Distribution Branch (N/CG33). (See appendix for address.)

(56) This section presents an overall, seasonal picture of the weather that can be expected in the offshore waters along the entire coast of Alaska. Detailed information, particularly concerning navigational weather hazards, can be found in the appropriate coastal sections.

(57) **Winter (October–March).**–The Aleutian Low looms over the North Pacific as a climatic warning to mariners navigating the Alaskan waters. This semipermanent feature is made up of the day-to-day storms that traverse these seas in a seemingly endless procession. And with these storms come the rain, sleet, snow, the howling winds, and the mountainous seas that make the northern Gulf of Alaska and the southern Bering Sea among the most treacherous winter waters in the Northern Hemisphere.

(58) The broad expanse of the Aleutian Low covers the Pacific Basin from the Arctic Ocean to 30°N, and from the North American coast to Japan. The center migrates from the Bristol Bay-northwestern Aleutian Islands by midwinter. While this migration indicates a shift in storm activity, particularly intensity, three of four storms per month still move through the area each month, on the average. Winter or extratropical storms from the Asian mainland and the waters around Japan generally move NE toward the Aleutians and then into either the Bering Sea or the Gulf of Alaska. Once they reach the Alaskan coast, they have a tendency to stall and dissipate, particularly in the Gulf, where there are mountain barriers to the N and E. Early winter storms are often intense and are more likely to make it into the Bering Sea than mid- and late-season storms. This makes the early part of the win-

ter the roughest part of a rough season in the Gulf and the southern Bering Sea. As winter progresses, more storms remain S of the Aleutians which results in a noticeable difference in wind, wave, and weather conditions in the navigable Alaskan waters.

(59) Winter winds are variable. No one direction prevails. In the northern Gulf, easterlies, southeasterlies, and westerlies are common. In the southern Bering Sea, including the Aleutian waters, SW through NW winds common early in the season give way to N through E winds by January. This is a reflection of the more S route of storms. Gales, which blow 10 to 20 percent of the time, are most likely in November and December. Windspeeds average 16 to 20 knots; peak values occur in October, November, and December. Wave heights climb to 10 feet or more throughout the winter. In situations that occur on the average of once every five years, severe wind and wave conditions may be encountered. Along the Aleutians, sustained winds may reach 65 to 70 knots; significant wave heights can climb to 40 to 50 feet, with an extreme wave height reaching 80 to 90 feet. In the northern and western Gulf of Alaska and in Bristol Bay, sustained winds may reach 60 to 70 knots; significant wave heights can climb to 30 to 40 feet, with an extreme wave height of 60 to 75 feet. These extremes are most likely to occur during the winter season.

(60) In winter, precipitation occurs 20 to 35 percent of the time. It is most likely along the Aleutians, where it falls as snow more than one-half of the time in midwinter. In the Gulf, it snows about 5 to 10 percent of the time. Since snow is the primary restriction to visibility in the winter, restrictions are most likely to occur along the Aleutians. Visibilities less than 2 miles occur 5 to 15 percent of the time. Cold winter temperatures are a result of winds blowing off land or off the ice sheet. Temperatures drop to freezing or below about 20 to 30 percent of the time in January. Rare polar outbreaks from the Arctic can drop temperatures into the teens.

(61) Heavy swells out of the S through SW in Aleutian waters are often forerunners of intense storms from the waters around Japan. They can climb to 20 to 30 feet. As storms from the S or W approach the Aleutians, they bring clouds and either rain or snow. Winds blow out of the NE through SE. They can reach gale force and whip up 30-foot seas. Gales and high seas can occur before and after the storm passes.

(62) Lows running E with their centers S of the Aleutians, as is common in midwinter, usually bring E winds backing through N to W over the southern Bering Sea. These winds can reach 60 knots, with seas to 30 feet. As these storms and storms from the mid-Pacific approach the Gulf of Alaska, they are sometimes preceded by heavy swells from the SE through the SW. Then winds strengthen out of the NE through S as clouds and rain begin to move in. Gales and 30-foot seas are not unusual with intense storms. Sometimes they will stall in the Gulf and prolong these rough conditions for several days. When a low is centered in the eastern Gulf, winds are generally out of the E off Sitka, out of the N off Seward, and out of the NW off Kodiak.

(63) Storms that move E or NE, remaining N of the Aleutians, as is common early and late in the season, are followed by a SW through N flow that can reach gale force, raise high seas, and bring snow. If these storms move into Bristol Bay, they can create a strong SE to SW flow in the northern Gulf of Alaska which can raise 20-foot seas.

(64) In the Gulf of Alaska, conditions are often roughest in the waters S of Seward and E of Kodiak Island. The long fetch to the E and SE allows a buildup of sea and swell from that quarter. Wave heights reach 20 feet or more up to 8 percent of the time in November, the roughest month. This is as rough as it gets in the Aleutians. Gales are most frequent here, blowing 15 to 17 percent of the time early in the season. While they blow most often out of the E, they are also common from the W and NW.

(65) **Summer (April–September).**–The changeover from winter to summer is subtle. The Aleutian Low slowly weakens and retreats, while the North Pacific High gradually strengthens and advances. The storms still come, but they are less intense. Winds get strong, but become gales less often. Rough seas are encountered, but less frequently. Clouds and rain remain a persistent weather feature, but snow and cold retreat N. Winds blow more often from a S quarter, bringing warmth and the most dangerous and frequent summer-weather navigational hazard, fog.

(66) Fog hampers navigation most often during June, July, and August. It is an advection or sea fog that forms when warm moist air blows across cooler water. The southwesterlies and westerlies that blow across the cold Oyashio Current, which runs S along Kamchatka and the Kurils, often bring a dense, widespread fog to the Aleutians and the southern Bering Sea. This fog can engulf a ship traversing these waters, for several days. Sea fog is also common, but a little less frequent, in the northern Gulf of Alaska and along the northwest and north coasts of Alaska. Off the west coast of Alaska and along the Aleutians, visibilities drop below 2 miles about 20 to 40 percent of the time, and 0.5 mile or below up to 20 percent of the time. Elsewhere, fog is about one-half as frequent.

(67) During May and June, summer weather features become more apparent. While the lows that move through the area cause variable winds, S through W winds are the most common. Gales occur less than 10 percent of the time everywhere; they are least likely in June, July, and August. Seas of 20 feet or more are unlikely from May through August, when seas of 10 to 20 feet occur 5 to 15 percent of the time; they are most likely in the northwestern Gulf and the Aleutians. Off the north coast, they have been observed less than 5 percent of the time. Freezing temperatures are rare from June through September except off the north coast.

(68) The weather-producing storm systems are gradually forced N by the North Pacific High. Some still move over the old winter routes, but they are usually weak. By midsummer, numerous weak lows find their way through the Bering Sea and Strait. This results in a maximum of cloudiness and precipitation off the northwest and north coasts of Alaska, and a minimum in the Gulf of Alaska and along the Aleutians. The more restricted movements of these storms and the clockwise flow around the North Pacific High to the S help make S through W winds the most common in the Alaskan coastal waters, except off the north coast where northeasterlies and easterlies prevail.

(69) September weather is often a harbinger of winter. This transition is usually more abrupt than the change from winter to summer. More storms begin moving into Bristol Bay and the Gulf of Alaska; some are intense. Gales blow up to 5 percent of the time, and 20- to 30-foot seas are occasionally encountered in the northwestern Gulf and southern Bering Sea. Waves of 10 feet or more occur up to 20 percent of the time. Breezy, warm days alternate with cool, stormy ones. Winter is approaching.

(70) **Superstructure icing.**–Ice accretion on ships can occur in coldwater seas. It is caused by freezing spray, freezing rain, or steam fog. On large merchant ships, it often results in only slippery decks, since they have a high freeboard and often pass quickly through icing conditions. Fishing trawlers, small merchant ships, and Coast Guard cutters have other problems. Their freeboards are relatively low. A trawler often has a large top hamper and is usually confined to one area for long periods. On a small

ship, icing can greatly increase the weight. It elevates the center of gravity, which decreases the metacentric height. It increases the sail area and heeling moment due to wind action. The trim is altered because of the nonuniform distribution of ice. Icing hampers steerability and lowers ship speed.

(71) Freezing sea spray is by far the most common and dangerous form of icing. It can occur when the air temperature falls below the freezing temperature of seawater (usually about 28° F) and sea-surface temperatures are below about 41° F. If air temperature falls below about 0° F, wind-induced spray may freeze before striking the ship and not adhere. In general, however, the lower the temperature and the stronger the wind, the more rapid the accumulation of ice.

(72) Tests by the Russians, Japanese, and British have shown that when air temperatures are just below the freezing point of the seawater, ice buildup is slow, and will not accumulate at more than 1 ton per hour on a 300- to 500-ton vessel, in any wind. On a vessel of this size, a moderate buildup of less than 4 tons per hour will generally occur with air temperatures between 27° F and 18° F, in winds of 16 to 30 knots. When winds exceed 30 knots and temperatures drop below 18° F, conditions are right for an accumulation rate of more than 4 tons per hour on a 300- to 500-ton vessel. These figures are somewhat subjective, and represent a compromise of opinions of the major maritime nations.

(73) Freezing rain can coat a ship with a freshwater glaze of ice the same way it covers trees and roads on land. The weight picked up is usually not enough to endanger a ship, but this ice can make topside conditions dangerous. Steam fog can occur when the air temperature is below freezing and is also considerably colder than the sea. It is usually confined to a layer a few feet thick. Trawlermen call it "white frost" when the top of the layer is below the observer's eye level, and "black frost" when it extends above the observer. The small water droplets in this fog are supercooled (exist as water even though the temperature is below freezing) and freeze on contact with the cold ship. Usually, ice accretion by this method is small. However, there are exceptions. The ERNEST HOLT, about 100 miles E of Bjornoya Island (an island N of Norway) and 20 miles from the ice edge, ran into a dense steam fog. She took 4 inches of rime ice on the deck, with up to 12 inches on the ship's side at the level of the rail, within a 12-hour period.

(74) The two categories of potential icing are somewhat subjective, but give a relative idea of which areas are dangerous. Moderate icing potential exists when temperatures fall to 28°F or below, and winds blow at 13 knots or more. This means a probable accumulation of up to about 2 inches per hour. The potential for severe icing (greater than 2 inches per hour) exists when temperatures are 16°F or lower, and winds are 30 knots or more.

(75) Superstructure icing is a threat in the northern Gulf of Alaska and along the Aleutians, from about November through April. In the Gulf, the waters around Kodiak Island are the worst. Here the potential for moderate icing exists 10 to 20 percent of the time from December through March, compared to a 3- to 10-percent potential in the other Gulf coastal waters. There is also a slight chance of severe icing in Kodiak waters during this period. The December-through-March period is also the roughest along the Aleutians, where the potential for moderate superstructure icing exists 10 to 25 percent of the time; severe icing is unlikely since temperatures rarely get down into the teens. In the ice-free waters of the southern Bering Sea and Bristol Bay, the potential for moderate superstructure icing exists 20 percent or more of the time from December through March, and up to 50 percent of the time in February. Severe icing is also a threat in February, when the conditions for it occur 5 to 10 percent of the time. Icing in the navigable northern Bering Sea waters can be a threat as early as September and as late as May.

(76) Icing rates can be cut by slowing down to reduce ship-generated spray. A course change to reduce spray, however, should be secondary to getting away from the icing, except in critical conditions. Another precaution is to remove the ice, if possible. When icing becomes a problem, it is important first to free the aerials, freeing ports, stays, shrouds, masts, rigging davits, running and navigational lights, windlass, and hawsepipes. If the ice is unevenly distributed, it should be removed from the listing side first.

(77) The Russians are well experienced with superstructure icing, as they do a lot of coldwater fishing. From a proposal they made to the International Maritime Organization (IMO), here are some excellent suggestions of what to do in an icing situation.

(78) **Tips to keep icing hazards to a minimum aboard fishing vessels:**

(79) 1. Head for warm water or protected coastal areas.

(80) 2. All fishing gear, barrels, and deck gear should be placed below deck or fastened to the deck as low as possible.

(81) 3. Cargo booms should be lowered and fastened.

(82) 4. Deck machinery and boats should be covered.

(83) 5. Storm rails should be fastened.

(84) 6. Gratings should be removed from scuppers, and all objects that might prevent water drainage from the deck should be moved.

(85) 7. Ship should be as watertight as possible.

(86) 8. If freeboard is high enough, all empty bottom tanks containing ballast piping can be filled with seawater.

(87) 9. Reliable two-way radio communication should be established either with a shore station or another ship.

(88) **Williwaws.**–These dangerous winds occur mainly along the Aleutian chain and Gulf of Alaska shores, and are influenced by local topography. They are most frequent in winter and are usually the result of air damming up on the windward slopes of mountains. This air spills over in strong gusts on the lee side; that lasts as long as the dammed-up cold air lasts, which frequently is only a matter of minutes. However, such winds are violent, often reaching hurricane force, and their onset is sudden, often interrupting periods of near-calm conditions. Some locations sheltered from the normal winds of the area may be extremely vulnerable to williwaws.

(89) **Ice.**–Ports in the Aleutian Islands and in the Gulf of Alaska, except at the upper end of Cook Inlet, are ice free and open to navigation the year around. Ports N of Unimak Pass are icebound in varying degrees. (See page T–21 for dates of ice breakup and freezeup.)

(90) **Routes.**–These are the usually traveled routes in W Alaska. In laying out courses to pass through the geographic positions of the turning points listed, allowance must be made for wind and current. Departure from these routes may become necessary because of weather conditions and ice in the more N latitudes. Special attention should be given to the continual current setting N and W along the coast of Alaska. Where necessary, directions for entering a port are given in the text for the place concerned, including information about dangers, prominent features, and other pertinent information.

(91) **Strait of Juan de Fuca to Prince William Sound ports (Cordova, Valdez, Whittier).**–Rhumb lines through:

(92) 48°31′N., 125°00′W.; Swiftsure Bank, Washington.

(93) 48°50′N., 125°39′W.; of Amphitrite Point, Canada.
(94) 50°01′N., 128°03′W.; off Solander Island, Canada.
(95) 51°49′N., 131°12′W.; off Cape St. James, Canada.
(96) 60°13′N., 146°41′W.; off Cape Hinchinbrook, Alaska.

(97) **Strait of Juan de Fuca to Seward.**–Same as to Prince William Sound ports to 51°49′N., 131°12′W., thence great circle to 59°51′N., 149°17′W., S of Barwell Island off Cape Resurrection.

(98) **Strait of Juan de Fuca to Cook Inlet ports (Seldovia, Homer, Nikishka, Drift River, Anchorage).**–Same as to Prince William Sound ports to 50°01′N., 128°03′W., thence great circle to 59°03′N., 151°26′W., off East Chugach Island.

(99) **Strait of Juan de Fuca to Kodiak.**–Same as to Prince William Sound ports to 50°01′N., 128°03′W., thence great circle to 57°42′N., 152°09′W., N of Cape Chiniak.

(100) **Strait of Juan de Fuca to Unimak Pass.**–Great circle from 48°31′N., 125°00′W., to 54°00′N., 163°00′W., thence rhumb line to 54°20′N., 164°45′W., off Scotch Cap.

(101) **Cape Spencer to Prince William Sound ports.**–Rhumb lines through:
(102) 58°10′N., 136°38′W.; off Cape Spencer.
(103) 59°43′N., 144°38′W.; S of buoy off Cape St. Elias.
(104) 60°13′N., 146°41′W.; off Cape Hinchinbrook.

(105) **Cape Spencer to Seward.**–Rhumb lines through:
(106) 58°10′N., 136°38′W.; off Cape Spencer.
(107) 59°21′N., 146°19′W.; S of Middleton Island.
(108) 59°51′N., 149°17′W.; S of Barwell Island off Cape Resurrection.

(109) **Cape Spencer to Cook Inlet ports.**–Rhumb line from 58°10′N., 136°38′W. to 59°03′N., 151°26′W.

(110) **Cape Spencer to Kodiak.**–Rhumb line from 58°10′N., 136°38′W. to 57°42′N., 152°09′W.

(111) **Prince William Sound ports to Seward.**–From Elrington Passage clear Cape Puget and Cape Junken by 1 mile, thence to 59°51′N., 149°17′W., S of Barwell Island off Cape Resurrection.

(112) **Prince William Sound ports to Cook Inlet.**–From Elrington Passage, rhumb lines through:
(113) 59°33′N., 149°38′W.; N of Seal Rocks.
(114) 59°21′N., 150°14′W.; off Outer Island.
(115) 59°09′N., 150°57′W.; off Gore Point.
(116) 59°03′N., 151°26′W.; off East Chugach Island.

(117) **Prince William Sound ports to Kodiak.**–From Elrington Passage, rhumb line to 57°50′N., 152°17′W.; off Spruce Cape.

(118) **Prince William Sound ports to Unimak Pass.**–Same as to Cook Inlet, thence Shelikof Strait route.

(119) **Seward to Cook Inlet.**–Rhumb lines through:
(120) 59°45′N., 149°26′W.; off Pilot Rock.
(121) 59°36′N., 149°32′W.; off Chiswell Island.
(122) 59°31′N., 149°40′W.; off Seal Rocks.
(123) 59°21′N., 150°14′W.; off Outer Island.
(124) 59°09′N., 150°57′W.; off Gore Point.
(125) 59°03′N., 151°26′W.; off East Chugach Island.

(126) **Seward to Kodiak.**–Same as to Cook Inlet to 59°31′N., 149°40′W., thence rhumb lines through:
(127) 58°21′N., 151°54′W.; off Tonki Cape.
(128) 58°13′N., 151°56′W.; Marmot Strait.
(129) 57°50′N., 152°17′W.; off Spruce Cape.

(130) **Seward to Unimak Pass.**–Same as to Cook Inlet, thence Shelikof Strait route.

(131) **Cook Inlet to Kodiak.**–Rhumb lines through:
(132) 59°03′N., 151°53′W.; S of Cape Elizabeth Island.
(133) 58°21′N., 151°54′W.; off Tonki Cape.
(134) 58°13′N., 151°56′W.; Marmot Strait.
(135) 57°50′N., 152°17′W.; off Spruce Cape.

(136) **Cook Inlet to Unimak Pass.**–Shelikof Strait route.

(137) **Shelikof Strait route—Cook Inlet to Unimak Pass.**–Rhumb lines through:
(138) 59°03′N., 151°26′W.; off East Chugach Island.
(139) 59°01.6′N., 152°19.0′W.; N of Ushagat Island.
(140) 57°38.5′N., 154°33.8′W.; off Cape Uyak.
(141) 56°27.0′N., 156°48.0′W.; off Foggy Cape.
(142) 55°46.0′N., 158°37.8′W.; SE of Mitrofania Island.
(143) 55°21.6′N., 160°03.6′W.; N of Andronica Island.
(144) 55°22.8′N., 160°21.7′W.; N of Popof Island.
(145) 55°26.0′N., 160°43.5′W.; off Unga Spit.
(146) 55°17.5′N., 161°15.2′W.; off Seal Cape Light.
(147) 55°17.2′N., 161°39.5′W.; N of Ukolnoi Island.
(148) 55°10.9′N., 161°54.2′W.; off Arch Point.
(149) 55°07.5′N., 161°55.6′W.; off Moss Cape.
(150) 55°06.7′N., 161°56.2′W.; NW of Goloi Island.
(151) 55°02.6′N., 161°54.5′W.; E of Iliasik Islands Light.
(152) 55°02.0′N., 161°55.5′W.; SE of Iliasik Islands Light.
(153) 55°00.5′N., 162°20.1′W.; N of Deer Island.
(154) 54°57.4′N., 162°27.6′W.; W of Fox Island.
(155) 54°48.1′N., 162°44.6′W.; W of Umga Island.
(156) 54°37.8′N., 163°03.6′W.; off Cape Pankof.
(157) 54°20′N., 164°45′W.; off Scotch Cap.

(158) **Kodiak to Unimak Pass.**–Proceed via Narrow Strait, Whale Passage, Kupreanof Strait, and Shelikof Strait route.

(159) **Unimak Pass to Aleutian Islands ports.**–Rhumb lines along the N coast of the Aleutian chain through:
(160) **To Dutch Harbor and Unalaska**
(161) 54°20′N., 164°45′W.; off Scotch Cap.
(162) 54°20′N., 165°38′W.; off Akun Head.
(163) 54°16′N., 166°00′W.; off North Head.
(164) 54°02′N., 166°24′W.; off Priest Rock Light.
(165) 53°55′N., 166°29′W.; off Ulakta Head.
(166) **To Kuluk Bay**
(167) 54°20′N., 164°45′W.; off Scotch Cap.
(168) 54°20′N., 165°38′W.; off Akun Head.
(169) 54°08′N., 166°40′W.; off Cape Cheerful.
(170) 53°36′N., 168°14′W.; N of Umnak Island.
(171) 52°28′N., 172°26′W.; N of Seguam Island.
(172) 52°28′N., 174°09′W.; off North Cape Light (Atka Island).
(173) 52°10′N., 176°09′W.; off Swallow Head Light (Great Sitkin Island).
(174) 51°54′N., 176°30′W.; E of Kuluk Shoal.
(175) **To Kiska**
(176) Same as to Kuluk Bay to 52°10′N., 176°09′W., thence rhumb lines through:
(177) 52°07′N., 179°46′E.; N of Semisopochnoi Island.
(178) 52°08′N., 178°05′E.; N of Segula Island.
(179) 52°05′N., 177°46′E.; E of Haycock Rock.
(180) 51°58′N., 177°35′E.; off North Head.
(181) **To Alcan Harbor**
(182) Same as to Kiska to 52°08′N., 178°05′E., thence rhumb lines through:
(183) 52°13′N., 177°38′E.; off Sirius Point (Kiska Island).
(184) 52°47′N., 174°05′E.; N of Shemya Island.
(185) **To Massacre Bay**
(186) Same as to Alcan Harbor, thence rhumb lines through:
(187) 52°49′N., 173°53′E.; N of Alaid Island.
(188) 52°47′N., 173°19′E.; off Alexai Point.

(189) Vessels may also proceed from Unimak Pass to Massacre Bay by great circle.

(190) **Unimak Pass to Bering Sea ports.**–Rhumb lines through:

(191) **To Port Moller**

(192) 54°20′N., 164°45′W.; S of Scotch Cap Light.

(193) 54°24′N., 164°59′W.; W of Scotch Cap Light.

(194) 54°36′N., 165°04′W.; off Cape Sarichef Light.

(195) 55°00′N., 164°36′W.; off Cape Mordvinof.

(196) 55°31′N., 163°18′W.; off Sea Lion Rock.

(197) 55°53′N., 162°15′W.; off Black Hill.

(198) 56°06′N., 160°50′W.; thence to entrance buoy.

(199) **To Kvichak Bay**

(200) Same as to Port Moller to 55°00′N., 164°36′W.; thence rhumb lines through:

(201) 57°44′N., 157°53′W.; off Cape Greig Light.

(202) 58°14′N., 157°53′W.; off Red Bluff Light.

(203) 58°27′N., 157°41′W.; off Middle Bluff Light; thence to the anchorage off the entrance to Naknek River.

(204) **To Nushagak Bay**

(205) Same as to Port Moller to 55°00′N., 164°36′W.; thence rhumb line to 57°44′N., 157°53′W. (off Cape Greig Light); thence to entrance buoy.

(206) **To St. Michael**

(207) 54°20′N., 164°45′W.; S of Scotch Cap Light.

(208) 54°24′N., 164°59′W.; W of Scotch Cap Light.

(209) 54°36′N., 165°04′W.; off Cape Sarichef Light.

(210) 60°14′N., 168°04′W.; off Cape Mohican Light (Nunivak Island).

(211) 63°00′N., 167°40′W.; 32 miles E of St. Lawrence Island.

(212) 63°41′N., 165°18′W.; Norton Sound.

(213) 63°41′N., 162°21′W.; N of Stuart Island.

(214) 63°32′N., 161°55′W.; off St. Michael.

(215) **To Golovnin Bay**

(216) Same as to St. Michael to 63°00′N., 167°40′W. thence rhumb line to 64°20′N., 163°00′W.

(217) **To Nome**

(218) Same as to St. Michael to 63°00′N., 167°40′W., thence rhumb line to 64°29′N., 165°26′W.

(219) **To Port Clarence**

(220) Same as to St. Michael to 63°00′N., 167°40′W., thence rhumb lines through:

(221) 64°58′N., 167°40′W.; E of King Island.

(222) 65°19′N., 167°40′W.; off Cape York.

(223) 65°19′N., 166°51′W.; off Point Spencer.

(224) 65°17′N., 166°25′W.

(225) **Unimak Pass to Arctic Ocean ports:**

(226) **To Point Hope**

(227) Same as to St. Michael to 63°00′N., 167°40′W., thence rhumb lines through:

(228) 64°58′N., 167°40′W.; E of King Island.

(229) 65°38′N., 168°31′W.; E of Fairway Rock.

(230) 68°21′N., 167°18′W.

(231) **To Point Barrow**

(232) Same as to Point Hope to 68°21′N., 167°18′W., thence rhumb lines through:

(233) 68°58′N., 166°40′W.; off Cape Lisburne.

(234) 70°34′N., 162°25′W.; off Icy Cape.

(235) 71°20′N., 156°55′W.

(236) **Principal ports.**–The principal deep-draft commercial ports within the area of this Coast Pilot are: Cordova, Valdez, Whittier, Seward, Kenai, Nikishka, Drift River, Anchorage, Kodiak, Sand Point, Unalaska, and Adak.

(237) **Pilotage,** except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. Exempted from this requirement are (1) vessels under enrollment, (2) fishing vessels registered in the United States or in British Columbia, Canada, (3) motorboats as defined in Sec. 1 of the Federal Motor Boat Act of 1940 (54 Stat. 163; 46 U.S.C. sec. 526 et seq.), (4) vessels of United States registry of less than 300 gross tons and tow boats of United States registry and vessels owned by the State of Alaska, engaged exclusively on the rivers of Alaska, or in the coastwise trade on the west coast of the United States including Alaska, Hawaii, and British Columbia, Canada, (5) vessels of Canada, including cruise ships, engaged in frequent trade between British Columbia and Alaska, provided that reciprocal exemptions are granted by Canada to vessels owned by the State of Alaska and those of United States registry, and (6) pleasure craft.

(238) The State of Alaska has established the following boundaries of the inside waters of Southwest Alaska:

(239) (1) All waters of Prince William Sound inside a line drawn from Cape Puget to Point Elrington, thence to Cape Cleare, thence Zaikof Point to Cape Hinchinbrook Light, thence Point Bentinch to Point Whitshed; (2) the waters of Resurrection Bay N of latitude 59°59.0′N.; (3) all waters of Cook Inlet inside a line drawn from Cape Douglas (58°51.2′N., 153°14.9′W.) through Cape Elizabeth Light (59°08.8′N., 151°52.6′W.) to the Kenai Peninsula shoreline.

(240) At all buoyed entrances from seaward to bays, sounds, rivers, or other estuaries for which specified boundary lines are not described, the waters inshore of a line drawn approximately parallel with the general trend of the shore, drawn through the outermost buoy or other aid to navigation of any system of aids, are inside waters

(241) Vessels proceeding directly from points outside Alaska inside waters to an established pilot boarding station or pickup point are excluded from compulsory use of a pilot when traveling specified inside exclusion routes.

(242) The inside exclusion routes for Southwest Alaska are as follows:

(243) (1) travel via Prince William Sound to the Cordova Pilot Station about 2 miles S of Sheep Point (60°37.0′N., 146°00.0′W.);

(244) (2) travel via Prince William Sound to the Valdez and Whittier Pilot Station:

(245) (A) oil tanker traffic-about 3.6 miles SW of Bligh Reef Lighted Buoy 6 (60°50.5′N., 146°54.4′W.); or

(246) (B) nonoil-tank traffic-about 2.3 miles N of Busby Island Light (60°53.7′N., 146°49.0′W.);

(247) (3) travel via Cook Inlet to the Homer Pilot Station about 1 mile S of Homer Spit Light (59°36.ON., 151°24.6′W.);

(248) (4) travel to Kodiak or Women's Bay Pilot Station about 2 miles 100° from St. Paul Harbor Entrance Light (57°44.4′N., 152°25.7′W.).

(249) The Southwest Alaska Pilots Association's main office is P.O. Box 977, Homer, AK 99603, telephone 907-235-8783, FAX 907-235-6119, cable address SWAPILOT HOMER, radio call KCE-203. The Homer office monitors VHF-FM channels 16 and 10, 24 hours daily.

(250) The other office is P.O. Box 869, Valdez, AK 99686, telephone 907-835-2134, FAX 907-835-5372, radio call WAB-982. The Valdez office monitors channels 16 and 13, 24 hours daily.

(251) Southwest Alaska Pilots Association provides pilot service to all ports N and W of Cape Spencer. The major ports served include, but are not limited to, all Cook Inlet ports; all Kodiak Island ports; all Prince William Sound ports, including Valdez, Cordova, and Whittier; Resurrection Bay including Seward; all Aleutian Islands ports; and all Alaska Peninsula and Bristol Bay ports.

(252) The Homer pilot boat is the "MARY DELE"; a 42-foot trawler, green hull, white deckhouse, and the word Pilot forward. "MARY DELE" monitors channels 16 and 10, 24 hours daily. Contact her directly or through the Homer office.

(253) The Valdez pilot boat is the "EMERALD ISLAND"; 91-foot long with black hull, white house and the word Pilot on both sides. "EMERALD ISLAND" monitors channels 16 and 13, 24 hours daily. Contact her directly or through the Valdez office.

(254) The pilot boats for other Southwest Alaska ports can be contacted by calling "KODIAK KING" or "KODIAK PILOT BOAT," "SEWARD PILOT BOAT," "DUTCH HARBOR PILOT BOAT," etc., on VHF-FM channel 16 or on a prearranged frequency between pilot and agent/vessel. When engaged in pilotage duties they display the appropriate day and night signals.

(255) Pilot services should be arranged in advance through ships' agents, or otherwise, in sufficient time to enable the pilot to travel to the area where the service is required.

(256) The established pilot boarding stations or pickup points for Southwest Alaska are as follows:

(257) (1) Cordova-about 2 miles S of Sheep Point (60°37.0′N., 146°00.0′W.).

(258) (2) Valdez-(A) oil tanker traffic-about 3.6 miles SW of Bligh Reef Lighted Buoy 6 (60°50.5′N., 146°54.4′W.); or

(259) (B) nonoil-tank traffic-about 2.3 miles N of Busby Island Light (60°53.7′N., 146°49.0′W.).

(260) (3) Whittier-pilot boarding station is the same as for Valdez.

(261) (4) Seward-about 1 mile SE of Caines Head Light (59°59.0′N., 149°23.1′W.).

(262) (5) Cook Inlet-about 1 mile S of Homer Spit Light (59°36.1′N., 151°24.5′W.).

(263) (6) Kodiak or Womens Bay-about 2 miles 100° from St. Paul Harbor Entrance Light (57°44.3′N., 152°25.8′W.).

(264) (7) Cold Bay-about 3 miles S of Cold Bay Channel Lighted Buoy 1 (55°05.5′N., 162°31.8′W.).

(265) (8) Dutch Harbor-about 1 mile E of Ulakta Head Light (53°55.5′N., 166°30.4′W.).

(266) (9) Adak-about 2 miles E of Gannet Rocks Light 4 (51°52.1′N., 176°36.4′W.).

(267) (10) Discoverer Bay-about 2 miles N of Posliedni Point (58°26.0′N., 152°20.0′W.).

(268) (11) Port Wakefield-about 1 mile NW of Kekur Point (57°51.5′N., 152°47.2′W.).

(269) (12) Port Bailey-about 1 mile N of Dry Spruce Bay Entrance Light (57°57.3′N., 153°06.2′W.).

(270) (13) Uganik Bay-about 1.5 miles W of East Point (57°50.5′N., 153°28.3′W.).

(271) (14) Larsen Bay-about 1 mile E of Harvester Island (57°38.8′N., 153°59.5′W.).

(272) (15) Alitak Bay-about 2 miles SE of Cape Alitak (56°50.7′N., 154°18.2′W.).

(273) (16) Old Harbor-about 1 mile E of Cape Liakik (57°06.9′N., 153°27.0′W.).

(274) (17) Chignik-about 1 mile N of Chignik Spit Light (56°18.6′N., 158°22.9′W.).

(275) (18) Sand Point-Squaw Harbor-about 2.5 miles S of Popof Head (55°14.7′N., 160°20.0′W.).

(276) (19) King Cove-about 1 mile SE of Morgan Point Light (55°02.4′N., 162°20.2′W.).

(277) (20) False Pass-Isanotski Strait-about 1.5 miles NW of Ikatan Point (54°46.5′N., 163°11.0′W.).

(278) (21) Akutan-about 1 mile E of Akutan Point (54°08.7′N., 165°43.6′W.).

(279) (22) Attu-Navy Cove-about 1.3 miles S of Murder Point (52°47.7′N., 173°11.7′E.).

(280) (23) St. Paul Island-about 4 miles W of Reef Point (57°06.5′N., 170°17.7′W.).

(281) (24) Port Moller-Herendeen Bay-about 7.5 miles NW of Entrance Point (55°59.5′N., 160°34.6′W.).

(282) (25) Port Heiden-about 7 miles WNW of Christiakof Island (56°55.8′N., 158°42.8′W.).

(283) (26) Ugashik Bay-about 0.5 mile W of Smoky Point (57°39.0′N., 157°42.0′W.).

(284) (27) Egegik-about 7 miles W of Red Bluff Daybeacon (58°14.1′N., 157°29.1′W.).

(285) (28) Naknek-about 9 miles WSW of Naknek Light (58°42.4′N., 157°04.8′W.).

(286) (29) Nushagak Bay-close aboard Nushagak Bay Entrance Buoy 2 (58°33.7′N., 158°24.3′W.).

(287) (30) Kulukak Bay-about 3 miles S of Kulukak Point (58°51.0′N., 159°36.0′W.).

(288) (31) Togiak-about 1 mile S of Summit Island (58°50.0′N., 160°12.0′W.).

(289) (32) Goodnews Bay-about 7.5 miles SW of Platinum (59°01.0′N., 161°49.4′W.).

(290) (33) Yakutat-about 1 mile NW of Yakutat Bay Lighted Whistle Buoy 4 (59°35.6′N., 139°51.2′W.).

(291) (34) Icy Bay-about 9 miles S of Claybuff Point (59°58.0′N., 141°35.0′W.).

(292) Alaska Marine Pilots, P.O Box 730, Dutch Harbor, AK 99692, telephone 907-581-1240, FAX 907-581-1372, radio call KBK-383, also provides pilotage in western Alaska. The pilot office, Dutch Harbor, monitors VHF-FM channel 16 and 4125.0 kHz, daily 24 hours.

(293) The Alaska Marine Pilots provide extensive pilot service to all ports from Kodiak Island W through the Alaska Peninsula and Aleutian Islands thence N to Bristol Bay and N regions through the Arctic Ocean to Demarcation Point.

(294) The major ports served include but are not limited to Chignik, Sand Point, King Cove, Akutan, Dutch Harbor, Captain's Bay, Atka, Adak, Port Moller, NakNek, Dillingham and Togiak.

(295) Pilot services should be arranged in advance through ships' agents or otherwise, in sufficient time to enable the pilot to travel.

(296) During times of frequent vessel movements, Alaska Marine Pilots station resident pilots in locations convenient to shipping activity to eliminate much of the detention which can occur due to inclement weather and limited transportation common to the area. These locations include but are not limited to Sand Point, King Cove, Port Moller, False Pass, Bristol Bay and Togiak. Contact Alaska Marine Pilots, Dutch Harbor, for current resident pilot locations.

(297) **Towage.**–Tugs are stationed at Anchorage, Valdez, and Kodiak. Navy tugs are stationed at Adak. At other places any towing that is required is done by cannery tenders and other local small craft. Much of the cargo traffic between Washington State and Alaska is by barges and tugs.

(298) **Vessel Arrival Inspections.**–Vessels subject to U.S. quarantine, customs, immigration, and agricultural quarantine inspections generally make arrangements in advance through ships' agents. Government officials conducting such inspections are stationed in most major ports. Mariners arriving at ports where officials are not stationed, should contact the nearest activity providing that service. (See appendix for addresses.) Unless otherwise directed, officials usually board vessels at their berths.

(299) **Harbormasters** are mentioned in the text when applicable. They generally have charge of the anchoring and berthing of vessels.

(300) **Supplies.**–Provisions and fuel are generally obtained by vessels prior to departure for western Alaska. Provisions and limited amounts of marine supplies are available at the principal towns in Alaska, and nearly all of the canneries can supply some provisions.

(301) Water is available at most of the ports and canneries, and gasoline, diesel fuel, and lubricating oils are available in all the larger towns and at many of the canneries in western Alaska.

(302) **Repairs.**–There are no repair facilities for large vessels in western Alaska. The nearest major facilities are in British Columbia and Washington. Most principal ports do, however, have facilities for minor emergency repairs to machinery, engines, and small boats.

(303) Some of the ports and canneries have small marine railways, slipways, or grids, but these are subject to frequent change due to destruction from ice, abandonment of canneries, or discontinuance of service.

(304) **Communications.**–There is scheduled steamer service from Seattle to ports in western Alaska, with limited service to nearby smaller ports. Air service is also available to most major ports in western Alaska, with connections to nearly every community in the State.

(305) Alaska State ferries maintain scheduled service between the cities of Anchorage, Whittier, Valdez, Cordova, Seward, Homer, Seldovia, and Kodiak.

(306) Telephone service is available from most communities in Prince William Sound, Cook Inlet, and Kodiak Island.

(307) Alascom, Inc., operates a radio network that includes coast stations with ship-to-shore service throughout most of Alaska. Complete information on this service can be obtained from Alascom, Inc., Office of Public Affairs, Pouch 6607, Anchorage, Alaska 99502.

(308) **Reporting Marine Emergencies and Oil Spills.**–Marine emergencies, oil spills, possible illegal entry, sightings of foreign naval or fishing vessels, icebergs, submarines, or any other unusual events should be reported to the nearest Coast Guard unit by radio or by calling, toll free, Zenith 5555 anywhere in Alaska except Juneau, Douglas, or Kodiak. Within these cities, call 586-2680 for Juneau/Douglas, and 487-5888 for Kodiak.

(309) **Small-craft facilities** are limited in Alaska. In general, only the larger communities have gasoline, diesel fuel, berths, marine supplies, and limited repair facilities. Services and supplies available at these facilities are described under the communities concerned.

(310) **A vessel of less than 65.6 feet (20 meters) in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. (Navigation Rules, International-Inland Rule 9(b).**

(311) **Standard time.**–All of Alaska E of 169°30′W. uses Alaska standard time (Ak.s.t.), which is 9 hours slow of Greenwich mean time. Example: when it is 1200 at Greenwich, it is 0300 in Juneau and Anchorage. All the Aleutian Islands W of 169°30′W., including the communities of Adak, Atka, Attu, and Shemya, use **Hawaii-Aleutian Standard time (H.A.s.t.)**, which is 10 hours slow of Greenwich mean time. Example: when it is 1200 at Greenwich, it is 0200 at Adak.

(312) **Daylight saving time.**–In Alaska clocks are advanced 1 hour on the first Sunday in April and are set back to standard time on the last Sunday in October.

(313) **Legal public holidays.**–The following are legal holidays in the area covered by this Coast Pilot: New Year's Day, January 1; Martin Luther King, Jr.'s Birthday, third Monday in January; Washington's Birthday, third Monday in February; Memorial Day, last Monday in May; Independence Day, July 4; Labor Day, first Monday in September; Columbus Day, second Monday in October; Veterans Day, November 11; Thanksgiving Day, fourth Thursday in November; and Christmas Day, December 25. The national holidays are observed by employees of the Federal Government and the District of Columbia, and may not be observed by all the States in every case.

(314) In addition the following holidays are also observed in the area covered by this Coast Pilot: Seward's Day, last Monday in March; Alaska Day, October 18.

4. CAPE SPENCER TO COOK INLET

(1) This chapter describes the S coast of the Alaska mainland from Cape Spencer to Cook Inlet, and the many passages and tributary waters of Prince William Sound and Cook Inlet. Also described are the deepwater ports of Valdez, Whittier, Anchorage, and Seward, and the petroleum terminals and facilities on the Kenai Peninsula, as well as the numerous fishing and logging ports in this area.

(2) **Charts 16016, 16013.**–From Cape Spencer the coast extends NW for about 130 miles to Yakutat Bay. The Fairweather Range begins 20 miles from Cape Spencer and extends to Alsek River. The mountains are snowcapped and have elevations of 10,000 to more than 15,000 feet. From Alsek River to Yakutat Bay the mountains are 4,000 to nearly 6,000 feet high. Along the coast are numerous glaciers with terminal moraines. The most conspicuous are La Perouse Glacier, with a sea face 200 to 300 feet high and partly vertical; Yakutat Glacier, 25 miles E of Yakutat Bay; and the great Malaspina Glacier, W of Yakutat Bay.

(3) **Weather.**–Winds near the coast are only slightly less variable than over the open sea. As this coastline is irregular, with many islands, channels, and inlets, and is often steep, there are strong local effects to both wind speed and direction. In general, prevailing winds set parallel to the coastline, while speeds are increased by funneling effects or decreased by blocking.

(4) The gale frequencies of less than 1 percent at ports like Valdez, Anchorage, and Cordova can be misleading since they are usually much more sheltered than their approaches. This is reflected in the frequencies of calms, which range from 20 to 40 percent during the winter season. Storms and williwaws are responsible for the gales that are most likely in early winter. Williwaws, which blow down from the mountains in winter, occur along most of the coast; they are particularly severe at Seward. Extreme sustained winds at these ports have reached 74 knots at Cape Spencer, 66 knots at Anchorage, and 50 knots at Yakutat. Gusts of 60 knots or greater occur almost monthly during the winter season.

(5) In general from Cape Spencer to Yakutat, easterlies and southeasterlies are frequent; and from Yakutat to Cook Inlet, northeasterlies and easterlies prevail. At Yakutat, E winds blow 30 percent or more of the time from August through April. They also prevail at Cordova during this period. At Valdez, the sheltering effects of surrounding mountains funnel local winds into northeasterlies in winter and southwesterlies in summer. Over Controller Bay, summer winds range from the E through S and occasionally SW. Seward's prevailing winds are from the N in winter and S in summer. In Cook Inlet, winds are most frequent from the N, with topography causing deflections to the NW and NE in some sections. At Anchorage, winter northerlies give way to southeasterlies and southerlies from May through August. At Kenai, northerlies prevail in winter, although gales are often out of the E in early winter and SE later on; summer winds blow out of the S through SW. At Homer, winter northeasterlies give way to summer southwesterlies.

(6) Precipitation along this coast is also greatly influenced by topography. The annual ranges are from 15 inches at Anchorage to 132 inches at Yakutat; records from Latouche, which has since been abandoned, were 184 inches. Most of it falls during the winter season. September and October are often the rainiest months, when precipitation occurs on 15 to 20 days per month on the average, except at the well-sheltered ports. Snow is likely from October through April. At Valdez, an average of 61 inches falls in January compared to 7 inches at Kenai. April through June is often the driest period.

(7) Poor visibilities are mainly caused by advection or sea fog in the summer, and land fog or precipitation in winter. In general, sea fog affects exposed ports, while land fog is more of an influence at sheltered spots. However, visibilities are most likely to drop below 0.5 mile on winter mornings, even at exposed ports. Land fog can be very dense for short periods. At Cordova, for example, visibilities are most likely to be below 0.5 mile in January, but below 2 miles in August. Yakutat suffers from poor visibilities in both midwinter and midsummer, when they drop below 0.5 mile on up to 6 days per month. In Cook Inlet, January is usually the foggiest month. This land fog will set in during the night and persist until about noon. Fog banks frequently hang over open waters after the harbors have been cleared. Occasionally in winter, if extremely cold air moves over the water, a steam fog or frost smoke may be experienced as relatively warm water evaporates into much colder air.

(8) Air temperatures are mild for these latitudes and reflect the influence of the land and the sea. The more continental ports have a wide daily and annual temperature spread compared to those exposed to the sea. A noticeable cooling begins in September, when daytime highs average in the low to midfifties (°F), with nighttime lows in the upper thirties to low forties. January is usually the coldest month and is the time when the difference between exposed and sheltered locations is most noticeable. In the sheltered Cook Inlet, average maximums are in the low twenties, while minimums drop to about 5°F or less. At Seward daytime highs average 30°F, with nighttime lows of 18°F. At continental locations like Kenai, Anchorage, and Valdez, temperatures fall below 0°F on an average of 10 to 15 days in January, compared to 3 days at Seward. Freezing temperatures, also more frequent at sheltered locations, are common from October through April. Extreme low temperatures range from a –18°F at Homer to a –48°F at Kenai. A noticeable warming begins in April, and the difference between the two types of locations becomes less noticeable. Daytime highs in the low to midforties, and nighttime lows in the midtwenties to low thirties, are common. July and August are usually the warmest months. Maximums average in the low to midsixties, while minimums are frequently in the low to upper forties. It is often warmest at the more sheltered ports. Extreme highs reach the mid- to upper eighties.

(9) Ice is most often a problem along this coast in Cook Inlet. The upper end is usually closed by ice to all but heavily-built vessels, from December until late March. Elsewhere in the rivers and bays and in Prince William Sound, waters partially freeze after December 1, and some floating ice is seen through May. This ice usually does not interfere with navigation.

(10) **Chart 17301.–Cape Spencer** (58°12′45″N., 136°39′30″W.),873 miles from Seattle by the outside route and 976 miles by the inside passage, is a conspicuous headland on the NW side of the entrance to Cross Sound. The large shoal area that

extends about 1.3 miles S from the cape has rocky islets, some of the inner ones wooded, and rocks, the outermost of which break. The cape rises rapidly to ridges about 1,800 feet high which are heavily wooded up to 1,500 feet.

(11) **Cape Spencer Light** (58°11.9′N., 136°38.4′W.), 105 feet above the water, is shown from a white square tower on a rectangular concrete building on the outermost large rocky islet S of the cape; a fog signal and radiobeacon are at the light.

(12) **Cross Sound,** between Cape Spencer and Cape Bingham, 8 miles SE, is the northernmost passage to the inside waters of Southeast Alaska. The sound is described in U.S. Coast Pilot 8, Pacific Coast, Alaska-Dixon Entrance to Cape Spencer.

(13) **Dicks Arm,** a narrow inlet less than 200 yards wide in places, extends in a NNE direction for about 2 miles along the SE side of Cape Spencer. From the head of the arm, a gradually rising valley passes over a saddle to Taylor Bay. A narrow channel, with depths of 2½ to 12 fathoms leads E of **Zip Rock,** 20 feet high and bare, through the off-lying rocks and islets to the inlet. Depths of ¾ to 8 fathoms are found in the inlet to within 0.5 mile of the head, where it is shoal.

(14) **Polka Rock,** 20 feet high, is 2 miles NW of Cape Spencer and at the outer edge of the foul ground, marked by kelp, which extends about 0.5 mile from shore in this general vicinity. Small craft approaching Graves Harbor from the SE usually pass between Polka Rock and Graves Rocks.

(15) **Graves Rocks** are a group of islets about 3.5 miles NW of Cape Spencer and about 1 mile from shore. Near the N end of the group is a wooded islet about 125 feet high. Rocks and kelp patches extend to the mainland and along the shore to Cape Spencer.

(16) **Libby Island,** 5.3 miles NW of Cape Spencer and 0.7 mile from the mainland, is high and wooded. Bare rocks and rocks awash extend about 0.3 mile S of the island. **Libby Island Light** (58°16.4′N., 136°46.4′W.), 53 feet above the water, is shown from a pole with a red and white diamond-shaped daymark on an islet SE of the island. **Horn Mountain** is a sharp, bare peak on the mainland N of Libby Island.

(17) **Graves Harbor** has an entrance about 1.2 miles wide between Graves Rocks and Libby Island Light and extends inland for about 3 miles. Depths in the harbor are 11 to 79 fathoms. The unnamed cove, which makes off to the S from the head of Graves Harbor, affords good landlocked anchorage in 7 to 15 fathoms and is easily entered. A daybeacon marks a shoal on the W side of the entrance to the cove.

(18) **Murphy Cove,** on the SE side of Graves Harbor 1.7 miles above Graves Rocks, has depths of 11 fathoms or more in its outer part and affords snug anchorage for small vessels. **Murk Bay,** opposite Murphy Cove, is clear but too deep and open for good anchorage.

(19) **Torch Bay,** 7 miles NW of Cape Spencer, extends inland more than 2 miles in a N direction and varies in width from 1 mile at the entrance to 0.3 mile at the head of the W arm. Rocks, which uncover 7 feet and always marked by breakers, are 1 mile S of **Venisa Point,** on the W side of the entrance; vessels can pass on either side of these rocks when entering the bay. The bay has depths of 13 to 56 fathoms and is not a good anchorage for large vessels; small vessels can find protected anchorage in the NE arm.

(20) **Sugarloaf Island,** 9 miles NW of Cape Spencer, was named from its shape as seen from S, from which direction it appears barely detached from the islet-like point projecting from Hankinson Peninsula. The island is high and wooded. From W, it has a uniform N slope; the S slope has a step and is separated from the narrow S extremity by a deep V-shaped ravine. Bare rocks and some that cover, fringe the shore from S around to W.

(21) **Sugarloaf Island Shoal,** about 0.5 mile long, is about 1 mile S of the southern end of Sugarloaf Island. A rock awash and submerged rocks on the shoal usually break. A lighted whistle buoy is off the W end of the shoal.

(22) During moderate E gales temporary anchorage is possible in 10 to 18 fathoms, rocky bottom, in the cove NE of Sugarloaf Island. The cove is 0.3 mile wide and open to the NW.

(23) **Local magnetic disturbance.**–Differences of as much as 3¼° from the normal variation, have been observed at the S end of Sugarloaf Island.

(24) **Astrolabe Point,** 11 miles SW of Cape Spencer, is rugged and has bare cliffs on its W side; the S face of the point is moderately wooded halfway up. **Astrolabe Rocks,** some bare, submerged, or awash, are 0.3 mile S of the point.

(25) **Dixon Harbor,** with its entrance between Sugarloaf Island and Astrolabe Point, has depths of 60 to 20 fathoms over an average width of 0.8 mile for 2 miles N to Thistle Cove, the NW arm. Depths of 13 to 18 feet are just W of the middle of the entrance. A glacier above the head of the harbor is visible from the entrance.

(26) **Thistle Cove** is 1 mile long in a N direction. At the point on the NE side of the entrance is a grass-covered rock, 20 feet high, from which a shoal extends SW across the entrance, leaving a channel 200 yards wide and about 2 fathoms deep close along the SW shore. The sea and swell from outside are well broken before reaching the cove and vessels have no difficulty in entering. The head of the cove is a secure anchorage with 7 fathoms, muddy bottom.

(27) **Palma Bay** is between Astrolabe Point and Icy Point, 6 miles to the NNW. This large body of water, sometimes called **Icy Bay,** has depths of 20 to 60 fathoms; large vessels have anchored close inshore in 15 to 20 fathoms.

(28) **Boussole Head,** in the E part of Palma Bay, is a prominent wooded 650-foot-high peninsula which extends about 1 mile into the bay. The outer end of the head is a natural arch which rises 60 feet above the water and is quite prominent from the S. **Alder Rock,** 0.3 mile S of Boussole Head, uncovers 4 feet.

(29) **Astrolabe Bay,** SE of Boussole Head, and **Boussole Bay,** on the NW side of the head, are open to the S but afford protection to small vessels in N or E weather. Anchorage is possible in 6 to 8 fathoms, sand bottom, near the head of each bay; the best is in Boussole Bay.

(30) Another anchorage, which affords some protection for small craft in W weather, is off the mouth of **Kaknau Creek,** a large stream which empties into Palma Bay on the NE side of Icy Point; recommended anchorage is close inshore in 6 to 10 fathoms, sand bottom.

(31) **Icy Point,** on the W side of Palma Bay and 17 miles NW of Cape Spencer, is low and wooded; from S La Perouse Glacier can be seen over the point. Many rocks fringe the point but deep water is only 0.3 mile offshore.

(32) **Chart 16760.**–From Icy Point to La Perouse Glacier, a distance of about 8 miles, the coast is low and wooded, with rolling hills that gradually increase in height to the bare mountain peaks. Rocks extend along the coast about halfway from the point to the glacier; the rest of the way is mostly smooth sand beach.

(33) **La Perouse Glacier,** about 24 miles N of Cape Spencer, is an outstanding landmark along this coast because the mountains are often covered by clouds. The face of the glacier is 200 to 300

feet high and is nearly perpendicular; at the foot of the glacier is a narrow strip of sand beach strewn with boulders.

(34) Between La Perouse Glacier and Lituya Bay, 15 miles NW, the coast is low and densely wooded. About 2 miles inland are hills that rise in a succession of terraces to the snowcapped peaks of the **Fairweather Range.** Most of the shore is sandy, with occasional boulders; huge boulders cover the last 1.5 miles to Lituya Bay.

(35) **Chart 16762.–Lituya Bay,** 39 miles NW of Cape Spencer, affords protected anchorage in all weather, but the entrance is dangerous and should never be attempted except at slack water because of the strong current. The bay extends about 6 miles in a NE direction and has widths of 1 to 2 miles. The shoaler area along the shore around the bay is obstructed by tree trunks. Anchorage for small boats close to the shore is not recommended because of the possibility of fouling anchors in the debris of trees and roots.

(36) In July 1958, a giant wave, caused by an earthquake-induced avalanche, denuded the shores of Lituya Bay of trees to a height of 1,720 feet. Giant waves are a recurring phenomenon in the bay, and other catastrophic waves were observed in 1853, 1874, and 1936. Steep shattered cliffs at the head of the bay present a continuing hazard of avalanches; destructive waves, caused by rock falls, can occur at any time.

(37) At the head of Lituya Bay are two arms, each leading to a glacier. **Gilbert Inlet,** on the NW, has **Lituya Glacier** at its head; **Crillon Inlet,** on the SE, has **North Crillon Glacier** at its head. Because of rapid shoaling, depths in these inlets may differ from the charted depths. **Cascade Glacier,** which discharges into the head of the bay between the two arms, can be seen far at sea. Depths in the bay are as much as 78 fathoms. Vessels can obtain water from streams near the head.

(38) **Harbor Point,** on the E side of the entrance to Lituya Bay, can easily be identified from offshore by **The Paps,** two conical, wooded hills about 1 mile to the NE; the NW hill is the higher and rises to 540 feet. Large boulders, 20 to 35 feet high, are strewn along the beach. **Cormorant Rock,** 16 feet high, is the largest of three bare rocks off the S side of Harbor Point.

(39) **La Chaussee Spit,** on the NW side of the entrance to Lituya Bay, is 100 to 225 yards wide and about 0.7 mile long. The spit is 2 to 12 feet high; the outer side of the spit is covered with large boulders.

(40) The entrance to Lituya Bay between Harbor Point and La Chaussee Spit is about 350 yards wide but is mostly foul. The channel has a controlling depth of about 5 fathoms but is only about 50 yards wide; the water shoals abruptly on either side and there are many rocks. The entrance is marked by a **007° 30′** lighted range.

(41) **Anchorage Cove** behind La Chaussee Spit, has depths of 3 to 5 fathoms, but is obstructed by numerous tree trunks and rocks awash and is not suitable for anchorage. On a flood tide with S weather, the cove has considerable swell.

(42) **Cenotaph Island,** in midbay and about 3 miles from the entrance, is densely wooded and has several hills, the highest rising about 320 feet. The N and W sides of the island slope gently, but the S side is an abrupt, high cliff with depths of 75 fathoms only 100 yards away. The island is named for a wooden monument, or cenotaph, which was erected by La Perouse in 1786 in memory of officers and men who were lost in the entrance to the bay. No trace of the monument or its site have been found in recent years.

(43) **Tides and currents.**–The diurnal range of tide is 9.7 feet 2 miles inside the entrance. The current velocity at the entrance is 5.1 knots on the flood and 4.1 knots on the ebb. Ebb currents, running against a SW swell, cause bad topping seas or combers which are dangerous to small craft. Small powered vessels in the bay should stay away from the entrance on the ebb to avoid being swept through. The ebb current follows a narrow path for several miles out to sea and can be seen for some distance. On the flood, the entrance is smooth and local fishing boats often negotiate it with a calm sea but are quickly swept through the channel by the powerful current. Strangers should not attempt to enter except at slack water. (See the Tidal Current Tables for daily predictions.)

(44) **Ice.**–The bay has never been known to freeze over but icebergs can always be found in the upper part. With NE breezes these icebergs often reach the entrance to the bay before melting. Ice is usually heaviest during October. The many streams flowing from the glaciers at the head of the bay give the water a murky discolored appearance.

(45) **Chart 16760.**–From Lituya Bay NW to Yakutat Bay, the shore is mostly gently curving sand beaches but boulders are found in the vicinity of Cape Fairweather and at other places. Prevailing currents set NW about parallel to the shore, but it has been observed that winds have a great influence on directions and strengths.

(46) **Cape Fairweather,** 54 miles NW of Cape Spencer, is an evenly rounded point sloping gently to the sea and abruptly back to the mountains. The summit of the cape is bare of vegetation but is covered with large piles of glacier drift, some of a bright iron-rust color. **Mount Fairweather,** 15,320 feet high, is 15 miles inland from the cape and is on the Alaska-Canada boundary.

(47) Protection from SE weather can be had N of Cape Fairweather, which appreciably breaks both wind and swell. Just N is a high rocky slide, with a cataract several hundred feet high, which is prominent from offshore.

(48) **Alsek River,** about 82 miles NW of Cape Spencer, empties into the NE part of **Dry Bay.** About 8 miles back of the coast is **Alsek Glacier.** Dry Bay is filled with bars and small islands between which are constantly changing channels. The entrance to the bay, about 400 yards wide with depths of about 6 feet, has been used to some extent by small craft. The tidal current has a velocity of about 2.5 knots on the ebb; during heavy weather the sea breaks fully 2 miles offshore.

(49) From Dry Bay to Yakutat Bay, the mountains are 5 to 15 miles from the coast, and between is a low wooded plain cut by numerous streams. The principal rivers between Dry Bay and Yakutat Bay have shifting bars at their entrances and lagoons or tidal basins inside; they can be used only by small boats or launches at high water and with a smooth sea. The mountains back of the coastal plain carry numerous glaciers; **Yakutat Glacier,** about 100 miles NW of Cape Spencer and 30 miles E of Yakutat Bay, is 3 miles wide and very prominent.

(50) Mariners are advised that in glacially fed areas such as Yakutat Bay, a layer boundary with a steep thermal/salinity gradient and/or suspended sediments in the water column can produce erroneous bottom traces on echo sounders. If this anomaly is suspected, a handheld lead line should be used to penetrate the layer for an accurate reading.

(51) **Chart 16761.–Yakutat Bay,** 130 miles NW of Cape Spencer, has a 16.5-mile-wide entrance between Ocean Cape on the SE and Point Manby on the NW; the bay is 7 miles wide at

Blizhni Point, 15 miles above the entrance, and 2 miles wide a few miles farther up in Disenchantment Bay, the N extension of the bay. Yakutat Bay, the best anchorage between Cape Spencer and Prince William Sound for light and medium-draft vessels, is mostly clear of islands and dangerous shoals. Depths in the bay range from 2 fathoms, marked by heavy growths of kelp W of Otmeloi and Krutoi Islands, to 141 fathoms off **Point Latouche,** 23 miles above the entrance. Two to 3 miles outside the line between Ocean Cape and Point Manby is a submarine ridge, very narrow on top, with depths of 3½ to 17 fathoms; the water deepens rapidly to more than 30 fathoms on either side except near Point Manby, and the ridge curves NE near Ocean Cape to join shallower water. During very heavy weather, it has been observed that breakers or pronounced increased height of swell occur across the entire entrance to Yakutat Bay; at such times entrance is dangerous.

(52) Current predictions are unavailable for Yakutat Bay, but complex currents are known to exist. The current to the E of **Knight Island** flows S on a flood tide and N on an ebb tide.

(53) **Ocean Cape,** on the SE side of the entrance to Yakutat Bay, is low and well wooded. Three bare light-colored bluffs 50 to 70 feet high, the westernmost point of the cape, are unmistakable landmarks. **Ocean Cape Light** (59°32.1′N., 139°51.3′W.), 130 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on one of the bluffs. A lighted whistle buoy, 3 miles W of Ocean Cape Light, marks the entrance to Yakutat Bay. Heavy breakers have been observed up to 0.5 mile offshore from the cape; vessels unfamiliar with the area should not attempt to pass between the lighted whistle buoy and Ocean Cape.

(54) **Point Manby,** on the NW side of the entrance to Yakutat Bay, is low and wooded. There is usually heavy surf and strong currents along the shore from this point NE to Blizhni Point, making it dangerous for boats to land, and causing migration of the shoreline and sandbars close to shore. Landings at stream entrances should only be made at high water and with local knowledge.

(55) **Point Carrew** is on the E side of Yakutat Bay 1.5 miles NE of Ocean Cape. A lighted whistle buoy, about 2 miles N of Point Carrew, marks the N end of a bank of shoaler water extending from the point, and the turn into Monti Bay. A rocky point, over which heavy surf breaks, extends N from Point Carrew. The W shore of Phipps Peninsula is foul with large boulders. The N and NE shore of Phipps Peninsula is subject to a periodic buildup of sand often producing sandbars offshore.

(56) **Point Munoz,** the westernmost extremity of Khantaak Island, is 3.5 miles above Ocean Cape. Dangerous rocks and heavy kelp growth, over which heavy surf breaks, extend SW to S from Point Munoz making the area foul for vessels. The island is about 5 miles long in a NE-SW direction and the greatest width is between Point Munoz and **Point Turner,** 2 miles to the SE. Khantaak Island is low and wooded except at Point Turner, which is a tongue of sand covered with grass and bushes. **Khantaak Island Light** (59°33.6′N., 139°47.1′W.), 28 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the S end of the island near Point Turner.

(57) **Monti Bay,** entered between Point Carrew and Point Munoz, extends about 3 miles SE to Yakutat, then turns N to Yakutat Roads anchorage. Depths in Monti Bay are 12 to 40 fathoms, except for a 10-fathom wreck 0.4 mile S of Point Turner. The S side of the bay is clear, but the N side in the vicinity of Khantaak Island is foul. Heavy breakers are reported to exist at the entrance to Monti Bay.

(58) **The Ankau,** on the S side of Monti Bay 1 mile SE of Point Carrew, is the outlet of an intricate system of shallow lagoons within the peninsula between the bay and the ocean. In 1979, a depth of 5 feet could be carried through the entrance to The Ankau; currents are strong and entry should not be attempted except at or near slack water and as close to Ankau Head as possible. A sandbar extending N across the channel from Ankau Head is building to the E making entry into The Ankau very difficult. Several large boulders on the S side nearly block the entrance. Inside The Ankau, tides lag those predicted for Yakutat by as much as 2 hours.

(59) **Tzuse Shoal,** about midway between Point Turner and the Yakutat mainland, has on its N side a rock 5 feet high; the bare shoal is about 300 yards in diameter at low water. A rock, 4 feet high, is near the S side of the shoal. Two rocks, awash at lowest tide, are about 0.2 mile N of the shoal. A lighted buoy marks the SE side of the shoal.

(60) **Yakutat,** a town at the E end of Monti Bay, has a small hospital, school, and two general stores. Lodging is available at the airport S of the town.

(61) Vessels with drafts greater than 8 feet should anchor on the E side of the harbor.

(62) **Tide.**–The diurnal range of tide at Yakutat is 10.1 feet.

(63) **Weather.**–The Yakutat area is surrounded on three sides by the waters of the Gulf of Alaska and Yakutat Bay; consequently, the climate is maritime in character. Both daily and seasonal average temperatures are held within fairly well-confined limits. Differences between average maximum and minimum readings range from a little over 12°F in October to around 16°F in April and May. Normal monthly temperatures range from slightly above 26°F in January to around 53°F in July and August. Although Yakutat has experienced a record low of –24°F, readings approaching this figure are extremely rare. Yakutat averages about 20 days each year with temperatures below zero. The higher mountain areas to the N and NE of Yakutat, with extensive glaciation, provide downslope cold air drainage which results in wide variations of temperature within short distances. Maximum temperatures above the 80°F mark have occurred in June, July, and August.

(64) Although the area in the immediate vicinity of the station is relatively flat, rather rough, hilly terrain exists within short distances. At distances of 40 to 75 miles to the N and NE, peaks of the St. Elias Range rise to heights of from 14,000 to almost 20,000 feet. The upslope terrain, combined with the exposure of the station to moisture-laden air from the Gulf, tends to provide Yakutat with abundant rainfall. The annual precipitation of around 130 inches is one of the greatest in the State, and annual amounts have always been in excess of 85 inches. Thunderstorms seldom occur, averaging only about one per year. June has the lowest average precipitation of any month with around 5 inches. October, with an average of almost 20 inches, has the heaviest monthly rainfall. In spite of abundant rainfall, runoff from heavy rain seldom creates a problem of any consequence. This is particularly true in the vicinity of the station where runoff not easily reaching drainage ditches is quite readily absorbed by the porous gravel which is exposed as a surface layer over much of the area. The heavy precipitation produces copious growth of various types of vegetation in the surrounding woods, including several types of edible berries. Heavy stands of timber in the area are harvested for lumber and pulp. Salmon fishing is a main source of income for natives in the area.

(65) Snowfall has occurred in all months of the year except June, July, and August. The heaviest fall in any 24-hour period was experienced in March of 1960 when 32 inches fell.

(66) Cloudiness is abundant with the annual average sunrise to sunset exceeding eight-tenths sky cover. During the spring, fall, and winter months, the Yakutat area is subjected to numerous storms, usually accompanied by high winds. During these seasons, the low pressure systems that develop in the Aleutians seem to follow a path lying just S of this area, resulting in persistent cloudy weather and extensive precipitation in the vicinity. During the summer, however, the weather occasionally remains cloudless and delightful for days at a time. The St. Elias Mountain Range, which borders the area on the NE and contains numerous glaciers, exerts a pronounced effect upon the local weather, particularly when a steep pressure gradient develops with low pressure in the Gulf to the SW of Yakutat. Under these conditions cold winds move down from the glacier slopes and skies are generally cloudless.

(67) **Ice.**–The ice in Yakutat Bay comes from the glaciers at the head of Disenchantment Bay and Russell Fiords. It is usually quite thick in Disenchantment Bay, but at times is scarce. Ordinarily, the ice banks on the W side of Yakutat Bay as far S as Blizhni Point. Scattered bergs usually are found in the bay proper, and occasional drifts find their way as far S as Ocean Cape and Point Manby. Ice flows have reportedly been encountered W of Knight Island on the E side of the bay.

(68) (See page T-1 for **Yakutat climatological table.**)

(69) **Pilotage,** except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. (See Pilotage, chapter 3, for details.)

(70) Vessels en route Yakutat meet the pilot boat about 1 mile NW of Yakutat Bay Lighted Whistle Buoy 4 (59°35.6′N., 139°51.2′W.).

(71) The pilot boat can be contacted by calling "YAKUTAT PILOT BOAT" on VHF-FM channel 16 or on a prearranged frequency between pilot and agent/vessel.

(72) **Wharves.**–The Delta Western wharf is on the S side near the head of Monti Bay and has a 55-foot face with 25 feet alongside. Gasoline, diesel fuel, and water are available. Other petroleum products can be delivered by truck from the airport.

(73) Sitka Sound Seafood Pier, 300 yards across the head of Monti Bay from the Delta Western wharf, has a 110-foot face with about 18 feet alongside and 25 feet about 20 feet out from the face. The pier is exposed to SE swells.

(74) Another Sitka Sound Seafood Pier is about 500 yards WNW of the Seafood Pier described above.

(75) A small-craft and seaplane float owned by the State and operated by the City of Yakutat is off Yakutat Roads in **Shipyard Cove,** (59°33′50″N., 139°44′20″W.). No services or supplies are available at the float. Limited repairs to small-craft are available at the cannery, when in operation, and at a garage in town.

(76) The **harbormaster** assigns berths; he can be contacted on VHF-FM channel 16 and by telephone (907-784-3323 or 907-784-3270).

(77) **Communications.**–Barge service is available, stops being made only as freight traffic demands. Daily scheduled air service to Anchorage, Cordova, and Juneau is available from the Yakutat airfield, about 3 miles SE of the town; charter air service is also available.

(78) **Yakutat Roads,** extending NNE from Monti Bay, has a clear width of 0.3 mile E of Tzuse Shoal, a length of about 2 miles, and depths of 4 to 23 fathoms, mud bottom, except for an extensive foul area at its NE end. A light marks the N limit of shoals on the E side of the roads. The best anchorage for large vessels is in the middle of Yakutat Roads in 15 to 23 fathoms.

(79) **Port Mulgrave,** on the W side of Yakutat Roads behind Point Turner, Khantaak Island, is 1 mile long and about 200 yards wide; on the side opposite Point Turner is **Village Shoal,** parts of which show at high water. The entrance to Port Mulgrave has a depth of 1½ feet; the arm is usuable only by small boats.

(80) **Rurik Harbor,** the next arm indenting the inner side of Khantaak Island NE of Port Mulgrave, has depths of 5 to 14 fathoms in its entrance. Small vessels can anchor in the entrance.

(81) **Sea Otter Bay,** NE of Rurik Harbor, is 1.2 miles long and has depths of 10 to 36 fathoms. **Prince Shoal,** between Rurik Harbor and Sea Otter Bay, extends about 0.5 mile SE from the Khantaak Island shore. The shoal is foul with rocks and has an extensive area that bares. **Prince Shoal,** partly bare at low water, extends out 0.4 mile from the point on the NE side of the entrance. Small vessels can anchor in the entrance to Rurik Harbor.

(82) **Johnstone Passage,** at the NE end of Yakutat Roads, connects with several bays and arms between the numerous islands and rocks behind Khantaak Island. The connecting channels are navigable only for small craft at low water. Extensive shoaling and rocks exist throughout the area; local knowledge is advised.

(83) **Broken Oar Cove,** 2.5 miles NE of Yakutat, is the site of a logging operation. **Sawmill Cove,** on the S side of Broken Oar Cove, is used as a log dump and has a log boom with a submerged cable extending across the entrance.

(84) **Redfield Cove,** 3 miles NE of Broken Oar Cove, affords excellent protected anchorage for light and medium draft vessels in 5 to 22 fathoms. The S side is clear of obstructions or shoals. A shoal extends about 0.3 mile SSW from the N entrance point. The safest passage to the bay is from N between Knight Island and **Krutoi Island.** Unlighted buoys mark the passage.

(85) From the SE side of **Knight Island,** 6.5 miles N of Redfield Cove, a 500-yard-wide ridge extends SE to Tla-xagh Island. The ridge provides a good anchorage in 14 fathoms for moderate-draft vessels. About 0.5 mile E of Tla-xagh Island is the entrance to **Eleanor Cove. Chicago Harbor,** just NE of Eleanor Cove, is a well-protected steep-sided cove for small craft.

(86) N of Point Latouche, the bay bends to the NE and joins **Disenchantment Bay.** Depths of 120 to 136 fathoms are found throughout Disenchantment Bay, except in the vicinity of Haenke Island, about 4.5 miles NE of Point Latouche, Osier Island, about 2.5 miles NE of Haenke Island in the entrance to Russell Fiord, and a small islet about 1.3 miles NE of Haenke Island. A partially protected anchorage in 40 fathoms can be found behind **Haenke Island.**

(87) **Turner Glacier** and **Hubbard Glacier** actively discharge icebergs into the bay. The flow favors the W shore but at times heavy ice concentrations can be troublesome throughout the area. Turner Glacier flows into the W side of the bay. The position of the glacier's terminus varies and, at times, a moraine bar is exposed at low tide some distance off the ice cliffs. Hubbard Glacier, the largest tidal glacier in Alaska, discharges innumerable icebergs into the head of the bay along a 6-mile-long ice cliff. Large waves caused by calving ice from the glacier makes landing on the shores of the N part of the bay hazardous. **Osier Island** is 2.5 miles NE of Haenke Island and 95 feet high; the passage between the island and the mainland S is shallow. Hubbard Glacier has advanced in recent years, at times closing the entrance to Russell Fiord. Uncharted reefs, tidal currents, icebergs, and ice calving from the glacier and resulting waves make navigation

between Disenchantment Bay and Russell Fiord extremely hazardous at all times.

(88) Mariners should contact the U.S. Forest Service Public Affairs Office, Chatham Area, Region 10, 204 Siginaka Way, Sitka, Alaska 99835, for the latest conditions concerning Disenchantment Bay, Hubbard Glacier, and Russell Fiord; telephone, (907) 747-6671.

(89) **Russell Fiord** (see chart 16760) extends 27 miles SE of Osier Island and has depths well over 100 fathoms except in the vicinity of Hubbard Glacier. A branch, **Nunatak Fiord,** extends E for 12 miles from Russell Fiord to **East Nunatak Glacier** which terminates on shoals that bare at low water.

(90) Tide rips and strong currents have been observed at the entrance to Russell Fiord on both sides of Osier Island. Errors in charted depth of 1 to 5 feet may exist in the area E of longitude 139°30′ because of tidal differences between Yakutat Bay and Russell Fiord.

(91) **Ice.**–The ice in Yakutat Bay comes from glacier ice. Floating glacier ice and icebergs from Hubbard and Turner Glaciers is usually quite thick in Disenchantment Bay to as far S as Point Latouche.

(92) **Chart 16016.**–Between Yakutat Bay and Cape Suckling, the coast is formed by river and glacier deposit and is relatively regular. Coastal currents are discussed in chapter 3.

(93) A short way inland, the St. Elias Range rises to 18,008 feet at **Mount St. Elias,** on the Alaska-Canada boundary, and culminates in the 19,850-foot **Mount Logan** in Canada. These towering snow-clad peaks, only 25 miles apart, are surpassed in all Canada and the United States only by central Alaska's 20,320-foot Mount McKinley.

(94) Stretching from Yakutat Bay to the Bering River in one continuous icefield are the tremendous **Malaspina Glacier** and **Bering Glacier.** Malaspina Glacier, which covers most of the coastal plain between Yakutat Bay and Icy Bay, reaches the sea at **Sitkagi Bluffs** which are formed of forest and debris covered ice. From the sea the glacier appears as a vast, almost featureless white plain, gently sloping toward the coast from the base of the towering peaks of the St. Elias Mountains.

(95) **Chart 16741.–Icy Bay** is a glacially carved fiord that is 5 miles wide at the mouth and extends inland more than 22 miles. Actively calving Guyot, Yahtse, and Tyndall Glaciers are at the N end of the bay.

(96) **Caution.**–Mariners should use extreme caution when navigating Icy Bay. Icebergs and floe ice are hazards and their movement can cause changes to both shoreline and water depths.

(97) The bay is entered between **Point Riou Spit,** on the SE, and **Claybluff Point,** on the NW. Claybluff Point is composed of soft shale and sand.

(98) A bar extends across the entrance of Icy Bay, roughly in the shape of a crescent, with depths in midchannel of 5½ to 9 fathoms. Breakers extend out from each entrance point along the crest of the bar, varying from the size of the seas, but have never been observed to encroach on the channel.

(99) It is reported that most points on the E side of the bay give excellent radar returns from all positions in the bay.

(100) **Riou Bay** is behind Point Riou Spit. **Moraine Reef** lies in the entrance to Riou Bay. Numerous rocks awash and deadheads are in the entrance and throughout the bay.

(101) A dangerous shoal extends about 0.5 mile N from the E sandspit to a 2-fathom spot in 59°55′45″N., 141°25′47″W. Depths to the N of the shoal are greater than 5 fathoms.

(102) **Moraine Island,** actually a peninsula, is on the E side of Riou Bay. A bar, with a least depth of 1 fathom, N of Moraine Island, extends from 59°56′00″N., 141°23′35″W. to 59°56′00″N., 141°23′50″W.

(103) **Gull Island,** a natural bird sanctuary, is 2.5 miles NE of Moraine Island. A 40-foot-high conical hill on the NE end of the island is conspicuous. A shoal extends 0.6 mile W from the SW tip of the island. Between the island and the SE shore of Icy Bay, the water is foul with rocks and a moraine reef.

(104) The Icy Bay Lumber Company logging camp, on the NW side of the bay about 2 miles W of Claybluff Point, is the only settlement in Icy Bay. Two caretakers are in attendance at the camp during the nonoperational winter months. An airstrip is at the camp.

(105) The Icy Bay Lumber Company also operates a log dump and pier on the NW side of the bay at **Carson Creek,** about 2.5 miles NE of Claybluff Point. The pier, a 230-foot beached barge, has depths of 15 feet at its outer face and is subject to heavy surge action. Heavy swells, which frequently break along this coast, can make landings difficult. A road terminates at Carson Creek.

(106) **Pilotage,** except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. (See Pilotage, chapter 3, for details.)

(107) Vessels en route Icy Bay meet the pilot boat about 9 miles S of Claybluff Point (59°58.0′N., 141°35.0′W.).

(108) The pilot boat can be contacted by calling "ICY BAY PILOT BOAT" on VHF-FM channel 16 or on a prearranged frequency between pilot and agent/vessel.

(109) **Anchorage.**–Possibly the best anchorage in Icy Bay is E of Moraine Island. This harbor makes an excellent anchorage in most weather, well protected from the wind. The bottom is soft clay which may yield in very high winds. In 1976, the controlling depth in the NW part of the harbor was 5 fathoms with a 1½-fathom spot at the entrance in 59°56′00″N., 141°22′40″W. Do not anchor between Moraine Island and Gull Island to the NE, as bergs drift through this area, sometimes with considerable velocity. Off the entrance to Riou Bay, NE of Moraine Reef, is an area that offers good protection from swells coming from the Gulf of Alaska and has a good holding bottom. Riou Bay has many foul areas along the E shore which, combined with the presence of Moraine Reef, makes the bay an undesirable anchorage.

(110) In 1972, the USCG Cutter CLOVER reported a good anchorage in about 20 fathoms, untroubled by ice in all except E winds of 20 knots or more in 60°00.8′N., 141°23.1′W., just SW of **Kichyatt Point.**

(111) A 5½-fathom spot is 3.5 miles SW of Kichyatt Point, 0.9 mile offshore.

(112) **Tides and currents.**–The diurnal range of tide at Icy Bay is 9.9 feet. Currents in the bay are weak. The combined effect of the ebb current and the discharge from the glacial streams is most pronounced in the NW part of the bay. In the entrance to Guyot Bay, the ebb current attains a velocity of 2 knots or more. The tidal current at the entrance to Icy Bay floods NE and ebbs SW, with a velocity of about 0.5 knot.

(113) **Weather.**–The prevailing winds are E and NE. A breeze off the glacier usually brings rain. Winds from other quarters are seldom observed, although offshore winds are known to blow at times. Breakers on the outside coast are generally heavy and plainly audible on either side in entering. Within the bay, W of

Claybluff Point, breakers are frequently heavy enough to make landing difficult in small boats. There is no surf along the E shore of the bay.

(114) The bay trends generally NE for 10 miles with depths of generally less than 50 fathoms below Kichyatt Point; uncharted shoals and rocks may be present. N of prominent **Kichyatt Point,** on the W side of the bay, the shores are barren having been recently exposed by glacier retreat; the bay trends NW for 15 miles to **Guyot Glacier** and **Yahtse Glacier** which discharge icebergs. The W shore is high; 7 miles NW of Kichyatt Point, **Tsaa Fiord** extends W 3 miles heading in three calving glaciers. The E shore of the bay is low and composed of glacial moraine and outwash from Malaspina Glacier. Two miles NNE of Kichyatt Point is low **Kageet Point;** N of the point **Taan Fiord** extends 5 miles NE to **Tyndall Glacier.**

(115) **Ice.**–Ice in the bay originates from the actively calving glaciers at the head of the bay. The part of the bay N of 60°00′N. is usually filled with ice. In the S part of the bay, the ice usually forms long tongues of loosely packed ice. Icy Bay is usually ice-free from the E shore, W to the centerline of the bay. The size of the ice ranges from a few widely spaced bergs of over 200 feet in length and 50 feet in height to many small bits 2 feet and smaller. Riou Bay remains relatively free of ice during the summer. During and shortly after periods of strong winds, the upper end of the bay is clear of ice sometimes to the face of the glaciers.

(116) Caution should be exercised when approaching or beaching a boat near the face of the glaciers. Boats may be swamped by the large waves generated by the falling of large chunks of ice into the water. Caution should also be exercised in the vicinity of the larger bergs which may roll over or break apart without warning.

(117) Freshwater may be obtained from streams along the W side of the bay in the vicinity of Kichyatt Point. Also, small icebergs can be taken aboard for potable water.

(118) **Chart 16016.**–From Icy Bay to Cape Yakataga, the coast is backed by a continuous ridge of stratified mountains 3,000 to 6,000 feet high. Numerous streams cut the foothills, and a dense growth of alders and bushes line the shore.

(119) **Yakataga Reef** extends about 0.5 mile from shore at **Cape Yakataga** (60°03′40″N., 142°26′00″W.) and parts of it show above high water. This is the best landing place between Icy Bay and Controller Bay about 57 miles to the W, but landing is possible only with occasionally smooth seas. In 1968, a depth of 9 fathoms was reported about 15 miles S of Cape Yakataga in 59°50.0′N., 142°31.0′W. An aero radiobeacon is at Cape Yakataga.

(120) **Chart 16723.–Caution:** Mariners are urged to use caution when navigating in the area of this chart due to possible changes in depths and shoreline as a result of the earthquake of March 27, 1964.

(121) **Cape Suckling** (59°59′24″N., 143°53′36″W.), 25 miles NE of Cape St. Elias, is low and wooded. Two miles N of the cape a prominent mountain ridge 1,500 to 2,500 feet high extends about 8 miles NE. Three bluffs about 100 feet high are 1.5 to 2.9 miles W of Cape Suckling. From the E bluff a sunken reef extends 0.6 mile SW to three rocks awash that are close together.

(122) **Southwest Breaker** is a rock bare at low water, 3.8 miles 260° from Cape Suckling.

(123) **Okalee Spit,** forming the S side of Controller Bay, is low with bare sand dunes, and is 7 miles long in an E-W direction. The SE entrance to Controller Bay between the N end of Kayak Island and Okalee Spit is of little use except for very small vessels that can cross the flats E of Wingham Island.

(124) Two prominent rocks about 75 feet high are in the approach, 1.5 miles E of **Lemesurier Point** at the NE end of Kayak Island, and 1.2 miles S of Okalee Spit. Ledges which uncover are between the two rocks, and extend about 300 yards E and W from them. Foul ground with 13 feet over its outer half extends from Lemesurier Point almost to the shoal surrounding the rocks.

(125) The channel is over a bar with least depths of 17 to 19 feet, thence between Okalee Spit and the two prominent rocks. N from the rocks, the channel has depths of 5 to 6 fathoms until about 1 mile inside the N end of Kayak Island; thence, through the flats, about 12 feet can be carried to Kayak Entrance, and 6 feet to Okalee Channel. Keep to the W of Southwest Breaker when using this channel.

(126) **Kayak Island** is 17.5 miles long, has peaks 1,110 to 1,390 feet high in the central portion, and slopes gradually to its N part, which is low and wooded.

(127) **Cape St. Elias,** the S end of Kayak Island, is an important and unmistakable landmark. It is a precipitous, sharp, rocky ridge, about 1 mile long and 1,665 feet high, with a low, wooded neck between it and the high parts of the island farther N. **Pinnacle Rock,** about 0.2 mile off Cape St. Elias, is 494 feet high and connected to the cape by a low, narrow strip of land.

(128) **Cape St. Elias Light** (59°47.9′N, 144°35.8′W.), 85 feet above the water, is shown from a white square tower at the corner of a rectangular building on the SW end of Kayak Island.

(129) A breaking reef extends 1 mile SW from Pinnacle Rock. Another breaking reef, about 1 mile E of Cape St. Elias, extends 2 miles SSE from Kayak Island and then continues as a submerged ridge of 4 to 8 fathoms to **Southeast Rock,** which uncovers 11 feet. Broken ground with 7 to 16 fathoms extends 2.5 miles SW from the rock. A bell buoy, 3.2 miles from Cape St. Elias Light, is on the broken ground. Tidal currents have considerable velocity across the reefs.

(130) The E coast of Kayak Island is strewn with boulders and landing is impracticable. Rocky shoals with 11 feet over them are 1.8 miles 172° from Lemesurier Point. Lying 3.2 miles SW of the point and 1 mile offshore is a reef 0.5 mile long. Its N end is a rock 10 feet high and its S end uncovers 5 feet. For 6 miles NE from Cape St. Elias, rocks awash and breakers extend 0.8 mile off the E coast of the island.

(131) **Sea Ranger Reef** is off the W coast of Kayak Island 3.3 miles N of Cape St. Elias. The inner shoal is 1 mile from shore, has 11 feet over it and often breaks. The outer shoal is 1.5 miles from shore, has a least known depth of 24 feet, and seldom breaks. Tide rips occur around it at times.

(132) The tidal currents on the W side of Kayak Island set N on the flood and S on the ebb, with an estimated velocity of 0.6 knot.

(133) **Anchorage.**–Good protection from all winds except from the W can be found on the W side of Kayak Island. This area is used by foreign fishing vessels, generally large stern trawlers, for the transfer of fish between vessels at anchor. The smoothest water usually will be found between Sea Ranger Reef and Kayak Entrance, an anchorage which is used by fishing vessels during the halibut season. Indifferent anchorage can be had on the E side of Kayak Island in 15 to 20 fathoms, about 1.5 miles offshore midway between Cape St. Elias and Lemesurier Point. The holding ground is poor and a vessel should be ready to move on short notice.

(134) **Controller Bay** is formed by Okalee Spit and Kayak Island on the S and Wingham and Kanak Islands on the W. For some distance back from the E shore the land is but slightly above high water, and is broken by many streams. Quicksand has been found in the channel at the mouth of Edwardes River. The bay is mostly flats. Entrance is through two principal channels; Kayak Entrance just S of Wingham Island; the other, Okalee Channel just N of Wingham Island.

(135) **Kayak Entrance,** between Kayak and Wingham Islands, is rocky and foul with shoals. The least depth of the shoals as far as abeam of the SE tip of Wingham Island is 1 fathom; above that and into the S portion of Controller Bay the depth is not more than 3 feet. Two rocks awash are about 0.3 mile N of the S entrance point. The channel is 0.5 mile wide between spits, which largely uncover, projecting out from Kayak and Wingham Islands. Kayak Entrance should be used with caution and only at high water.

(136) **Anchorage.**–Anchorage can be made in 2 to 3 fathoms, bottom soft in places, in Kayak Entrance as far N as abeam of the SE end of Wingham Island. There is some local chop with strong winds, but no outside swell enters the bay either through Kayak Entrance or around the N end of Kayak Island.

(137) Small vessels can anchor in the narrow channel close to the E side of Wingham Island. This channel is about 300 yards wide and has depths of 7 to 11 fathom for 1 mile, then shoals gradually S. The flats on the E edge of the channel have depths of 7 to 11 feet. At times the tidal currents in the channel have a velocity of 3 knots or more.

(138) With heavy E winds, anchorage and shelter can be found in 16 to 18 fathoms 0.5 mile off the W side of Wingham Island.

(139) **Wingham Island,** 4 miles long and wooded, has three hills, the highest, near its N end, rises to 833 feet. The W shore of the island is precipitous.

(140) **Okalee Channel,** between Wingham and Kanak Islands, is 0.6 mile wide at the entrance. A depth of 6 fathoms can be carried to abeam of the S tip of Kanak Island. Further NE, and into the bay depths are less. The channel is a secure anchorage, however, it changes annually and should be used only with local knowledge.

(141) The shoal on the S side of Okalee Channel, 1.5 miles NE from Wingham Island, uncovers shortly after high water, and this shoal and the one on the opposite side of the channel are usually indicated by breakers. The shoal extending S from Kanak Island is mostly uncovered at low water. Above these shoals the flats bordering Okalee Channel are partly uncovered at low water only, and there is nothing to indicate the channel when the flats are covered.

(142) Vessels sometimes anchor in Okalee Channel about 2 miles above the N end of Wingham Island. This part of the channel is generally easy of access in clear weather. Above this point Okalee Channel should be navigated at low water only, in the absence of local knowledge.

(143) **Kanak Island** is about 4 miles long, very low and flat, and wooded in the middle. Breakers mark the extensive shoal which makes out from the W side of the island. The S edge of the shoal is within 1.2 miles of the N end of Wingham Island.

(144) The passage between Kanak Island and Strawberry Point is used only by small boats at high water with local knowledge.

(145) **Tides and currents.**–The diurnal range of tide is 10.1 feet at the N end of Wingham Island. The current velocity is 1.5 knots on the flood and 1.2 knots on the ebb off the N end of Wingham Island, and 1.7 knots on the flood and 2.0 knots on the ebb in the channel SE of Kanak Island. The currents set into Controller Bay through all the entrances on the flood and out on the ebb. In Kayak Entrance the ebb has greater velocity than the flood and the estimated velocity is not over 3 knots. Tide rips occur at times in the channels S of Wingham Island and SE of Kanak Island.

(146) **Weather.**–During the summer the prevailing winds are from the E around through S to SW. During the early spring and fall, NW winds blow with great force over the flats. There is a great deal of cloudy misty weather during the summer. Fog is infrequent and usually clears before noon.

(147) **Point Hey** is a projecting and prominent point, high and narrow, on the NW side of Controller Bay 1 mile N of Kanak Island. **Chilkat,** an abandoned village, is on the W side of the mouth of **Bering River,** which flows into the NE end of Controller Bay.

(148) **Katalla Bay,** 23 miles N from Cape St. Elias, is between Strawberry Point on the E and Martin Islands on the W, a distance of 5 miles, and indents the coast about 2 miles to the mouth of Katalla River. The bay is a roadstead sheltered from offshore winds, but exposed to winds from SE through SW.

(149) **Strawberry Point** is low and bare at the end and wooded toward the foot of a prominent hill on the point which has a low break between it and the higher land N. A shoal with little water over it, and on which the sea generally breaks at low water, extends nearly 1.2 miles S from the point.

(150) The NE shore of the bay from Strawberry Point to the mouth of Katalla River is a steep sand beach. The NW shore from Katalla to Martin Islands is foul and should be given a berth of about 0.8 mile.

(151) **Palm Point** is 1.5 miles SW of Katalla. A boulder reef, bare at low water, extends 0.4 mile S from it.

(152) **Martin Islands,** two in number and about 150 feet high, have steep rocky sides, and are 0.5 miles from shore. The N island is joined to the shore by a flat, bare at extreme low water.

(153) **Martin Islands Light** (60°09.9′N., 144°36.2′W.), 150 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the SW point of Fox Island, the outer island of the Martin group.

(154) **Katalla** is an abandoned village at the head of the bay, on the W side of **Katalla River.** The bar at the mouth of the river has a depth of about 3 feet, and the sea generally breaks on it. The entrance is narrow and rocky, and requires local knowledge. With a smooth sea, lighters formerly landed in the bight on the NE side of Palm Point. The beach always has some surf, and with SE or SW winds, landing is impracticable. Shoals make out on both sides of the river mouth.

(155) The anchorage in the bay is 1.5 to 2 miles S of Katalla, in $5\frac{3}{4}$ to 7 fathoms, hard sand bottom. The holding ground is generally good, but quicksand S of Palm Point has caused the loss of many anchors. There are no dangers if the shore is given a berth of over 0.8 mile, but the shoal extending 1.5 miles S from Strawberry Point should be kept in mind.

(156) **Chart 16013.–Copper River** (60°25.0′N., 145°00.0′W.) emerges from the mountains between **Miles Glacier** and **Childs Glacier,** above which are rapids. Below the rapids, the river flows through broad flats in many changeable channels which vary in depth from 5 to 20 feet at high stages. There are five navigable channels in the Copper River Delta. These channels require local knowledge due to changing bar and sea conditions and frequent dangerous breakers. The current is swift, and tidal effects are felt only near the mouth.

(157) The delta is low and marshy except for sand dunes, 50 to 150 feet high, on the islands and banks of the main channel. From seaward, the vicinity of Copper River shows as a vast, rugged range with numerous glaciers filling its gorges. From **Point Martin** to Hinchinbrook Island is a chain of low sand islets, 4 to 5 miles offshore. These islets are marked by four lights, shown 12 feet above the water from steel skeleton towers with red and white diamond-shaped daymarks. The daymarks, moving E to W, are labelled "S", "K", "G", and "P" in black. These lights are frequently destroyed in severe weather conditions. Between 1-2 miles offshore of these lights are corresponding yellow spherical special purpose buoys with black letters "S", "K", "G" and "P". These buoys are difficult to see and detect on radar even in moderate weather and should only be used for position reference, as they do not mark the navigable channels between the islets. Back of the islets are tidal flats of mud and sand, intersected by sloughs which drain into the Copper River passes and into Glacier and Eyak Rivers.

(158) The shoals extending seaward from the islets off the Copper River Delta have not been surveyed, however, danger can be avoided by giving the islets a berth of more than 3 miles and by avoiding depths less than 10 fathoms.

(159) **Alaganik Slough,** the westernmost and main outlet of Copper River, is 0.5 to 1 mile wide, with depths from 5 to 15 feet depending upon the stages of tide and river. The mean range of tide is about 9 feet at the mouth, and is reported to be 2 to 3 feet at **Alaganik** about 10 miles up the slough.

(160) **Chart 16709.–Eyak River,** 6 miles ENE of Point Whitshed (60°26′45″N., 145°52′42″W.), flows from Eyak Lake and has a swift current. At favorable stages of the tide it is navigable for small, light-draft craft to the lake. A highway bridge with a 43-foot fixed span and a clearance of 8 feet crosses the river about 3.5 miles above the mouth. **Mountain Slough** is 1.5 miles W from the mouth of Eyak River.

(161) **Egg Islands,** about 5 miles SE of mainland Point Whitshed and 10 miles E of Hinchinbrook Island, are low and partly grass covered. **Egg Island Channel,** just E of the islands, leads NE between sand and mudflats to Alaganik Slough. The seaward approach to the channel is marked by a lighted whistle buoy.

(162) **Egg Island Light E** (60°22.2′N., 145°45.0′W.), 33 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark, on the SE island of the group.

(163) The current in the channel is strong. E of Egg Islands, flood and ebb velocities of 3 to 3.5 knots, respectively, setting in the direction of the channel, have been observed. N of the islands a current of 1.5 knots, flooding NW and ebbing SE, was found. SE of Point Whitshed a W flood of 1.5 knots was observed.

(164) Navigation in this area is limited to small craft with local knowledge. Anchorage can be found in the wider parts of the sloughs N of the Egg Islands. There is no protection from prevailing winds but seas are broken up by the surrounding flats.

(165) **Point Whitshed** is at the S extremity of the **Heney Range,** the steep E side of which flanks the alluvial coastal region of the Cooper River. The waterfall, 1 mile from the point on the coastal side of the ridge, is a prominent landmark, seen for several miles over the mudflats, and shows well when the peaks and higher land are cloud covered. The higher peaks on Heney Range, as well as those on Hinchinbrook Island, are generally sharp and bare topped. The end of the peninsula W from Heney Range is rolling hills. **Government Rock,** at Point Whitshed, is 30 feet high and rounded in outline.

(166) The irregular slough, marked by stakes and black oil drum buoys and trending E and W near Point Whitshed and **Twin Rocks,** has a controlling depth of about 1 foot. When the Twin Rocks are just covered, the depth in the slough is increased to about 6 feet. Twin Rocks can be avoided by bringing the summit of Mummy Island, a rounded wooded knoll, in range with the 1,845-foot mountain peak on Hawkins Island.

(167) An abandoned radio tower is near **Gravel Point** on the mainland about 1 mile E from Mummy Island.

(168) **Mummy Island** is about 425 feet high and wooded. **Mummy Island Light 5** (60°27.7′N., 145°59.4′W.), 21 feet above the water, is shown from a skeleton tower with a square green daymark on the islets E of Mummy Island, where there is an approach through a slough. The islet 0.2 mile SW of Mummy Island has two steep ends, 75 feet high, with a low, flat strip between.

(169) **Little Mummy Island** is rounded in outline and profile.

(170) About 1 mile S of Mummy Island is **Pinnacle Rock,** on the edge of a slough extending from Point Bentinck to Mummy Island.

(171) Orca Inlet N to Cordova from Mummy Island is filled largely with flats. The channel from Mummy Island to Cordova is marked by seasonal buoys from May to November. In June 1983, 1¼ fathoms could be carried in the channel from Mummy Island to Cordova. Shoals throughout the area are constantly shifting; numerous other dangers exist in the area. Local knowledge is necessary. The inlet is described later in the chapter.

(172) **Point Bentinck** (60°23.5′N., 146°05.0′W.), at the E end of Hinchinbrook Island, is low, sandy, and grass covered, with sand dunes and brush 0.5 mile back. The brush covers a ridge extending SW from **Strawberry Hill** at the S shore of Boswell Bay. The 798-foot knoll with a parabolic antenna N of Boswell Bay is prominent.

(173) At low water, sandflats bare for 2 miles off Point Bentinck. Part of this area is above ordinary high water offering a footing for sparse grass and a lodging place for driftwood. Shoal water continues off the point in a SE direction, and about 4 miles from the point the shoal drops off into deeper water.

(174) A lighted bell buoy SSE of Point Bentinck marks the seaward approach to a channel that leads between the flats 1 mile E of the point to Orca Inlet. After crossing the bar the channel becomes deep and narrow abreast of Point Bentinck. Low water is the best time to negotiate the entrance as the flats are bare and of some aid. A stranger should not attempt this entrance.

(175) Current velocities up to 3 knots on the flood and 2 knots on the ebb were observed in this channel. On the bar, flood and ebb velocities of about 1 knot were found setting NE and S, respectively. S of the flats which extend W from Egg Islands, a NW flood of 0.5 knot and a SE ebb of 1 knot were observed.

(176) A ½-fathom spot is about 1.2 miles NNE of Point Bentinck in about 60°24.8′N., 146°03.7′W. A group of rocks that bare is in the middle of the entrance to Boswell Bay in about 60°24.9′N., 146°05.7′W.

(177) **Boswell Bay,** indenting the E end of Hinchinbrook Island, affords anchorage for small craft just inside the entrance. Massive **Boswell Rock** is 100 yards off the N point. Immediately adjacent to the point itself is an undercut rock. A very small rock is 100 yards outside of Boswell Rock.

(178) To enter bring the 65-foot rock, brown in color and near the S shore of the bay, just clear of the southernmost pinnacle inside the entrance, and steer on this range until abreast of Boswell Rock. Then haul S a little and anchor when the NE point of

Hinchinbrook Island is just shut in on the undercut rock. Flood and ebb velocities of 1.5 and 2 knots, respectively, have been observed in the narrow entrance.

(179) **Hinchinbrook Island, SE coast.**–A mountain ridge parallels the SE coast of Hinchinbrook Island. The tree line is about 1,000 feet high and the summits of the island are bare. The peaks are not prominent and from offshore they are difficult to identify.

(180) The promotory between **Point Steele** and **Hook Point** is 2 miles broad and is faced with 200-foot bluffs; back of the bluffs is swampland. Lowland and sand beaches are adjacent to the promontory on either side. A boat can land in good weather on the NW side of Hook Point and 0.5 mile N of Point Steele. Reefs make out 0.4 mile from the promontory.

(181) NE of Cape Hinchinbrook, the seaward face of Hinchinbrook Island is steep, with rocky bluffs at the water, for 12 miles to an open bight with a broad sand beach on the W side of Hook Point.

(182) Hinchinbrook Entrance is described later.

(183) **Chart 16700.–Prince William Sound** is an extensive body of water with an area of about 2,500 square miles. It is very irregular in outline, with great arms spreading in all directions. The entrance, from Cape Hinchinbrook to Cape Puget, is 58 miles across, but is almost closed off by islands. The largest is Montague Island which extends well out into the ocean.

(184) Many of the islands and peninsulas in the sound are low and tree covered but behind these rise eternal barriers of ice and snow. The **Chugach Mountains** stretch NW from the St. Elias Range and enclose the sound round through N and W. On the N shore glaciers come down to the heads of the bays.

(185) **Prince William Sound Shipping Safety Fairway,** extending SE from Hinchinbrook Entrance at the approaches to Prince William Sound, has separate inbound and outbound traffic lanes that merge in the NW part. (See **166.100 through 166.110 and 166.400,** chapter 2, for limits and regulations.)

(186) **Traffic Separation Scheme (Prince William Sound),** wholly within U.S. Territorial waters, has inbound and outbound traffic lanes and separation zones, and leads from the vicinity of Cape Hinchinbrook through Prince William Sound and into Valdez Arm (the entrance to Port Valdez). (See charts 531, 16013, 16700, 16709, and 16708.) (See also, Traffic Separation Schemes, chapter 1, for additional information.)

(187) Mariners approaching or departing Hinchinbrook Entrance are advised to use caution, because of strong currents, occasional severe weather, and fishing activity in the area. Hinchinbrook Entrance may be transited E or W of Seal Rocks, at the vessel master's discretion.

(188) **Dangers.**–The off-lying dangers in the approaches to Prince William Sound are Middleton Island, Fountain Rock, Wessels Reef, and Seal Rocks.

(189) It has been found convenient to approach Hinchinbrook Entrance on a radio bearing using the radiobeacon station at Cape Hinchinbrook, and taking cross bearings on the radiobeacon at Cape St. Elias as an aid in clearing Wessels Reef and Seal Rocks.

(190) **The March 1964 earthquake caused a bottom uplift of from 4 to 32 feet in Prince William Sound. Some parts of the sound outside of the traffic separation scheme have not been surveyed since the earthquake. Until a complete survey is made of the area, extreme caution is necessary because depths may be considerably less than charted and mentioned in the Coast Pilot.**

(191) A **Vessel Traffic Service (Prince William Sound Vessel Traffic Service),** operated by the U.S. Coast Guard, has been established in Prince William Sound, Valdez Arm, Valdez Narrows, and Port Valdez. The Service is designed to prevent collisions and groundings, and to protect the navigable waters of the Vessel Traffic Service area from environmental harm resulting from such collisions and groundings.

(192) The **Prince William Sound Vessel Traffic Service** comprises three major components: a **Traffic Separation Scheme,** a **Vessel Movement Reporting System,** and **radar surveillance.** The Traffic Separation Scheme comprises a network of one-way traffic lanes with a separation zone in between. The traffic lanes are each 1,500 yards wide from Hinchinbrook Entrance to the vicinity of Bligh Reef at the SE end of Valdez Arm, then gradually decrease in width to 1,000 yards and terminate at Rocky Point. The separation zone is 2,000 yards wide between Hinchinbrook Entrance and the vicinity of Bligh Reef, then gradually decreases in width to 1,000 yards and terminates at Rocky Point.

(193) The Vessel Movement Reporting System is controlled by the **Vessel Traffic Center,** call "Valdez Traffic," which is operated continuously by the U.S. Coast Guard. The center maintains radiotelephone communications with vessels in the Vessel Traffic Service Area on VHF-FM channel 13. The center receives, assembles, and processes information from vessels through mandatory and voluntary reports, and in turn disseminates marine safety information to vessels participating in the Service.

(194) The radar surveillance system covers Valdez Arm, Valdez Narrows, and Port Valdez from Coast Guard operated radar sites. One site is at **Potato Point,** on the W side of Valdez Narrows, and the other is on Valdez Spit, which borders the S and E sides of the small-boat basin at Valdez. A continuous radar watch of these areas is maintained by the Vessel Traffic Center.

(195) The mariner is cautioned that the reliability of information received by the Vessel Traffic Center may vary depending on the method of receipt and source. Additionally, the Coast Guard may not always have first-hand knowledge of hazardous circumstances existing in the Vessel Traffic Service area, and unreported hazards may confront the mariner at any time.

(196) The Vessel Traffic Service is shown on the appropriate nautical charts of the area.

(197) The rules governing vessels operating in the Vessel Traffic Service area are given in **161.301** through **161.387,** chapter 2. In addition, detailed operating procedures are contained in the Prince William Sound Vessel Traffic Service Operating Manual, available from the Commanding Officer, Coast Guard Vessel Traffic Service, Valdez, Alaska 99686.

(198) **Middleton Island,** about 50 miles off the entrance to Prince William Sound, is comparatively low and grass covered and difficult to pick up when making a landfall. An aerolight is on the W side about 1.3 miles from the S end of the island.

(199) From a few miles offshore the island appears flat. The highest ground, on the S, has an elevation of 126 feet. A pinnacle rock at the extreme S end is conspicuous from E and W. The N end slopes to a sandspit.

(200) The E and S sides of the island are bold hard-clay cliffs upon which great numbers of seafowl nest. The steepest and highest section of the cliff, on the W side, extends for 1 mile from the S end. There is also a short section of cliff midway along the W shore.

(201) A sandbar, awash at low water, extends 1.3 miles NW from the N tip of the island. The channel between the extreme end of the bar and the main island, 0.5 mile NW of the tip of the island,

carries a depth of 3 fathoms, but strong rips occur and it is dangerous to use.

(202) Middleton Island is inhabited by a few families that operate the Federal Aviation Administration station. The island is fringed by vast areas of reefs, rocks, and kelp. Breakers occur at greater distances. Foul ground extends 2 miles S of the island, terminating in breakers except in very smooth weather. Seaward of these breakers, the bottom falls off rapidly into deepwater, except that in 1967, a depth of 5¼ fathoms was found to exist about 0.3 mile S of the foul ground in 59°22.3′N., 146°23.1′W. Broken ground extends 3 miles to the E, terminating in breakers which first begin to appear when a moderate swell is running. This side of the island should be given a wide berth.

(203) The waters W of Middleton Island are clear of off-lying dangers, giving an easy approach to an anchorage from this direction. The best anchorage is 1 mile S of the N tip and 2 miles W of the island in about 12 fathoms. Small vessels can anchor further E, 1 mile W of the island, in about 7 to 8 fathoms. This area gives protection from the NE and SE. Tidal currents, of about 2 knots, run approximately parallel to the island.

(204) There are two good landing places, depending on the prevailing seas; one is on the NE side of the island 0.3 mile from the N tip, and the other is on the W side of the island, directly W of a quonset hut, 0.7 mile S of the N tip of the island. These areas have steep beaches, and landings can be made in moderate swells. The remains of the S.S. COLDBROOK, which was wrecked in this vicinity in 1942, are above the high waterline.

(205) At the N and S ends of the island the current is irregular and sets in a NE-SW direction. Tide rips are visible several miles to the S of the island, and to the N in the vicinity of Fountain Rock. Mariners are advised to use extreme caution when navigating in shoal waters in the vicinity of Middleton Island because of possible additional shoaling as a result of the bottom uplift caused by the earthquake of March 1964.

(206) **Fountain Rock,** 4 miles N of Middleton Island, breaks in light seas. The rock, which uncovers 2 feet, and the danger area, centered around the rock is about 0.5 mile square. Safe passage can be made midway between Fountain Rock and the N tip of Middleton Island in 14 fathoms, but should be done so with caution.

(207) **Wessels Reef,** bare at low water and 2 miles long, NNE-SSW, is about 19 miles N of Middleton Island. Depths of 30 fathoms or more are close to the reef, and with smooth seas it can hardly be detected. A lighted whistle buoy is on the E side of the reef.

(208) **Seal Rocks** are discussed later with Hinchinbrook Entrance.

(209) **Routes.**–Vessels bound for ports on Prince William Sound from E use Hinchinbrook Entrance, between Montague and Hinchinbrook Islands. Vessels approaching from SW use Elrington Passage, it being the best marked. Montague Strait, the widest and deepest of the W entrances to Prince William Sound, Latouche Passage, Prince of Wales Passage, and Bainbridge Passage are also available to vessels approaching from the SW.

(210) **Tides and currents.**–In Prince William Sound high and low water occur about the same time as at Cordova. The diurnal range of tide is 12.4 feet at Cordova and 11.2 feet at Port Etches at the entrance to the sound. (See the Tide Tables for daily predictions for Cordova.) It is reported that the currents along the approach to Prince William Sound set SW invariably, and occasionally with a velocity of 2.5 knots; accordingly, extreme caution is required in approaching Hinchinbrook Entrance in thick weather.

(211) **Weather.**–The waters of the sound are very deep and are chilled by large amounts of ice from the surrounding glaciers. The meeting of cold water and the colder air from the mountains with the warmer waters and vapor-laden airs of the Gulf of Alaska causes changeable weather; sudden wind squalls and thick fogs are common.

(212) **Ice.**–Glacial ice is rarely found in the open waters of Prince William Sound. Ice is discharged by the Columbia Glacier, N of Glacier Island, and is driven into the sound by N winds; it may be expected, depending on the winds, from Bligh Island to Bald Head Chris Island and as far S as Storey Island. Large bergs may be found at anytime along the N shore from Point Freemantle to Fairmount Island.

(213) There are numerous discharging glaciers in Port Wells, the NW arm of the sound, but ice rarely reaches the entrance of the arm. There is a discharging glacier at the head of Blackstone Bay, but the ice is confined to the bay. Ice is discharged by Chenega Glacier on the SW side of the sound, and occasionally drifts E as far as Point Helen and the N entrance to Latouche Passage.

(214) During very cold weather ice sometimes forms in the arms of the sound which reach well into the mountains, and is at times heavy enough to impede navigation.

(215) **Montague Island,** on the W side of Hinchinbrook Entrance approach to Prince William Sound, is high, mountainous, and wooded to about 1,000 feet. There are no distinctive peaks, although Montague Peak, the most N one of the range, can be distinguished from the S. A striking characteristic of the E part of the N half of the island is the regularity of the succession of spurs reaching from the mountain range to the coast, where the spurs terminate in dirt bluffs with comparatively steep slopes.

(216) A constant SW current is reported along the E coast of Montague Island. (See remarks on currents in chapter 3.)

(217) Two logging camps are on the N side of Montague Island. Brown bears are numerous on the island, and they are said to be ferocious.

(218) **Montague Island was subjected to extensive upheaval during the March 1964 earthquake. Thirty-one feet was measured at Macleod Harbor, 11 feet at Port Chalmers, and 15 feet at Patton Bay. Mariners should exercise extreme caution when navigating in depths under 10 fathoms or areas of uneven bottom.**

(219) **Chart 16701.–S and E coast of Montague Island.**

(220) **Cape Cleare,** the SW extremity of Montague Island, is gently rounding and consists of eroded bluffs with rocky beaches. Back of the cliffs the cape is timbered and undulating with the ground gradually rising to the mountain masses nearby. A detached rock with a double head 25 feet high is about 75 yards off the SW extremity of the cape. A pinnacle rock (59°44.2′N., 147°51.2′W.) with a depth of less than 3 fathoms is S of the cape. The cape should be given a berth of at least 2.5 miles. Strong tidal currents sweep around the cape and tide rips are frequently encountered.

(221) Exposed anchorage can be had in the bight about 5 miles NE from Cape Cleare in 10 to 20 fathoms, sand and gravel bottom.

(222) **Neck Point,** the first prominent point NE from Cape Cleare, is a bold headland with eroded bluffs. A prominent pinnacle rock is about 100 yards off the point and deep water extends close to shore. The point is separated from the higher peaks back

of it by a neck of land somewhat lower than the outside point. The headland and the 1,900-foot peak are separated from the main ridge by a deep valley. When viewed from a position SW of Cape Cleare the peak has the appearance of a detached conical island.

(223) **Jeanie Cove,** a bight 10 miles NE from Cape Cleare, is exposed to the S and affords no protected anchorage. There are numerous reefs and rocky patches in this vicinity that should be avoided.

(224) A rock awash is 0.8 mile off the W entrance point, and a reef, which uncovers, is 0.8 mile off Jeanie Point, the E entrance point. A depth of 7 fathoms is about 1.4 miles 212° from Jeanie Point.

(225) **Jeanie Point** is bold with rock cliffs. Back of the cliffs the land is timbered and rolling. A prominent detached rock is a short distance off the point.

(226) **Wooded Islands,** on the SE side of Patton Bay, are 16 miles NE from Cape Cleare. The largest of the three is wooded and flat topped, with a prominent square-topped pinnacle rock about 175 yards off its W end. **Tanker Island,** the middle islet about 0.4 mile E of the largest island, has a small clump of trees near one end that appear similar to the stack and wheelhouse of a tanker. **Fish Island,** the easternmost island, is small with a few trees on the W summit. The area between the islands is foul, and the small passage SW of the largest island is shoal and foul. These islands should be given a berth of at least 2 miles, and without local knowledge, the shoal rocky passage SW of the islands should not be used by small boats.

(227) A survey of the coast from Wooded Islands to Cape Cleare disclosed no outlying dangers, but there are areas of broken bottom near the shore and vessels are advised to give the coast a berth of 3 miles.

(228) **Patton Bay,** 17 miles NE of Cape Cleare, is about 4.5 miles square with Box Point on the NE side and Wooded Islands on the SE side. The deepwater entrance, about 3.5 miles wide, is between the rocky foul ground extending E from Box Point and the irregular rocky ground extending ENE from the Wooded Islands.

(229) Inside the bay, foul areas make 0.3 mile S and 1.1 miles W of the S tip of Box Point; 1 mile offshore from the head of the bay due W of the bay entrance; and 0.7 mile N and 0.3 mile E from the prominent pinnacle rock on the rocky point 2 miles NW of the largest of the Wooded Islands. **Nellie Martin River,** on the S side of the bay, is blocked by a bar across its mouth.

(230) There is good anchorage, except during NE to S weather, for small boats in the bights at the NE, W, and SW parts of the bay in 3 to 10 fathoms, sand bottom, and for larger vessels in 15 fathoms or more, sand and mud bottom.

(231) **In July 1983, a reconnaissance survey of Patton Bay by the NOAA Ship DAVIDSON confirmed that the March 1964 earthquake caused a bottom uplift of at least 2 fathoms throughout the bay. Shoaling and new dangers may exist requiring extreme caution until a complete survey is made of the area.**

(232) **Box Point,** 20 miles NE of Cape Cleare, is about 130 feet high and comparatively level, with steep bluffs, giving a rectangular appearance. Two box-shaped islets are on foul ground extending 1.7 miles E to 6-fathom depths.

(233) **Purple Bluff,** 5 miles N of Box Point, has a purple hue especially in the afternoon. S of Purple Bluff, a conspicuous valley, drained by a river, trends far inshore.

(234) From Purple Bluff to Zaikof Point, the outer coast of Montague Island is unbroken and free from outlying dangers except for Seal Rocks. About 3.5 miles S of Purple Bluff, a spit extends 0.5 mile offshore, terminating in a group of rocks awash.

(235) The W and N coasts of Montague Island are described later.

(236) **Chart 16709.–Hinchinbrook Entrance,** the main entrance to Prince William Sound, is about 6 miles wide, and clear with the exception of Seal Rocks. The entrance (1.5 miles SW of Cape Hinchinbrook Light) is 1,168 miles from Seattle via Strait of Juan de Fuca and the outside route, and 1,306 miles via the inside passages, Cross Sound, and Cape Spencer.

(237) The S extremity of the **Prince William Sound Traffic Separation Scheme** leads through the middle of Hinchinbrook Entrance. Additional information on this scheme is given earlier in this chapter under Prince William Sound.

(238) **Seal Rocks,** off the entrance, are 6 to 7 miles SW from Cape Hinchinbrook and over 6 miles from Montague Island. They are two bare rocks, 30 and 37 feet high, surrounded by low rocks. The westernmost bare rock is marked by **Seal Rocks Light** (60°09.8′N., 146°50.3′W.), 48 feet above the water and shown from a skeleton tower with a red and white diamond-shaped daymark. A radar beacon (Racon) is at the light. Rocks, submerged and awash, extend 1 mile NE and 0.4 mile SW from them. The entire reef within the 10-fathom curve forms an obstruction nearly 2.9 miles long. A lighted whistle buoy marks the E end of this obstruction.

(239) **Currents.**–The tidal currents in the entrance set directly in or out of the sound, except E of Seal Rocks where the currents usually run E to W regardless of the tide. There is a strong set in the direction of Seal Rocks when the wind is blowing from the E and the tide is ebbing. In Hinchinbrook Entrance, Montague Strait, and Latouche Passage, the velocity of the current is about 1 knot. The ebb current running out against a large swell causes overfalls, especially in the deep water 2 or 3 miles E of Zaikof Point, which have been mistaken for breakers. There are also tide rips on the broken ground around Cape Hinchinbrook. The flood entering W of Montague Island sets NE past Montague Point and causes rips between it and Johnstone Point.

(240) Outside the entrance along the SE coast of Hinchinbrook Island the current sets SW almost constantly. (See remarks on current in chapter 3.) Current observations in Elrington Passage indicate a velocity of 1.5 knots.

(241) With a strong S gale and ebb tide, very heavy overfalls and tide rips occur in Hinchinbrook Entrance, and are dangerous to small craft. Tremendous seas, steep and breaking, are sometimes encountered just outside the entrance. During heavy weather, tide rips and confused seas are in the vicinity of Wessels Reef. Many halibut schooners have foundered between Cape St. Elias and Montague Island.

(242) **Cape Hinchinbrook** is on the E side of Hinchinbrook Entrance, the principal entrance to Prince William Sound from the E.

(243) A few rocky islets are close to the SE and SW sides of the cape, and submerged reefs on which the sea breaks in a moderate swell, are 0.4 mile SE and S from the cape. The cape should be given a berth of at least 1 mile.

(244) **Cape Hinchinbrook Light** (60°14.3′N., 146°38.8′W.), 235 feet above the water, is shown from a white square tower on the corner of a building on the SW point of the cape; a fog signal and radiobeacon are at the light.

(245) **Zaikof Point,** on the W side of Hinchinbrook Entrance, is one of three prominent points on the NE end of Montague Island.

Schooner Rock, marked by a light, is a pinnacle 75 feet high about 0.3 mile off Zaikof Point.

(246) Between the three prominent points are Zaikof and Rocky Bays. Low depressions run through from the heads of these bays to the W side of Montague Island.

(247) **Zaikof Bay** is clear, but exposed to NE winds. In 1973, a 47-foot spot was reported in the entrance in 60°19.4′N., 146°56.8′W., 1.3 miles NW of Zaikof Point. Dangerous rocks awash are 2.6 miles WNW of Zaikof Point in about 60°19′02″N., 147°00′42″W. and 60°19′18″N., 147°00′39″W. Anchorage can be selected with the aid of the chart along the SE shore, from 2 miles inside Schooner Rock to the head, also on a bar with 6 to 9 fathoms that extends across the bay 2.5 miles from the head. A swell makes in during SE gales.

(248) A small vessel can anchor in the cove on the SE side 1.6 miles from the head, with shelter from NE winds. Anchor close to the S side of the point, about 0.1 miles from the short spit making out from it, in 8 to 10 fathoms. There is no swell, but the williwaws blow with great force over the lower land inside the point. When the wind hauls SE or S the williwaws come from all directions, and it is well to shift anchorage farther from the spit. A small shallow lagoon is at the head of the cove, and the bank is steep-to.

(249) Foul ground marked by kelp extends 0.6 mile off **Middle Point,** which separates Zaikof and Rocky Bays.

(250) **Rocky Bay** is deep, and exposed to N and E winds. A small vessel can anchor in good weather about 0.6 mile from the head and 0.2 mile from the NW side, in 5 to 6½ fathoms. Small craft can anchor in the lagoon, on the S side 1 mile from the head, where a small area has a depth of 10 feet. When entering the lagoon care should be taken to avoid a reef, partly bare at low water, extending W and NW from the N point. A dangerous sunken wreck is in the entrance to the lagoon in about 60°20′30″N., 147°06′15″W.

(251) A reef that uncovers extends about 0.8 mile E from Montague Point which forms the W side of Rocky Bay. The S side of the bay has many dangerous off-lying rocks and reefs that extend up to 0.6 mile offshore. Mariners are advised to exercise extreme caution when navigating on this side of the bay.

(252) **Port Etches,** an inlet in the SW end of Hinchinbrook Island, has secure anchorage, the best in Hinchinbrook Entrance, and is easy of access. The strongest gales are NE and are not steady, but descend from the surrounding mountains in heavy williwaws of varied direction, and at times blow hard in Port Etches when comparatively light winds prevail outside. Water can be obtained from streams in Garden Cove and on the NW side of Constantine Harbor.

(253) The best anchorage for large vessels is abreast Garden Cove, in 11 to 14 fathoms, muddy bottom. A flat extends 1.5 miles from the head, but can easily be avoided. The swell is quite perceptible in heavy S weather.

(254) **Garden Cove,** on the SE side 2 to 2.5 miles from the head of Port Etches, is the best anchorage for small vessels. **Garden Island,** wooded and with a break through it, is in the middle of the entrance; there is no safe passage NE of it. **Point Horn,** the SW point of the cove, is the most prominent of the projecting points on the SE shore of Port Etches.

(255) Anchor with Point Horn in line with the southernmost of the Porpoise Rocks, and about 250 yards SE of Garden Island in 4 to 5 fathoms, sticky bottom. No ocean swell reaches the anchorage, but, as elsewhere in Port Etches, the williwaws are bad in E gales.

(256) **English Bay,** on the S side of the entrance to Port Etches, is a bight about 0.4 mile wide. It can be used as a temporary anchorage by small vessels, but is exposed to the ocean swell in heavy weather and open to N and W winds. E gales blow in williwaws from all directions but do not raise much sea in the inner cove. The holding ground is good. A submerged rock is about 0.2 mile N of the SW entrance point, in about 60°17′30″N., 146°40′47″W.

(257) The two bights on the SE shore of Port Etches, 1.2 and 3.5 miles NE of English Bay, are rocky and should be avoided.

(258) **Porpoise Rocks,** on the NW side of the entrance to Port Etches, are three principal rocks about 48 feet high, with numerous small rocks among and E of them. The westernmost and largest is flat on top and grass covered, and has a rock covered at high water 200 yards W from it. Deep water is close to the rocks except on their NE side where foul ground extends to Point Barber at Nuchek, a distance of 1 mile, with no safe channel between. Kelp surrounds Porpoise Rocks and extends 0.4 mile SW of Point Barber.

(259) **Nuchek** is an abandoned Indian village on the SE end of the shingle spit at the SW end of Constantine Harbor. A hunting lodge is conspicuous.

(260) In good weather steamers have anchored off the shingle spit NW of Nuchek. It is an uncomfortable anchorage because of the swell. The best anchorage in about 10 fathoms, sandy bottom, is abreast the spit midway between the village and the rocky wooded knob in the middle of the spit, with the southeasternmost of the three largest Porpoise Rocks in line with the end of Hinchinbrook Island.

(261) **Constantine Harbor,** the lagoon on the NW side of Port Etches, has its entrance at **Phipps Point.** It is suitable only for small craft because of the very narrow entrance channel, that is 50 to 100 yards wide with depths of 3 to 15 feet. The tidal currents have considerable velocity in the entrance. The best time to enter is at high water, preferably near slack. The harbor is mostly shallow, but has an area 0.5 mile long and 0.4 mile wide with depths of 3 to 4¼ fathoms, sticky bottom, but exposed to williwaws. Numerous brown bears are reported to inhabit the area.

(262) On the NE side of the entrance are three small rocky wooded islets with overhanging sides. Among them are rocks awash, and 60 yards SSE from the W islet is a submerged rock, all marked by kelp at slack water. The channel is close to the W islet, between the foul ground at the islets and a shoal of 9 to 10 feet extending 0.3 mile E from Phipps Point.

(263) Temporary anchorage in 10 to 12 fathoms, sticky bottom, can be had about 0.5 mile SE of the rocky islets in the entrance of Constantine Harbor; there is considerable swell in heavy weather.

(264) The diurnal range of tide in Port Etches is 11.2 feet.

(265) **Bear Cape,** steep and high, is the SW end of the NW mountain ridge of Hinchinbrook Island. **Deer Cove,** 3 miles N of Bear Cape, has anchorage a little S of the middle of the entrance in 3 to 6 fathoms, with shelter from E and SE winds. A light is on the point at the S side of the entrance to the cove.

(266) **Shelter Bay,** 5.5 miles NNE of Bear Cape, has a shallow entrance with strong currents and is foul inside. It should not be used even by small craft. A shoal with a rock that uncovers 3 feet extends 0.3 mile from the shore of the bight at the entrance to Shelter Bay. This bight should not be used without local knowledge.

(267) A vessel has anchored in 10 fathoms, about 0.3 mile NW of **The Seven Sisters,** a group of rocks 2 miles N of Shelter Bay,

and found the williwaws less strong with SE winds than at the anchorage in the cove 3 miles N of Bear Cape.

(268) Temporary anchorage, with shelter from offshore winds, can be had S of the sharp point, with two rocks about 30 feet high close-to, 0.4 mile S of Johnstone Point. The anchorage is about 0.5 mile off the sand beach, in 10 fathoms, sandy bottom.

(269) **Johnstone Point,** the NW end of Hinchinbrook Island, is low and wooded with a small bluff at the water's edge. **Johnstone Point Light** (60°29.0′N., 146°36.7′W.), 57 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on a pillar rock off the point.

(270) Twin 100-foot-high communication towers, about 12 feet apart, and several buildings are about 1 mile E of Johnstone Point.

(271) E of Johnstone Point the shore is low, and broken by two shallow bays or lagoons. The E bay has secure anchorage for small craft. The entrance, 4 miles E of Johnstone Point, is W of a large island, and leads between two rocks. The one on the W side is bare at half tide and is at the end of a sandspit making out from the shore; it should be given a berth of about 40 yards. The rock on the E side is bare at extreme low water. When inside the rocks, head for the cove in the SW side of the bay and anchor in about 3 fathoms, sticky bottom, about 250 to 300 yards from shore and about halfway between the sandspit mentioned above and the S shore of the bay.

(272) **Middle Ground Shoal,** between Hinchinbrook and Hawkins Islands, extends for 3 miles into Orca Bay. A lighted bell buoy marks the NW end. The shoal, which uncovers at low water, consists of sand and mud, and is subject to shifting. A narrow unmarked channel with depths of about 2 feet leads from the NW corner of the shoal SE into Hawkins Island Cutoff. Anchorage can be selected off the shore, SW of Middle Ground Shoal, in 12 to 20 fathoms, soft bottom, with shelter from S and E winds.

(273) **Hawkins Island Cutoff,** between Hinchinbrook and Hawkins Islands, leads from Prince William Sound into Orca Inlet and is navigable only for small craft with local knowledge. It is full of shoals, and in its E end are extensive flats which bare and are largely covered at high water. Strong tidal currents are in its narrower parts.

(274) **Orca Bay** is the E arm of Prince William Sound, N of Hinchinbrook and Hawkins Islands. From its entrance between Johnstone Point on the S and Knowles Head of the N, Orca Bay extends about 30 miles in a general E direction. The city of Cordova is on Orca Inlet at the head of the bay. The S side of the bay is clear with the exception of Middle Ground Shoal. The N side is indented by large bays of no commercial importance.

(275) **Anchorage.**–An anchorage with fair to good holding ground is on the N side of Orca Bay and extends about 2.2 miles S of Knowles Head. (See **110.1 and 110.233,** chapter 2, for limits and regulations.) Williwaws may cause vessels anchored in the E part of the anchorage to drag; caution is advised.

(276) **Knowles Head,** the SW end of the mountainous peninsula between Port Gravina and Fidalgo Bay, is a steep massive headland, with a prominent yellowish landslide down its S face. There are numerous rocks close to shore and, a rock, covered 3¾ fathoms and marked by a lighted bell buoy about 0.5 mile SW of it, is about 3 miles W of Knowles Head.

(277) **Red Head,** 4 miles ESE of Knowles Head, is a high hill with a long, low, wooded neck behind it. It is the W entrance point to Port Gravina and marked by a light.

(278) **Gravina Point,** on the N side of Orca Bay, is low and wooded, and at its S end is a bare spit with a large and a small clump of trees on it. **Gravina Point Light 3** (60°37.4′N., 146°15.1′W.), 27 feet above the water, is shown from a skeleton tower with a green square daymark on the point.

(279) **Gravina Island,** low and wooded, is 1.5 miles NW of the point and 0.6 mile offshore. Anchorage in about 10 fathoms, with shelter from NE winds, can be had about 0.5 mile offshore between the island and Gravina Point.

(280) **Sheep Bay** has its entrance between Gravina and Sheep Points, and extends N about 7 miles. The bay has not been closely surveyed, the bottom is exceedingly broken, and vessels should proceed with caution. Foul ground extends 0.2 to 0.4 mile from the E shore for 2 miles N of Sheep Point. Indifferent anchorage in 18 to 20 fathoms can be selected in the middle about 3 miles above Sheep Point and 0.4 mile below the point where the bay narrows. Proceeding with care and preferably at low water, small vessels can follow the deep channel among the islands in the upper part of the bay and select anchorage in 6 to 15 fathoms.

(281) **Sheep Point** is moderately low and wooded at the end and backed by high land. A wooded islet is 0.3 mile W of the point with bare rocks between; foul ground extends 0.3 mile S and W from the islet.

(282) **Hanks Island,** small and wooded, is 0.8 mile E of Sheep Point and 0.5 mile from shore. **Gatherer Rock,** 0.6 mile 124° from Hanks Island, is a pinnacle covered 13 feet with deep water close-to. Broken ground on which the least depth found was 8 feet, extends 0.8 mile S from Hanks Island, and is marked at its S end by a lighted bell buoy.

(283) **Simpson Bay** is just E of Sheep Bay. **Bomb Point** is the E entrance point to Simpson Bay. The shores of the bay are fringed with numerous rocks and islets. In navigating the N arm, avoid the rock awash at extreme low water 400 yards S of the E entrance point of the inner part of the bay. Anchorage can be had at the head of the arm in about 15 fathoms.

(284) The E arm of Simpson Bay is clear except near the shores. Good anchorage in 12 to 15 fathoms, can be had on either side of the twin islands in the upper part of the arm. The Coast Guard uses the E arm for wet-pool storage of buoys. Occasionally lanterns are attached to the buoys, but at no time are they lighted. Mariners should not confuse these buoys with navigational aids.

(285) **Hawkins Island,** about 20 miles long and mountainous, is divided by **Canoe Passage** about 8 miles from its SW end; the passage is no longer navigable. The NW shore W of Canoe Passage is low tundra with patches of trees. NE of Canoe Passage the high land is nearer the NW shore of the island; there are bluffs in places, and it is more densely wooded.

(286) With the aid of the chart, anchorage can be selected in places along the NW shore of Hawkins Island with shelter from E and S winds. The best anchorage in 9 to 12 fathoms, soft bottom, is 0.2 to 0.4 mile off the spit at the S end of Cedar Bay. A round, wooded islet is at the N end of this spit, and a larger wooded one is 0.5 mile N. Small craft, entering at high water and passing N of the awash and covered rocks inside, can anchor E of the spit, where there is a limited area with a depth of 7 feet.

(287) **Windy Bay** is a small inlet on the NW coast of Hawkins Island about 5 miles NE from Canoe Passage.

(288) **Chart 16710.–Channel Islands,** wooded and nearly 1 mile long, are on the NW side of Orca Bay 6 miles above Sheep Point. The channel at the islands, 0.5 mile wide, is called **The Narrows.** A rock with 3 feet over it, 0.4 mile SW of the SW end of Channel Islands, is marked by a lighted buoy. The lighted buoy and a light opposite it on Hawkins Island mark the SW entrance to The Narrows.

(289) **Orca Inlet** extends S from the head of Orca Bay to Mummy Island. From North Island to Spike Island, about 4.5 miles to the S, the W side of the inlet is shoal, and S of Spike Island the inlet is largely blocked by flats. N of North Island it has depths of 25 to 30 fathoms, and a flat extends 1 mile from the head at its N end.

(290) **Salmo Point,** marked by a light, the N extremity of Hawkins Island, is just E of Channel Islands. **Deep Bay,** 1.5 miles long and 0.5 mile wide, is between Salmo Point and **Knot Point,** the NE end of Hawkins Island. A large shoal covered 4 to 17 feet is across the entrance of the bay and extends 1 mile inside; however, there are depths of 19 to 33 feet farther inside. Anchorage is possible for vessels able to cross the shoal.

(291) **Observation Island,** 0.8 mile long, high and wooded, is 0.4 mile NE of Knot Point.

(292) **North Island,** 0.4 mile long, low and wooded, is 1 mile NE of Salmo Point.

(293) **Shepard Point** is a sandspit 1.5 miles ENE of North Island and 6 miles N of Cordova. Ruins of a cannery and wharf are on the point.

(294) The ruins of a cannery and wharf are on the SE shore of **Nelson Bay,** about 1.5 miles NE of Shepard Point.

(295) Chugach Alaska Fisheries has a cannery at Orca, 2.5 miles NE of Cordova. The 200-foot-long wharf has depths of 12 to 22 feet alongside its face, 11 feet off the NE end, and 5 to 8 feet off the SW end. A submerged obstruction covered about 10 feet is about 50 feet N of the SW corner of the face of the wharf. Large vessels make port landings; the dock heading is 224°. Docking on the flood is difficult as the current tends to set off the wharf.

(296) **Cordova** is on the E shore of Orca Inlet opposite **Spike Island,** which is wooded and marked by a light at its N end. Cordova is 1,221 miles from Seattle via the ocean route and 1,363 miles via inside passages through British Columbia and Southeast Alaska to Cape Spencer. It is one of the most important towns in southwestern Alaska and is the supply and distribution point for numerous outlying fishing localities.

(297) **Prominent features.–Mt. Eyak,** 2,498 feet, and **Mt. Eccles,** 2,680 feet, dominate the approach, the town nesting at the foot of Mt. Eyak.

(298) **Channels.**–The deepest channel, and the one used by larger vessels, leads N of North Island and then follows the E shore S to Orca and Cordova. The buoyed channel has a controlling depth of about 20 feet on the W side, but deeper water in midchannel can be carried to Orca and Cordova.

(299) **Anchorages.**–Good anchorage can be had in the channel NE of Spike Island in 45 to 55 feet, 0.1 mile NW of Spike Island in 40 feet, and 0.5 mile NW of Spike Island in 26 to 30 feet, sand bottom.

(300) **Dangers.–The March 1964 earthquake caused a bottom uplift of 6.3 feet at Cordova. Shoaling and new dangers may exist requiring extreme caution until a complete survey is made of the area.**

(301) Log booming areas are on the N side of Channel Islands and 1.3 miles N of Spike Island.

(302) The area extending from **North Island Rock,** marked by a light and 1.6 miles N of Observation Island, to over 2 miles S of the island has several visible rocks and shoals with little water over them. The E limit of the shoal area is buoyed.

(303) **Routes to Cordova** (see also chart 16709).–**From the S via the Prince William Sound Traffic Separation Scheme** (discussed earlier in this chapter under Prince William Sound). Depart the scheme about 14 miles N of its southern entrance, thence via the charted recommended track leading from about 60°28.0′N., 147°52.5′W., through Orca Bay, thence via the buoyed channel through the E part of Orca Bay, thence via marked Orca Inlet to Cordova.

(304) **From the W via Elrington Passage.** Pass 1 mile E of Point Helen Light, thence 1.5 miles W and 1.5 miles N of Seal Island, thence E across the Prince William Sound Traffic Separation Scheme to the charted recommended track in about 60°35′02″N., 146°42′10″W., through Orca Bay, thence the same as from the S to Cordova. **Caution:** Mariners are advised to adhere to the general principles for navigation when entering, departing, or crossing a traffic separation scheme. (See Traffic Separation Schemes, chapter 1.)

(305) Fishing vessels sometimes approach Cordova through **Western Channel** and **Odiak Channel,** on the W and S sides, respectively, of Observation Island. Both channels are buoyed, but local knowledge is helpful. Fishing boats also approach Cordova through Orca Inlet from the S. This route requires local knowledge and was discussed earlier in this chapter.

(306) **Tides and currents.**–The diurnal range of tide at Cordova and Orca is 12.4 feet. (See the Tide Tables for daily predictions.)

(307) The flood current enters the NE end of Orca Inlet and sets SW past Orca and Cordova. Off Orca the current velocity is about 1 knot, but a flood of nearly 2.5 knots has been observed. The current sets parallel with the face of Ocean Dock and Municipal Dock on the flood and ebb. In the channel between the Municipal Dock and Spike Island the swiftest water will be found along the E shore of Spike Island sometimes attaining 2 knots.

(308) Off Cordova the velocity is 1.8 knots on the flood and 1 knot on the ebb. (See the Tidal Current Tables for daily predictions.)

(309) In the channel W of Big and Gravel Points, 6 miles SW of Cordova (see chart 16709), velocities up to 2 knots have been observed setting along the channel. A NE current can be expected at low water and a SW current at high water.

(310) **Weather.**–(See page T-2 for Cordova climatological table.)

(311) **Pilotage,** except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. (See Pilotage, chapter 3, for details.)

(312) Vessels en route Cordova meet the pilot boat about 2 miles S of Sheep Point (60°37.0′N., 146°00.0′W.).

(313) The pilot boat can be contacted by calling "CORDOVA PILOT BOAT" on VHF-FM channel 16 or on a prearranged frequency between the pilot and agent/vessel.

(314) **Quarantine, customs, immigration, and agricultural quarantine.**–(See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

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

(316) **Coast Guard.**–A U.S. Coast Guard vessel is stationed at Cordova.

(317) **Harbor Regulations.**–The **harbormaster** administers the municipal wharves and the small-boat harbor, and maintains an office at the N end of the small-boat basin.

(318) **Wharves.**–The waterfront facilities at Cordova consist of two piers for large vessels, a small-boat harbor, and a few piers for fishing boats.

(319) **Ocean Dock**: L-shaped pier 0.8 mile N of town; 408-foot outer face with about 25 feet alongside; inner face, 325 feet long, 16 feet alongside; deck height, 20½ feet; 140-ton mobile crane,

water, gasoline, and diesel fuel are available on the pier; AlaskaState Ferry Terminal is at the SW end of the pier; receipt of petroleum products and general cargo; owned by the city of Cordova.

(320) **Morpac, Inc. Dock,** just S of Ocean Dock, is a cannery with docking facilities for unloading fishing vessels; N pier, 14 feet alongside; S pier, 8 feet alongside.

(321) **Municipal Dock**: T-shaped pier across from Spike Island; 280-foot outer face; 23 feet alongside; deck height, 20 feet; the outer face is used by a U.S. Coast Guard vessel stationed at Cordova; the inner face is privately rented moorage; water is available; owned by the city of Cordova.

(322) St. Elias Ocean Products, Inc., and North Pacific Processors are just N of Municipal Dock. Both have unloading facilities for fishing boats with depths of 12 to 13 feet alongside.

(323) **Cordova Small-Boat Harbor,** SE and inshore of Municipal Dock, is protected by two breakwaters, the S of which is lighted. It has about 852 berths, and transient moorage is available; the harbormaster assigns berths. The harbormaster's office monitors 2509 kHz, VHF-FM channels 16 and 19. In July 1983, the controlling depths were 16 feet in the entrance channel, thence in June 1988, reported depths of 16 feet were available in the basin, except for shoaling to 4 feet along the edges of the basin. In July 1985, a pinnacle rock, covered 6½ feet, was reported in about the middle of the entrance to the basin about 75 yards E of the breakwater light. Water, electricity, gasoline, and diesel fuel are available in the basin. The basin is owned by the State and operated by the city.

(324) **Supplies.**–Gasoline, diesel fuel, and water are available at Ocean Dock; gasoline, diesel fuel, and water are available at the small-boat harbor. Most provisions can be obtained in town.

(325) **Repairs.**–Several machine shops can handle minor engine repairs. A marine grid, in the small-boat harbor, can handle craft up to 70 feet; a small boatyard is S of town.

(326) **Communications.**–Regular freight van ship feeder/vessel and barge services to and from Seattle use the Municipal Dock. Telephone and telegraph service is available, and scheduled air service to Anchorage and Juneau is maintained. Ferry service to Valdez and Whittier is maintained by the Alaska State Ferry System.

(327) RCA Alascom maintains a public coastal radio station at Cordova and on nearby Hinchinbrook Island.

(328) **Charts 16708, 16707.–Port Gravina** has its entrance between Gravina Point and Red Head. A 3¼-fathom bank is near the middle of Port Gravina, between Gravina Rocks and St. Matthews Bay.

(329) **Gravina Rocks** are about 0.8 mile offshore near the SE entrance point.

(330) **Comfort Cove** is a small inlet on the SE shore about 6 miles from Gravina Rocks. The entrance is narrow and the cove is suitable for small craft only.

(331) **The March 1964 earthquake caused a bottom uplift of 4.6 feet in Comfort Cove. Shoaling and new dangers may exist requiring extreme caution until a complete survey is made of the area.**

(332) **Beartrap Bay** is a narrow inlet near the head of Port Gravina. There are rocks awash and areas of broken bottom in midchannel just within the entrance. About 1.2 miles from the entrance, an island nearly blocks the channel. The deep channel is on the N side of the island. Depths of 27 to 30 fathoms, mud bottom, will be found in the upper basin.

(333) The upper end of Port Gravina is deep, and terminates in mudflats which extend for 1.3 miles to the head of the bay.

(334) **Parshas Bay** is a small bay on the N side of Port Gravina. Depths of 40 to 30 fathoms extend nearly to the head of the bay, but there is no suitable anchorage. An extensive area of rocks, islets, and foul ground extends about 1 mile SW from Parshas Bay.

(335) **Olsen Bay,** 1.5 miles W from Parshas Bay, shoals gradually from 20 fathoms at the entrance to mudflats at the head. In entering, the W shore should be followed at a distance of 0.5 mile or less to avoid the foul ground extending SW from the W entrance point of Parshas Bay.

(336) **St. Matthews Bay** indents the N shore of Port Gravina 5.5 miles NE from Red Head. The only known dangers are a reef extending 0.4 mile off the E point and a rock awash 0.1 mile S of the prominent point on the W side of the bay, 1 mile within the entrance. Good anchorage can be had near the head of the bay in 14 fathoms, mud bottom.

(337) Between Red Head and St. Matthews Bay are a series of lagoons. **Hells Hole** is the northeasternmost one. This shore should be given a berth of 0.8 mile or more.

(338) **Port Fidalgo,** an E arm of Prince William Sound, has its entrance between Goose and Bligh Islands and extends E about 22 miles. There are abandoned mines on the shores of Boulder and Landlocked Bays and on the S shore of Port Fidalgo, between Irish Cove and Whalen Bay.

(339) The waters of the main arm of Port Fidalgo are deep and free from outlying dangers. Vessels can navigate with safety as far as the SE arm at the head of the bay by keeping over 0.3 mile offshore.

(340) **Goose Island,** on the S side of the entrance to Port Fidalgo, is wooded and has two prominent knolls. **Gull Island,** small and rocky, is midway between Goose Island and the shore. The passages between the islands and the shore should be avoided by strangers.

(341) **Goose Island Light** (60°42.8′N., 146°43.6′W.), 38 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the SW side of the island, and marks the entrance to Port Fidalgo.

(342) **Porcupine Point** is a round, high, wooded bluff, with a low depression between it and Knowles Head. A rock awash and marked by kelp, is 350 yards N of the point.

(343) **Snug Corner Cove,** on the NE side of Porcupine Point, has good anchorage except with NW winds, but the bottom is irregular and should be avoided by large vessels. A rocky patch with 4¼ fathoms, possibly less, is in the entrance 0.5 mile off the NE side of Porcupine Point. A low divide is at the head of the cove and another is across Porcupine Point.

(344) To enter Snug Corner Cove, avoid the rock off Porcupine Point and follow the SW shore at a distance of about 0.3 mile. Anchor about 0.3 mile off the bight in the SW shore in 10 to 11 fathoms, soft bottom. Small vessels can find better shelter from N winds in the basin at the head of the cove, in a depth of 5 fathoms. Favor the SW shore slightly when entering and anchoring. The shore of the basin should be given a berth of over 0.2 mile.

(345) **Two Moon Bay** indents the SE shore of Port Fidalgo. Low divides cut the peninsula from the heads of its two arms. Good anchorage can be had in the bay at the entrance to either arm, and vessels of moderate size can anchor in the arms in about 10 to 15 fathoms, bottom generally sticky. A midchannel course should be followed in the arms. At the head of the SE arm is a basin trending SW where small vessels can anchor in 4 to 7 fathoms. The channel

is between the W point and a reef bare at low water near the middle of the entrance.

(346) **Irish Cove,** on the S shore of Port Fidalgo, is a narrow inlet about 1 mile long. Small craft can find secure anchorage in the widest part near its head in 5 fathoms. To enter, favor the E side of the narrows and then keep in midchannel.

(347) In **Whalen Bay,** mudflats, bare at low water, extend across the bay 0.5 mile from the head. Small vessels can enter the bay on a midchannel course, and find anchorage in 7 to 10 fathoms 1 mile inside the entrance to the bay.

(348) A group of islands is near the head of Port Fidalgo. A single islet is about 900 yards SW of this group, the passage to the bight to the N lying between the groups. This bight is not recommended as an anchorage. Its head is obstructed by mudflats, and it is reported that strong williwaws are encountered.

(349) The entrance to the E arm at the head of Port Fidalgo is 2 miles ESE of the group of islands. A dangerous rock awash is 460 yards off the NE entrance point. The head of the arm ends in a narrow passage that opens out into a circular lagoon. It is reported that this passage is foul and should not be attempted.

(350) A well-sheltered anchorage is in midchannel 0.6 mile W from the above mentioned dangerous rock in 15 fathoms, mud bottom. Small vessels can find anchorage near the head of the SE arm in midchannel, 0.8 mile beyond the rock, in 7 fathoms.

(351) **Fish Bay,** on the N shore of Port Fidalgo 9 miles above Porcupine Point, is an indifferent anchorage and should be avoided by large vessels. The williwaws are very heavy with NE winds drawing through the bay from the high mountains above its head. A small wooded island is just inside the entrance and 0.2 mile from the W side. The channel is E of the island and is obstructed near the middle by a rock covered 3½ fathoms, possibly less. Rocks awash are 200 yards off the E point at the entrance. Anchorage can be had in the middle of the bay, 0.3 to 1 mile above the island, in 8 to 13 fathoms, with soft bottom in places.

(352) **Landlocked Bay** is on the N shore of Port Fidalgo between Bidarka Point and **Graveyard Point.** Secure anchorage is afforded in the widest part above the narrows, in 14 to 15 fathoms, sticky bottom. The bay is easily entered during daylight, but the shadows cast by the hills at night obscure the narrow entrance, rendering it difficult for vessels not equipped with searchlights.

(353) The islands on the E side below the narrows have covering rocks near them. Near the middle of the narrows is a rock with 12 feet or less over it. The channel is NW of the rock, but the NW shore abreast of it should be given a berth of about 100 yards. There is a flat at the head of the bay with an islet at its lower edge. Water can be obtained from a fall on the S side of the bay SE of an old mine.

(354) There are no commercial enterprises in this bay. The mines are abandoned and the wharves are in ruins.

(355) **Bidarka Point** is a high wooded hill with a lower strip at its S end. A shoal extends 0.3 mile SW from the point.

(356) **Boulder Bay,** between Bligh Island and Bidarka Point, has several dangers, the depths are very irregular, and the anchorage is not desirable.

(357) In the approach to Boulder Bay, a reef bare at lowest tide is 0.6 mile from Bligh Island. About 0.3 mile E of this reef is a 2½-fathom spot and a depth of 6½ fathoms about 0.7 mile to the S. A submerged rock, nearly awash at low water, and a rock awash close N, are 0.4 mile from a point on the E shore and 1.6 miles NW from Bidarka Point. A reef, partly bare at low water, is 0.2 to 0.4 mile SE from the small wooded island in the middle near the head of Boulder Bay.

(358) **Bligh Island,** on the E shore of Prince William Sound, is mountainous. The SW end of the island is a high, steep, wooded head, with yellow landslides near the water. On the NW side are islands with foul ground between.

(359) Good anchorage from N winds for large vessels can be found about 1 mile S of Bligh Island. Radio reception from Valdez is reported to be poor at this anchorage.

(360) **Reef Island,** off the W side of Bligh Island, is level and wooded, and has a single knoll in the middle. A rock awash is 0.3 mile 208° from the SW end of the island.

(361) **Bligh Reef,** about 2 miles long, has depths of ¼ fathom to 9 fathoms and shoals to bare near the center. The reef is marked by **Bligh Reef Light** (60°50.3′N., 146°53.1′W.), 59 feet above the water and shown from a pile structure with a red and white diamond-shaped daymark. A lighted bell buoy is about 0.7 mile W of the light. The steamship OLYMPIA was lost on Bligh Reef in 1910.

(362) **Busby Island,** off the NW end of Bligh Island, is high, and partly wooded. Its W point is long, level, and wooded, and is surrounded by a reef to a distance of nearly 0.5 mile. The point is marked by **Busby Island Light** (60°53.7′N., 146°49.0′W.), 48 feet above the water and shown from a skeleton tower with a red and white diamond-shaped daymark.

(363) **Tides and currents.**–The diurnal range of tide is 12 feet in Snug Corner Cove in Port Fidalgo. At the entrance to Port Fidalgo, N of Goose Island, the velocity of the current is about 0.5 knot.

(364) **Tatitlek Narrows** separates Busby and Bligh Islands from the main shore, and offers a more direct route for small craft between Port Valdez or Ellamar and points on Port Fidalgo. The channel, buoyed in the SE part, has depths of about 4 fathoms, except for a shoal with a least depth of 8 feet in midchannel in about 60°51′58″N., 146°42′13″W. The channel is narrow with foul ground on both sides; local knowledge is advisable.

(365) **Tatitlek,** an Indian village on the N shore at the SE end of the narrows, has a Bureau of Indian Affairs school and a small store. A State-maintained pier with a 64-foot face is here. The Alaska State Ferry will stop for passengers on request. Skiffs are used to embark and debark passengers in the vicinity of Tatitlek Narrows Buoy 8 (60°53.5′N., 146°43.4′W.).

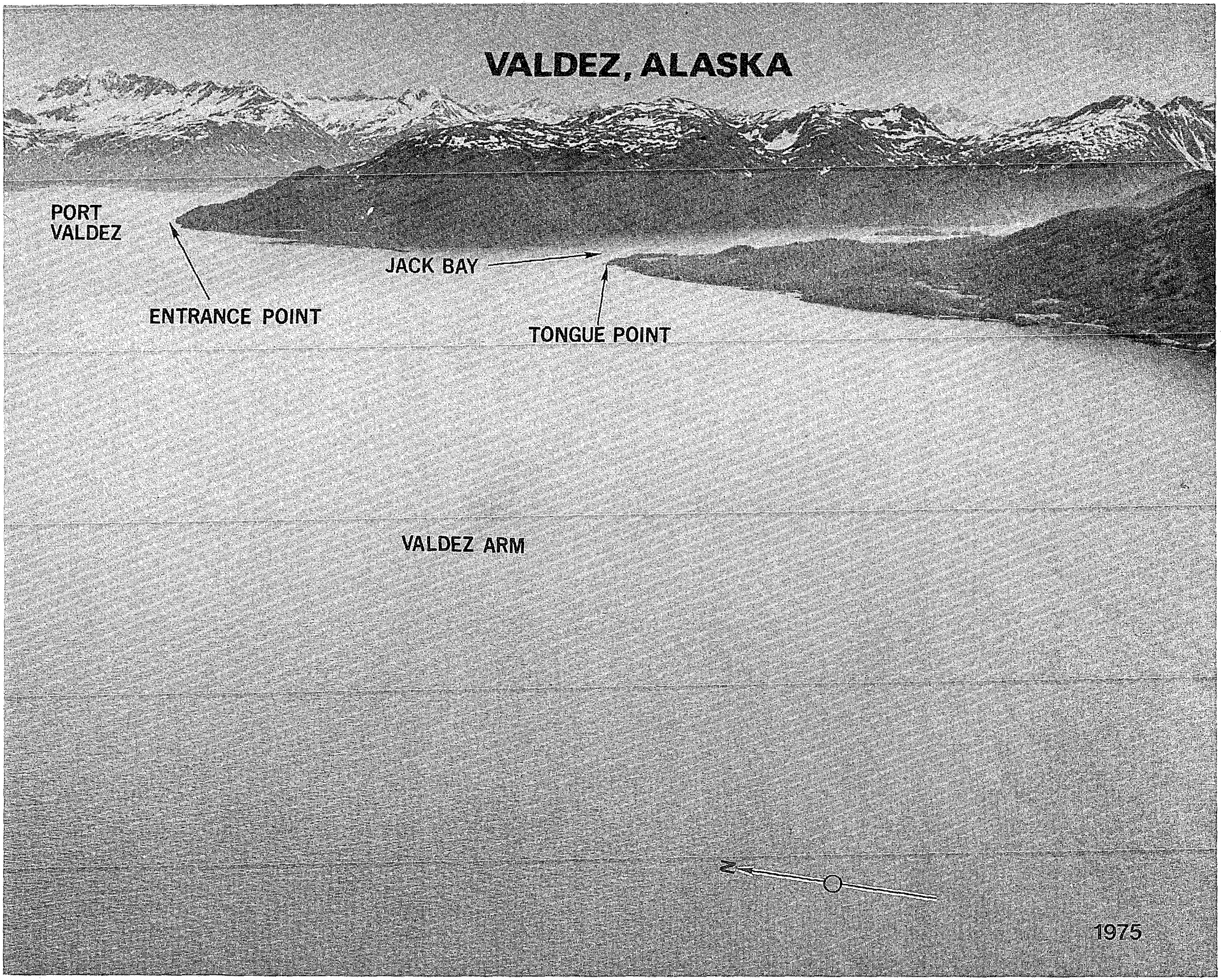
(366) **Virgin Bay** is a shallow bight 0.5 to 0.8 mile long on the NE shore of Tatitlek Narrows. There is little water in the bay, and on the N side of the entrance is a long reef bare at low water.

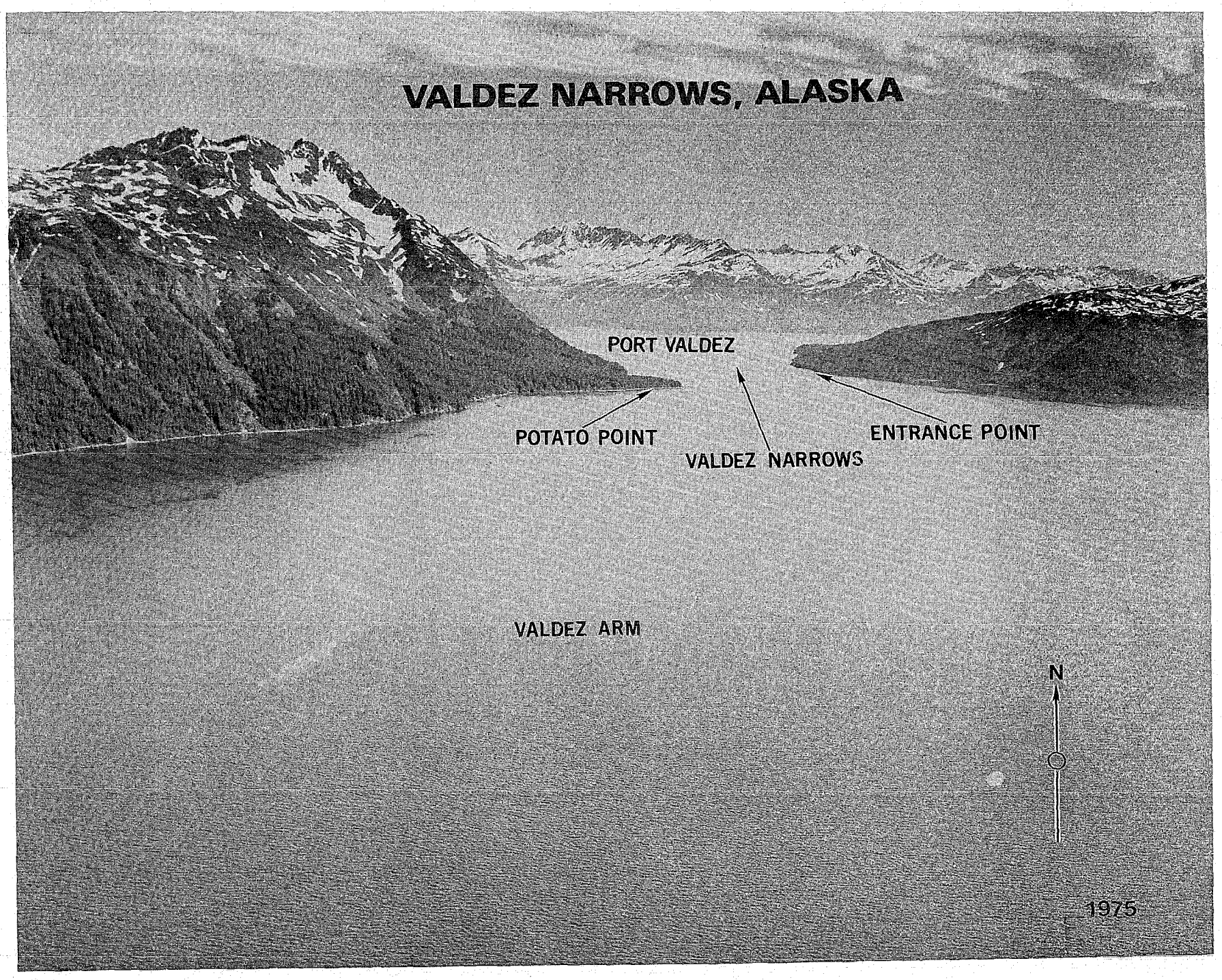
(367) **Ellamar,** an abandoned village on the NE side of Virgin Bay, has a large wharf in ruins. Small craft find shelter S of the ruins; the approach is marked by a lighted buoy.

(368) Anchorage can be had 0.3 to 0.4 mile from the NE shore of Tatitlek Narrows, and 0.5 to 0.8 mile NW of Ellamar, in 12 to 16 fathoms, sticky bottom.

(369) Larger vessels can find anchorage between Busby Island and Black Point, 1.4 miles NW of Ellamar, in about 30 fathoms, fair holding ground.

(370) **Valdez Arm,** the main N arm of Prince William Sound, extends about 13 miles NE from Busby Island and **Point Freemantle** to the N end of Valdez Narrows, then turns E for 11 miles to the head of Port Valdez. The water is very deep and there are no known outlying dangers except for Middle Rock near the N end of the narrows, which is described later in this chapter, and two shoals, 2¼ and 7 fathoms, about 0.2 mile apart, near the W edge of the arm about 3.5 miles NE of Point Freemantle. The S side of the 7-fathom shoal is marked by a lighted buoy. Anchorages are few because of the great depths.


VALDEZ, ALASKA
PORT VALDEZ
JACK BAY
ENTRANCE POINT
TONGUE POINT
VALDEZ ARM
N
1975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PORT VALDEZ
POTATO POINT
VALDEZ NARROWS
ENTRANCE POINT
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(371) The **Prince William Sound Traffic Separation Scheme,** which is a component of the **Prince William Sound Vessel Traffic Service,** leads through the middle of Valdez Arm. Additional information on the traffic separation scheme and the vessel traffic service are given earlier in this chapter under Prince William Sound.

(372) **Sawmill Bay,** on the W shore of Valdez Arm 9 miles from Point Freemantle, has depths of about 6 fathoms in its 0.4-mile-wide entrance. Secure anchorage, with a clear width of over 0.2 mile, can be had behind the W entrance point, in 9 fathoms, sticky bottom. The S and W ends of the basin forming the anchorage are shoal, and a flat fills the head of the bay down to the narrows at the N end of the basin.

(373) **Rocky Point** is the W end of the peninsula between Tatitlek Narrows and Galena Bay. A rocky grass-covered islet is 0.2 mile N of the point. **Rocky Point Light 10** (60°57.0′N., 146°47.1′W.), 38 feet above the water, is shown from a skeleton tower with a red triangular daymark on the SW point of an island W of Rocky Point.

(374) **Tides and currents.**–The diurnal range of tide at Rocky Point is 12.1 feet. The currents in Valdez Arm are too weak or variable to be predicted.

(375) **Galena Bay** is about 5 miles long in a general E direction. The depths are great throughout except for flats off the mouths of streams. Care should be observed in the vicinity of **The Narrows,** about 3 miles from the entrance, as that area has not been thoroughly surveyed. The only anchorage is about 0.2 mile S of the islets on the N side at the head of the bay, in about 15 fathoms, bottom soft in places.

(376) A group of rocky, grass-covered islets extends 0.5 mile off the N point at the entrance of Galena Bay. Anchorage can be had in the middle of the cove NE of the islets, in 10 to 12 fathoms, sticky bottom.

(377) **Jack Bay,** on the E shore S of Valdez Narrows, is 0.8 mile wide at the entrance and 0.2 to 0.4 mile wide in the upper 3 miles. An island with an islet off the NW end and several islets off the SE end are in the middle of the bay. Numerous rocks surround the island and the islets to the SE. Two coves indent the S shore, 0.7 mile and 1.8 miles inside the entrance. The entrance to the first cove is foul; the second cove has depths of 5¾ to 8 fathoms and is a suitable anchorage for small vessels. Jack Bay has mudflats at the head and numerous boulders along the shore. Anchorage for large vessels can be had 1.2 miles inside the entrance about 0.2 mile from the N shore, in 12 to 15 fathoms. Other anchorages are also available in the entrance to the cove about 1.5 miles ESE of **Tongue Point**, in 9 to 12 fathoms, and in the cove about 0.5 mile E of the island, in 9 to 14 fathoms. The diurnal range of tide is 12.1 feet in Jack Bay.

(378) **Valdez Narrows** is about 0.8 mile wide, with deep water and bold shores. **Middle Rock,** near the middle of the N end of the narrows and marked by a light, is a pinnacle barely covered at extreme high tides. A shoal, W of the light, extends E from the mainland about 0.4 mile. The shoal consists of a rock covered 2 feet at the inner end, a 3½-fathom depth at the outer end, and a wooded islet in between. The tidal currents in the narrows are too weak and variable to be predicted, however, it is reported that deep-draft tankers maneuvering at the regulated low speed of 6 knots will be affected appreciably by the currents. Speed adjustments may be necessary to lessen the effect of the currents on deep-draft vessels.

(379) **Entrance Point,** 1 mile N of Jack Bay on the E side of Valdez Narrows, and **Potato Point,** on the W side of the narrows, are marked by lights. **Entrance Island,** E of Middle Rock, is marked by a light.

(380) **Port Valdez** is the designation given the body of water extending from Valdez Narrows to the head of the bay.

(381) **Shoup Bay,** at the face of **Shoup Glacier,** is closed by a sandspit nearly dry at low water and over which the best depth is about 7 feet. The bay occasionally has floating ice, some of which escapes into Port Valdez when the wind and tide are favorable.

(382) **§166.103 Geographic Coordinates.**

(383) Geographic coordinates expressed in terms of latitude or longitude, or both, are not intended for plotting on maps or charts whose referenced horizontal datum is the North American Datum of 1983 (NAD 83), unless such geographic coordinates are expressly labeled NAD 83. Geographic coordinates without the NAD 83 reference may be plotted on maps or charts referenced to NAD 83 only after application of the appropriate corrections that are published on the particular map or chart being us.

(384) **Jackson Point** is a jutting point of land extending from the mainland on the S side of Port Valdez. This point of land was once an island.

(385) **Valdez Marine Terminal** is on the S side of Port Valdez between Jackson Point and **Saw Island,** 0.8 mile to the W. It is the terminus of the Trans-Alaska Pipeline which carries crude oil S from Prudhoe Bay on the Arctic Ocean. The terminal and adjacent waters are within a **Safety Zone.** (See **165.1 through 165.8, 165.20, 165.23, and 165.1701,** chapter 2, for limits and regulations.)

(386) **Towage.**–Three 5,750-hp tugs and two mooring launches are available for docking and undocking.

(387) **Wharves.**–The terminal, operated by Alyeska Pipeline Service Co., has four deepwater berths for the shipment of crude oil. Berth No. 1 is a floating pier with four 12-inch loading arms with a maximum loading rate of 20,000 barrels per hour each. Berth Nos. 3, 4, and 5 are T-head piers each having four 16-inch loading arms with a maximum loading rate of 27,500 barrels per hour each arm.

(388) No bunker fuel or freshwater are available at the terminal. The alongside depths for each facility are reported depths. For information on the latest depths contact the operator. For complete information on terminal facilities, services, and regulations refer to the Trans-Alaska Pipeline Port Information Manual, Valdez, Alaska, published by the operator. For a complete description of the port facilities for all of Port Valdez refer to Port Series No. 38, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.)

(389) Berth No. 1: E end of Jackson Point; 1,200 feet with dolphins; 150 feet alongside; deck height, 32 feet.

(390) Berth No. 3: W side of Jackson Point; 1,050 feet with dolphins; 90 feet alongside; deck height, 38 feet.

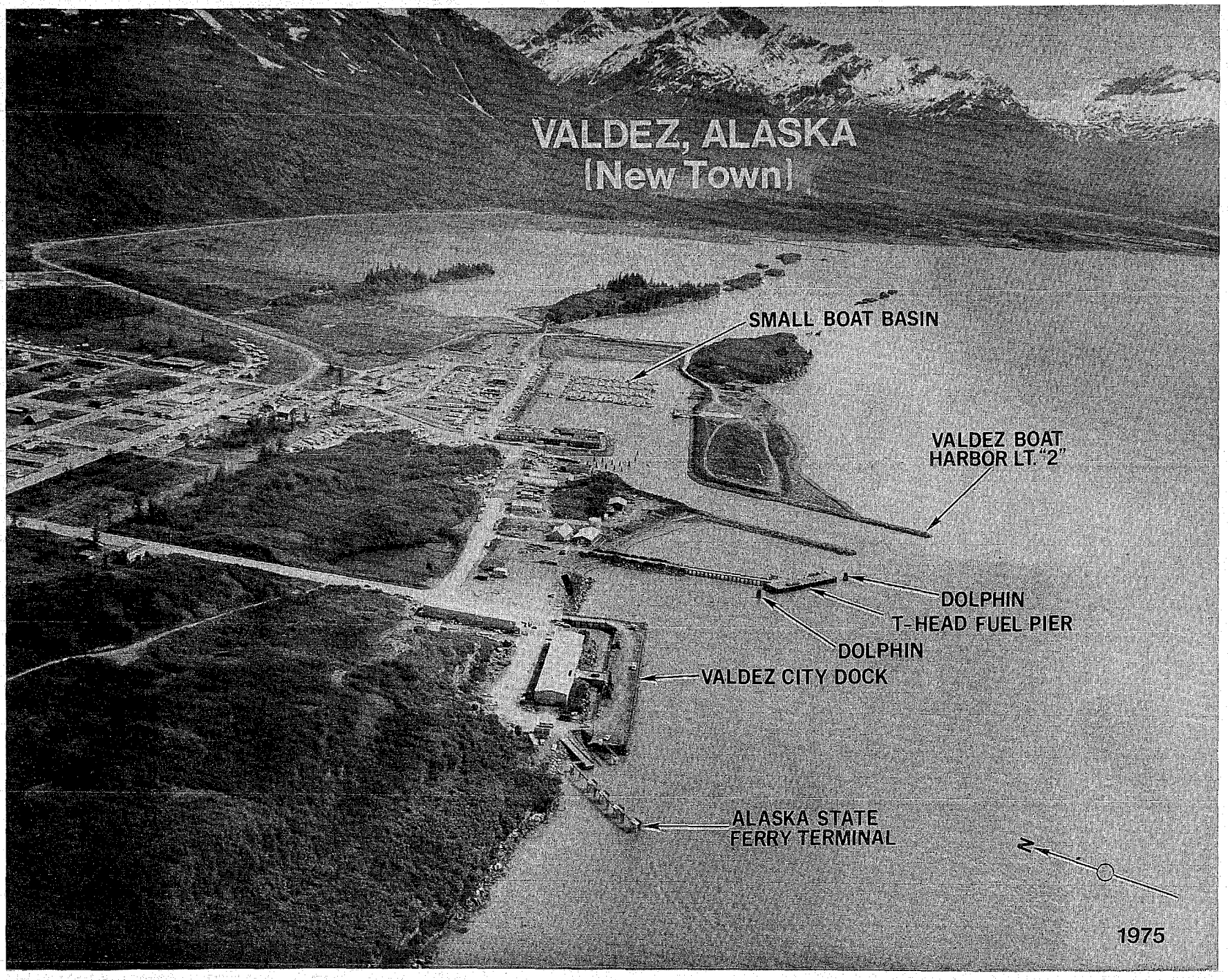
(391) Berth No. 4: about 0.4 mile W of Jackson Point; 1,380 feet with dolphins; 90 feet alongside; deck height, 38 feet.

(392) Berth No. 5: about 0.7 mile W of Jackson Point; 1,385 feet with dolphins; 85 feet alongside; deck height, 38 feet.

(393) A rock that uncovers 10 feet is about 175 yards SW of Saw Island. A private buoy displaying the word "Rock" marks the E end of the rock SW of the island.

(394) About 0.5 mile E of Jackson Point, submerged piling of an abandoned cannery wharf may exist. Ruins of the inactive Midas mine wharf are 2.3 miles E of Jackson Point.

(395) **Valdez** is on the N shore of Port Valdez about 2 miles from its head. It is at the S end of **Richardson Highway,** which connects with Fairbanks 374 miles distant. Open all year, the high-


VALDEZ, ALASKA
(New Town)
SMALL BOAT BASIN
VALDEZ BOAT HARBOR LT. "2"
DOLPHIN
T-HEAD FUEL PIER
DOLPHIN
VALDEZ CITY DOCK
ALASKA STATE FERRY TERMINAL
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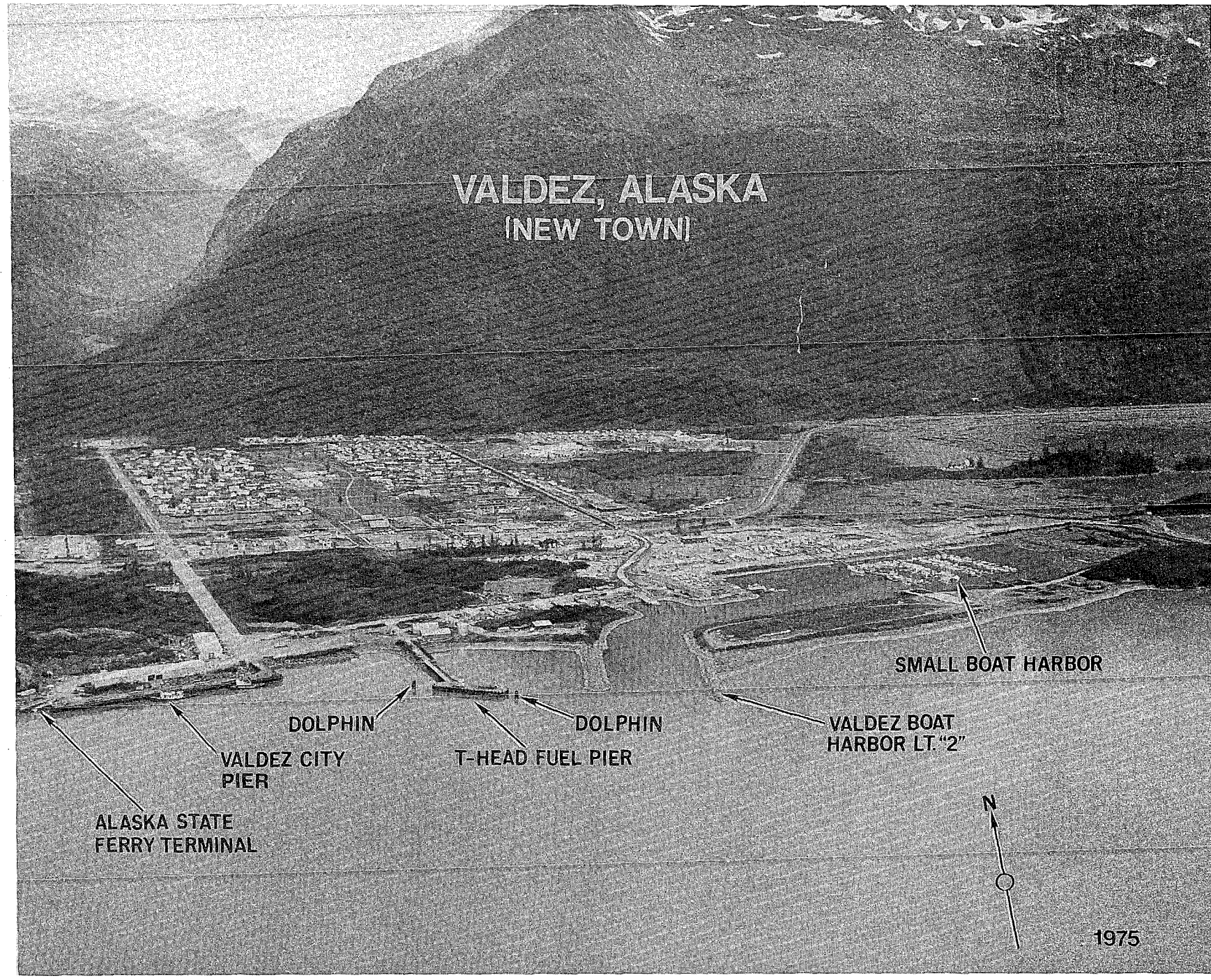
1975


VALDEZ, ALASKA
(NEW TOWN)
SMALL BOAT HARBOR
DOLPHIN
DOLPHIN
VALDEZ BOAT HARBOR LT. "2"
VALDEZ CITY PIER
T-HEAD FUEL PIER
ALASKA STATE FERRY TERMINAL
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1975

way also serves Anchorage and Seward and links with the **Alaska Highway.**

(396) The town of Valdez was formerly at the head of Port Valdez, but was relocated to its present site due to the extensive damage it suffered from the March 1964 earthquake.

(397) Valdez is 1,232 miles from Seattle via the outside route through the Strait of Juan de Fuca and 1,374 miles via the inside route to Cape Spencer.

(398) **Prominent features.**–The white petroleum tanks at Old Valdez are most prominent, and the Coast Guard radar tower on the S side of Valdez is conspicuous.

(399) **Channels.**–The approach to Valdez is deep and clear of dangers once through Valdez Narrows.

(400) **Anchorage.**–There are no safe anchorages at Valdez due to the foul ground and high winds that prevail from the W during the afternoons of the summer season. Convenient anchorages in the approaches to Valdez Arm and Port Valdez have been described.

(401) **Routes to Valdez** (see also chart 16700).–**From the S via Prince William Sound Traffic Separation Scheme** (described earlier in this chapter under Prince William Sound). Depart the scheme at its N end in Valdez Arm, thence through Valdez Narrows and Port Valdez to Valdez.

(402) **From the W via Elrington Passage.** Pass 1 mile E of Point Helen Light, thence 1.5 miles W of Seal Island Light, thence 2 miles E of Smith Island, thence enter the Prince William Sound Traffic Separation Scheme and depart the scheme at its N end in Valdez Arm, thence through Valdez Narrows and Port Valdez to Valdez. **Caution:** Mariners are advised to adhere to the general principles for navigation when entering, departing, or crossing a traffic separation scheme. (See Traffic Separation Schemes, chapter 1.)

(403) **Tides and currents.**–The diurnal range of tide at Valdez is 12.0 feet. (See Tide Tables for daily predictions.) Additional information on the predicted hourly heights of the tide can be obtained from the publication "Supplemental Tidal Predictions - Anchorage, Nikishka, Seldovia, and Valdez, Alaska," published by the National Ocean Service. The tidal currents are too weak and variable to be predicted. In 1966, however, it was observed that noticeable currents from the Robe River discharging into the SE end of Port Valdez are created at times of low and high stand of the tide. This current affects the area of the Old Valdez waterfront. The current sets 000° with a maximum observed velocity of 2 to 3 knots flowing perpendicular to the ruins of the piers at Old Valdez.

(404) In 1979, it was reported that the surface currents in Port Valdez had a maximum velocity of 0.5 to 1.0 knot.

(405) **Pilotage.**–Pilotage, except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. (See Pilotage, chapter 3, for details.)

(406) Vessels en route Valdez or Whittier meet the pilot boat as follows:

(407) (A) oil tanker traffic-about 3.6 miles SW of Bligh Reef Lighted Buoy 6 (60°50.5′N., 146°54.4′W.); or

(408) (B) nonoil-tank traffic-about 2.3 miles N of Busby Island Light (60°53.7′N., 146°49.0′W.).

(409) The pilot boat can be contacted by calling "EMERALD ISLAND" on VHF-FM channels 10 and 16, or on 4125 kHz from 1300 to 1400 daily. The pilot boat is a 65-foot trawler with a dark blue hull, and a white deckhouse with the word "Pilot" shown on both sides of the house. Vessels picking up a pilot should maintain a speed of about 6 knots and have the pilot ladder 8 feet above the water. The pilot boat displays the appropriate day and night signals when on duty.

(410) **Quarantine, customs, immigration, and agricultural quarantine.**–(See chapter 3, Vessel Arrival Inspections, and Appendix for addresses.)

(411) **Customs.**-Valdez is a **customs port of entry.**

(412) **Quarantine.**-A U.S. Public Health Service Contract Physician is located at the hospital in Valdez. (See appendix for additional information.)

(413) Valdez is a **customs port of entry.**

(414) **Coast Guard.**–A Coast Guard Marine Safety Office is in Valdez. (See appendix for address.)

(415) **Wharves.**–There are four deep-draft waterfront facilities at the new town of Valdez. For a complete description of the port facilities refer to Port Series No. 38, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.)

(416) **Valdez City Dock** (61°07′30″N., 146°22′30″W.): 600-foot face with 25 feet alongside; deck height, 22 feet; receipt and shipment of fish; cranes to 25 tons; owned by the city and operated by Nautilus, Inc.

(417) **State of Alaska, Valdez Ferry Terminal**: W side of City Dock; 200 feet of berthing space; 20 feet alongside; deck height, 22 feet; landing for passenger and vehicular ferry; owned by the city and operated by the State.

(418) **Valdez Dock Co., Petroleum Dock**: 133 yards E of City Dock; 200-foot face, 300 feet of berthing space with dolphins; 24 to 34 feet alongside; deck height, 22 feet; receipt and shipment of petroleum products; bunkering vessels; pipelines extend from wharf to storage tanks in rear, total capacity 180,500 barrels; owned and operated by Valdez Dock Co.

(419) When approaching this pier care must be taken to avoid a 3-fathom shoal extending about 100 yards out from the W breakwater of the small-boat harbor to E.

(420) **Valdez Small-Boat Harbor,** the small-boat harbor to the E of the fuel pier, is entered between two breakwaters. In June 1994, the controlling depths were 11 feet in the entrance channel to the basin, except for lesser depths to 7½ feet along the E channel edge, thence 10 to 12 feet in the basin, except for severe shoaling in the SE corner at the head of the project. The far E end of the basin is locally maintained and had depths of 10 to 12 feet. A light is shown from the E and W breakwaters. The harbor can accommodate about 520 boats, and transient berths are also available. The **harbormaster** assigns berths, he can be contacted on VHF-FM channel 16. Water, electricity, fuel, boat-launching ramps, and a 60-ton mobile vertical boat lift are available in the harbor. A tide grid is available for underwater repairs.

(421) **Port of Valdez, General Cargo and Container Wharf**: 1.5 miles E of the small-boat harbor; 704-foot face, 1,200 feet total berthing space with dolphins; 50 feet alongside; deck height, 14 feet; 21 acres of open storage; nine 522,000-bushel capacity grain silos; two cranes are available; receipt and shipment of containerized and general cargo; shipment of grain; owned and operated by the city of Valdez.

(422) A mooring buoy is 0.5 mile W of the marginal wharf.

(423) **Supplies.**–Gasoline, diesel fuel, and water are available at the fuel pier and in the small-boat basin. Some marine supplies can be obtained in town.

(424) **Repairs.**–Minor repairs can be made to small craft.

(425) **Communications.**–Valdez is connected with the Alaska Highway system. Scheduled air service to Anchorage is maintained, and charter service is available. The Alaska State Ferry maintains service to Cordova year-round and to the Alaska Rail-

road at Whittier during the summer. Telephone and telegraph service are available.

(426) **Glacier Island** is on the N side of Prince William Sound, W of the entrance to Valdez Arm. It is mountainous and indented by a number of bays.

(427) **Glacier Island Light** (60°52.4′N., 147°05.4′W.), 38 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the E side of the island.

(428) **Chamberlain Bay,** on the S side of Glacier Island, is exposed to the S but affords anchorage for small vessels about 0.4 mile from the head in about 15 fathoms, muddy bottom. Rocks, which partly bare at low water, extend 0.2 mile from the W side of the bay about 0.6 mile from the head.

(429) **Jackson Cove,** on the W side of Chamberlain Bay, is a secure harbor for small craft. The entrance has a least width of about 50 yards and a depth of about 12 feet; at the narrowest part of the entrance, favor the N side. The upper half of the cove has rocks on both sides, and a careful midchannel course should be followed. Anchorage can be selected in the lower part of the cove in 10 to 15 fathoms, also about 350 yards from the head in about 5 fathoms. A divide about 75 feet high extends through to **Jackson Hole.** The diurnal range of tide is 11.9 feet in Jackson Cove.

(430) The passage N of Glacier Island in its E part is very deep except near the shore. The N side of Glacier Island is indented by Finski Bay, Growler Bay, Eagle Bay, and Jackson Hole. On the N side of the passage, Columbia Bay, Long Bay, and several other smaller inlets form an irregular coast. None of the waters have been completely surveyed.

(431) **Finski Bay,** situated on the NE side of Glacier Island, has depths of 30 fathoms in the exposed N part. The inner cove is encumbered with rocks exposed at low tide and is unsuitable for anchorage.

(432) **Growler Bay** provides good anchorage near its head for small craft. Several rocks bare at low tide, situated along the S shore near the head of the bay, are the only known offshore dangers once well inside the entrance. The E side of the channel should be favored when approaching the bay with depths as little as 9 feet reported off the entrance in midchannel, and shoals extend all along the E side of the island between Growler Bay and Elder Point.

(433) The unnamed bay E of Elder Point provides two small-craft anchorages. As both entrance points are foul, a midchannel course should be maintained while entering and while passing on either side of a wooded island near the W shore. Anchorage can be had in about 50 feet SE of the island and in 40 feet S of the island. The narrow passage which connects with Growler Bay, with a least depth of about 3 feet, is suitable only for small boats.

(434) **Eagle Bay** provides secure anchorage at its head, but unsurveyed shoals are situated in midchannel on the W side of the bay SE of an unnamed island about 1 mile W of Elder Point. Rocks awash at low tide extend about 0.3 mile NE of the NE side of the unnamed island. Dangerous offshore rocks, nearly awash at low tide are situated about 0.5 mile W of this island and the passage on the S side has not been surveyed. Eagle Bay can be entered by maintaining a course about 200 yards off the W shore S from Elder Point until the lowland opens between Eagle Bay and the next bay E, then steering directly SW for the head of the bay, where anchorage in 4 to 6 fathoms is available. **Eagle Lagoon** connects with Eagle Bay by a very narrow passage which is encumbered on its S side by rocks exposed at low tide. Small craft entering at high water slack can find anchorage in depths up to 70 feet inside the lagoon.

(435) **Jackson Hole,** about 1 mile W of Eagle Bay, appears to be clear of offshore dangers and has depths ranging from 20 feet in its narrow entrance to 90 feet inside at midchannel.

(436) **Campbell Bay** and **Irish Cove,** on the NW side of Glacier Island, have not been surveyed. The bottom is irregular in the channel between them and the mainland with depths of 30 feet or less 0.3 mile off the W end of Campbell Bay. Dangerous uncharted rocks may also exist. A midchannel course is recommended for traversing the W part of the passage N of Glacier Island.

(437) **Iceberg Point** forms the W extremity of Glacier Island. A dangerous rock is reported about 0.5 to 1 mile SE of the point with its exact position unknown. Mariners are advised to use caution when navigating in the area.

(438) Between **Point Freemantle** and **Columbia Bay** the coast is encumbered by dangerous rocks extending at least 0.2 mile offshore. A shoal with a least known depth of 27 feet is reported 0.5 mile S of **Elf Point.**

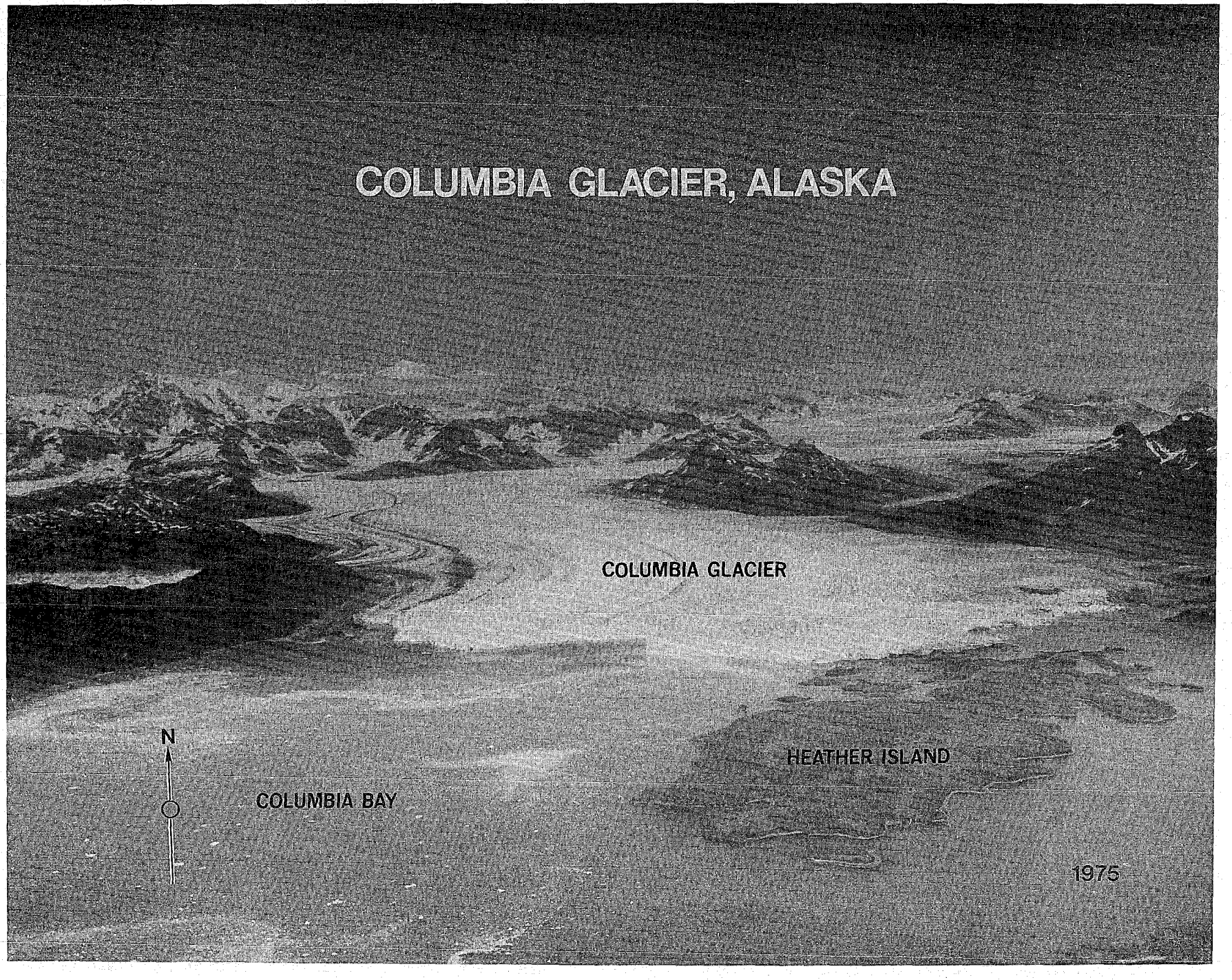
(439) **Columbia Bay,** situated W of Heather Island, is deep except near the shores. Between **Heather Island** and a small island to its S is a narrow, rocky passage, called **Lutris Pass,** which has a maximum depth of 10 feet; due to numerous reefs S and W, this latter island should be given a berth of at least 0.5 mile. Rocks extend 0.2 mile offshore along the NW shore of Heather Island.

(440) **Columbia Glacier** closes the head of Columbia Bay with a magnificant ice cliff 2.5 miles long and as much as 300 feet high, from which icebergs are constantly being discharged. Mariners are warned to keep at least 0.5 mile away from the cliff, as blocks of ice may be thrown great distances when falling seracs strike the water. A moraine shoal completely crosses the bay in front of the glacier. Both E and W ends of this moraine dry at low water; elsewhere the depths vary from about 2 to 12 fathoms.

(441) **Glacier Ice:** At any time of the year, but especially in summer and fall months, icebergs and brash ice discharged from the Columbia Glacier may completely fill Columbia Bay and block the passage and coves north of Glacier Island. Particularly dangerous to vessels are low-lying icebergs (growlers) which scarcely show above the water surface. Ice conditions change rapidly and mariners are cautioned to be vigilant at all times. At night and under conditions of low visibility, navigation of these and adjacent waters should not be attempted. Glacier ice provides extremely pure water and small bergs taken aboard provide excellent drinking water.

(442) **Heather Bay,** situated E of Heather Island, shoals gradually NE from 50 fathoms to moraine reefs near its head and provides good protection from wind and heavy glacier ice for moderate-sized vessels. The best anchorage is situated in about 30 fathoms in midchannel, where the bay trends N. The E side of the bay is encumbered by dangerous rocks and shoals. A moraine reef, with a maximum depth of 5 fathoms about 0.3 mile off the NE point of Heather Island, and with rocks awash at low tide further NE, encloses the head of the bay. Although Columbia Glacier extends nearly a mile across the head of Heather Bay, due to shoal water, only small icebergs are discharged.

(443) **Emerald Cove,** situated on the SE side of Heather Bay 1 mile NE of Elf Point, provides the most secure small-craft anchorage in the area. Depths of 85 feet, muddy bottom, are found in midchannel, and a small bight on its N side has midchannel depths of 33 feet; sunken rocks are located on both the E and W entrance points to the bight. Fresh water can be obtained from a small cascade at the E side of the bay; a drying flat extends 0.1 mile off the


COLUMBIA GLACIER, ALASKA
COLUMBIA GLACIER
HEATHER ISLAND
N
COLUMBIA BAY
1975

stream mouth. Another anchorage for small craft called **Jade Harbor** is situated S of an island about 2 miles NE of Emerald Cove. A midchannel course should be followed when entering due to rocks along both shores; once inside, good anchorage is available in 4 to 5 fathoms. A shoal extends about 0.2 mile off a small river of good water which enters the head of the cove.

(444) The NE corner of Heather Bay is shoal, and even small launches should not proceed N of a group of small islands and rocks situated on the E shore. Fishermen occasionally anchor in good weather in the passages on either side of the largest of the islands while visiting nearby lakes.

(445) **Granite Cove,** situated on the W side of Columbia Bay, has maximum depths of about 1 fathom, rocky bottom, in midchannel in the passage N of the entrance island. Once inside, the cove has depths up to 5 fathoms. Due to the shallow entrance and frequency of glacier ice, this cove is little used as an anchorage.

(446) The coast between **Granite Cove** and **Flent Point** is shoal. A reef with a least depth of about 10 feet is located 0.2 mile E of Flent Point and the beach S of the point is also foul. Vessels are advised to maintain a distance of at least 0.3 mile off these shores.

(447) **Long Bay,** 3.5 miles W of Columbia Bay, extends in a N direction for about 6 miles and at its head divides into two arms, each about 2 miles long. There are numerous islands and rocks that bare at various stages of tide. The bay is unsurveyed, but the bottom is known to be very broken. There are no apparent secure anchorages.

(448) **Useless Cove,** which indents the E shore of Long Bay, is reported to be foul. One mile NW of Useless Cove are numerous dangerous rocks which extend as much as 0.4 mile offshore. Other rocks encumber the E and W shores of Long Bay, and a midchannel course is recommended. S, W, and N of **Schrader Island,** situated near the center of Long Bay, foul ground is located between a small wooded island and the mainland. The NE extremity of Long Bay appears to be deep in midchannel until about 1 mile of the head, where the bottom rises abruptly to a shoal with depths of less than 3 feet.

(449) Moderate-sized vessels find good anchorage in 8 to 12 fathoms, mud bottom, in **Buyers Cove** just W of **Slipper Point,** situated off the W entrance point to Long Bay. Surveys in 1994 found shoals from about 1¼ to 4 fathoms in Buyers Cove. The 1¼-fathom depth is in about 60°55′04.1″N., 147°16′21.5″W. Commercial fishermen use the cove as a transfer point. Just W of this cove is **Eickelberg Bay,** about 2 miles long, with depths of 10 feet, possibly less, near the middle of the entrance.

(450) **Charts 16705, 16700, 16709.**–The NW part of Prince William Sound has long inlets and fiords, most of which are very deep. The shores are generally bold, wooded, and rise abruptly to lofty peaks, especially near the heads of the fiords. Spectacular valley glaciers descend into the heads of the fiords and discharge large quantities of icebergs which may completely block the upper channels, especially in the spring months.

(451) The bottom of the entire area is a bluish-gray glacial silt of very fine texture, and often quite sticky even though the deposit is only a few inches thick over the rock. In selecting an anchorage, care should be exercised to determine the true character of the bottom, for it is often difficult to get an anchor to hold on the underlying rock, even though the sounding lead shows a sticky bottom.

(452) **Naked Island, Peak Island,** and **Storey Island,** near the center of Prince William Sound, form a group about 8 miles long, N-S, and about 6 miles wide. They are high and wooded to the summits.

(453) The bottom in the vicinity of the islands, including the passages among them, is rocky and very broken. As a measure of safety it is advisable for vessels, especially large ones, to avoid areas with depths less than about 20 fathoms in the vicinity of the islands and to avoid the passages between them.

(454) It is safer for vessels to keep in the deeper part of the passage between Naked Island and Smith Island, preferably between the 50-fathom curves.

(455) The best anchorages are in the S part of the large bay on the N side of Naked Island in 20 to 30 fathoms for large ships, and in the E bight of this bay in 10 to 20 fathoms for vessels up to 500 tons. The bottom is rock and mud.

(456) Small craft can anchor in the small bight on the N side of Naked Island and in the small bight on the SW side of Peak Island. They may also anchor in the bay on the N side of the E part of Storey Island with protection from all winds except N. Anchorage in 6 to 10 fathoms on the E side of Naked Island affords protection only from the N and W.

(457) **Bass Harbor,** on the S side of Naked Island, offers secure anchorage in 20 fathoms, mud bottom, about 0.4 mile W of the entrance to a small unnamed cove on its E side. The anchorage is open to S winds, and a slight swell makes in during heavy S weather.

(458) **Cabin Bay,** on the W side of Naked Island, offers some protection from E winds for vessels up to 500 tons, but the bottom is broken and not ideal holding ground.

(459) **Fairmount Island,** 7.5 miles N of Storey Island, is high. Buildings of a former fox farm are on the gravel beach on the SW side but they are not prominent. The channel between the island and the mainland is about 0.6 mile wide at its narrowest part, but has numerous rocks that bare at various stages of the tide; passage should not be attempted without local knowledge. Foul ground extends about 2 miles from SE through SSW of the S shore of the island.

(460) **Wells Bay** (60°53.5′N., 147°28.5′W.) is a large bay just E of Unakwik Inlet and separated from it by a narrow peninsula. The bay extends N about 8 miles to a forked head, and is about 2 miles wide at the mouth and narrows to 0.6 mile about 4 miles N of the entrance. The E side is indented by two bays. **Granite Bay,** 1.3 miles from the mouth, extends ENE about 2.3 miles and is about 0.3 mile wide at the entrance. A constricted passage about 100 yards wide is about 1 mile from its head. Surveys in 1994 indicated numerous rocks and shoals. Caution is advised. The sides are usually bold. **Cedar Bay,** 2.5 miles from the mouth of Wells Bay, extends NE about 3.5 miles and averages 0.5 mile in width; an island near its head almost closes the upper part of the bay.

(461) A group of islands and bare rocks between Granite and Cedar Bays extends W past the center of Wells Bay. A prominent point juts out about 0.5 mile on the E side of this bay 1.3 miles N of the entrance; an island is on the SE side of the point. Temporary anchorage for moderate-sized vessels may be had about 0.2 mile N of the point and 0.2 mile E of the W shore in 17 to 20 fathoms, mud bottom. The bay is unsurveyed, but it is known that the entrance is deep. A 2-fathom shoal was discovered in 1993 in about 60°55′51.5″N., 147°29′31.2″W.

(462) **Unakwik Inlet,** unsurveyed, has its entrance 6 miles W of the W point of Glacier Island, 2 miles W of Wells Bay. The inlet extends N about 18 miles and averages 1.5 miles in width, narrowing to 0.5 mile at its N end at **Meares Glacier,** which discharges large quantities of small icebergs. Numerous rocks and islets are

situated off the E and W shores; in midchannel, excepting the shoal off Jonah Point described below, the inlet's depth gradually diminishes from over 1,000 feet at its S end to 500 feet near the glacier.

(463) **Olsen Island** is situated on the W side of the entrance to Unakwik Inlet; a rock awash at low water is reported about 1,200 yards E of the island and a group of rocks are situated 0.4 mile off its NW side; the passage between the island and these rocks is foul. Many rocks encumber the passage between Olsen and a small island SW; rocks and shoals extend a mile or more S of this latter island. The passage between Olsen Island and the mainland is used by small vessels. A course slightly W of midchannel is recommended, due to numerous rocks on both sides.

(464) **Olsen Cove** provides anchorage for small craft in 40 to 60 feet of water near the center of the basin. Sunken rocks extend 300 feet from the N shore just outside of the entrance narrows, which has a least depth of 14 feet. Once inside the narrows, a course slightly S of midchannel should be maintained to avoid rocks situated about 400 feet offshore midway between the two N points. A sunken rock is also located about 300 feet W of the S entrance point. The main basin appears to be clear of danger with the exception of shoals and a drying rock which block the NW extremity of the cove.

(465) An unnamed cove, 1 mile N of Olsen Cove, affords good anchorage for small craft near its S shore just W of the two small wooded islets marking the S entrance point. Depths shoal gradually from 25 to 8 fathoms, sand and gravel bottom. This anchorage is exposed to the NE.

(466) **Siwash Bay,** on the W side of Unakwik Inlet 6 miles N of Olsen Island, affords excellent anchorage in 10 to 15 fathoms, mud bottom, about 0.2 mile W of the entrance island. This bay is about 2 miles long, 0.5 mile wide, and has a wooded island near the S shore at the entrance. The deep channel is to the N of the island. Entering on a midchannel course the depths shoal rapidly to 10 fathoms just N of the island, continuing at that depth until well inside. Sheltered from all directions, the anchorage appears suitable for large vessels.

(467) **Jonah Bay,** on the W side 9 miles N of Olsen Island, is crescent shaped and about 2.5 miles long. A glacial stream discharges at its head. The entrance is narrow and nearly blocked by a small island. The best water appears to be S of the island, but the depths are unknown.

(468) A dangerous moraine bar completely crosses Unakwik Inlet just N of Jonah Bay. The shoal extends from **Jonah Point** to the E shore of the inlet. A low, grassy islet, difficult to observe in thick weather, is situated approximately one-third of the channel width from the E shore to which it is connected by drying rocks. Three crossings of the shoal in 1977 found a least depth of 22 feet about 0.4 mile W of the islet and depths of 11 and 10 feet approximately 0.1 mile E and W of this line. Shallow water extends about 0.2 mile E from Jonah Point and well offshore W to the mouth of Jonah Bay. The ruins of an abandoned cannery and wharf are on the E shore just S of the bar. A mooring buoy is near the ruins. A rock, depth unknown, lies at the entrance to the cove S of the cannery ruins.

(469) On the E side of the inlet, 11 miles N of Olsen Island is a series of small coves known collectively as **The Cow Pens.** A small ragged island lies about 0.5 mile offshore.

(470) **Eaglek Bay,** midway between Unakwik Inlet and Esther Passage, is a large irregularly shaped bay extending N about 7 miles. The S half is about 2.5 miles wide and the N half about 1 mile wide. Two coves are on the W side, each extends W for about 1.5 miles. One large and several small coves are on the E side. The shores are extremely ragged and there are many wooded islets, bare rocks, and rocks awash. The large cove on the E side has numerous good anchorages for small craft. The bay is unsurveyed, and caution should be used because of the irregularity of the bottom. In entering, the best water appears to be about 0.2 mile W of the small prominent wooded islet 0.5 mile SW of **Point Pellew.**

(471) **Axel Lind Island,** 2.5 miles SSW of the entrance to Eaglek Bay, is high. The buildings of a fox farm are prominent on a stretch of gravel beach on the N side. Passage to the N is deep, but there are several off-lying dangers. Fishing craft use this passage and the one N of Bald Head Chris Island when bound for Port Wells via Esther Passage. Surveys in 1994 indicate shoaling to 2¼ fathoms about 0.3 mile off the SW shore.

(472) **Squaw Bay,** 1 mile E of Esther Passage and 1.5 miles N of Bald Head Chris Island, extends NNE 2 miles and averages 0.5 mile in width. Its E side is irregular, with numerous islands and rocks baring at various stages of the tide. The W side has no visible dangers and is unbroken except for a small cove about midway in. The cove affords excellent anchorage for small craft in 8 to 10 fathoms, sticky mud bottom. Water may be obtained from a waterfall at the head of the cove. The bay is unsurveyed, but the best water appears to be near the W shore.

(473) **Lone Island,** about 3 miles E of Perry Island and 5.5 miles S of Axel Lind Island is wooded, comparatively level, and high. Foul ground extends nearly 0.5 mile N. A 3½-fathom shoal 1.4 miles S of the island is marked by a lighted bell buoy. A bank with a least depth of 3½ fathoms is between the shoal and the island.

(474) **Dutch Group** consists of several wooded islands and bare rocks 4.3 miles NNW of Lone Island, the largest having elevations up to 150 feet. Foul ground extends 1.3 miles S of the group to two prominent rocks about 5 to 10 feet high. An abandoned white building with a yellow roof is on the large N island of the Dutch Group and is prominent from offshore.

(475) **Fool Island,** 3 miles W of the Dutch Group, is wooded and about 50 feet high. A rock that uncovers is 0.3 mile S of Fool Island.

(476) **Egg Rocks** are prominent bare rocks 1.5 miles WNW of Fool Island.

(477) **Perry Island,** in the NW corner of Prince William Sound, is wooded to a height of about 1,000 feet. It is prominently marked on its NE side by a round peak, the summit of which is small, bare, and dome shaped. The bays indenting the island are anchorages for small craft only, because of the foul, rocky, and broken bottom.

(478) **Perry Island Light** (60°39.3′N., 147°55.8′W.), 35 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the southernmost point of the island. A rock, 14 feet high, is about 150 yards S of the light. A rock awash is 0.4 mile NW of the light.

(479) Foul ground extends 0.5 mile E from the E end of Perry Island, and nearly 1 mile SE and S from the SE point of the island.

(480) On the E side of Perry Island Light is a bay that is known locally as **South Bay.** Good anchorage is available for moderate-size vessels in 10 to 24 fathoms, sand and mud bottom, in the cove at the head of the bay. The only known off-lying danger in the cove is a rock awash about 50 yards off the point on the E side of the entrance. The buildings at the head of the cove are prominent from the S; the cove is a port of call for the biweekly mail boat from Cordova. South Bay should be entered with caution because of the irregularity of the bottom in the outer part.

(481) **East Twin Bay,** indenting the N side of Perry Island, has anchorage for small craft on the SW side of the head in about 11

fathoms; small area of soft bottom. A midchannel course should be followed until up with a prominent rock about 20 feet high, that is near the middle 0.7 mile from the head. Pass NE of the rock and follow the NE shore at a distance of about 150 yards. A rock with 1 fathom over it is 450 yards 135° from the prominent rock and 275 yards from the NE shore.

(482) **West Twin Bay,** on the NW side of Perry Island, affords no anchorage because of the rocky, broken bottom. Small craft entering should favor the NE side to the narrow part 1.3 miles from the head, and then favor the SW side, passing W of a rock, about 25 feet high, near the middle of the bay 0.6 mile from the head.

(483) From the point on the W side of entrance to West Twin Bay, a chain of islets and foul ground extends N for over 1 mile.

(484) **Perry Passage** is between Perry Island and Culross Island, 2.5 miles to the W. **Wells Passage,** between Perry and Culross Islands on the S and Esther Island on the N, is over 2 miles wide. The two passages have depths of 100 to 250 fathoms.

(485) **Esther Island** is mountainous, wooded to a height of about 1,000 feet, and the summits are bare rocks. The peak on the SE point of Esther Island, and the sharp twin peaks on the SW point, are prominent. **Point Esther Light** (60°47.1′N., 148°06.0′W.), 31 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the SW side of the island. Three bays are between the light and Esther Passage. **Esther Bay,** the easternmost, is unsurveyed. It is 3.5 miles E of the light on Point Esther and extends N about 2 miles. The entrance, 0.7 mile wide, is partly blocked by several wooded islets, bare rocks, and rocks awash. The interior of the bay is dotted with islets and rocks.

(486) **Quillian Bay,** the middle bay, is unsurveyed. It is 1.3 miles E of the light, extends 1.7 miles NNE, and is about 0.2 mile wide. The entrance is constricted to a width of 0.1 mile. An islet is 0.7 mile above the entrance and two rocks awash are toward the head of the bay. The shores are steep-to.

(487) **Lake Bay,** the westernmost bay, is 0.7 mile E of the light, extends 1.2 miles NW, and is about 0.1 mile wide. Fishing craft find indifferent anchorage near the E shore SE of the narrowest part where the bay widens to its maximum of 0.3 mile. Rocks awash extend about 100 yards SE of the point forming the NW extremity of this anchorage bight. A submerged rock is near the head of the bay. In general, the shores are steep-to and depths are too great for convenient anchorage. About 0.5 mile from the head on the E side is a freshwater stream that discharges from **Esther Lake.**

(488) **Esther Passage** separates Esther Island from the mainland. The S entrance, 7.5 miles E of Point Esther and 1.8 miles NW of **Bald Head Chris Island,** is about 1.5 miles wide. The entrance is flanked by two wood islets. A rock awash at about half tide is about 0.3 mile E of the W islet. The bottom of the entrance is extremely irregular, varying from 6¼ to 60 fathoms. Once inside, the water deepens rapidly to more than 100 fathoms for 2 miles or more. The passage trends NW for about 10 miles and connects with Port Wells about 8.5 miles N of Point Esther and 3.5 miles S of Golden; it is sharply constricted at its midpoint. The least depth in the constricted channel was reported in 1994 to be 3½ fathoms in about 60°53′39.6″N., 147°56′59.7″W. The S half is about 0.7 mile wide and the N half, 400 to 250 yards wide. The passage was being surveyed in 1994 and appears to be clear except for the 3½ fathom area previously mentioned and a rock, that uncovers, on the S side of the W entrance, and another rock, reported to be submerged, near midchannel at the bend 1 mile E of the W entrance to Port Wells. It is reported that the best way to avoid the reported submerged rock is to hold well into the N half of the channel when swinging on the turn. Fishing craft use the passage regularly.

(489) **Esther Rock,** 1 mile W of **Point Esther,** is 22 feet high and sparsely covered with grass.

(490) A reef, bare at lowest tide, is reported to extend about 1 mile off the S point of **Granite Bay,** on the W side of Esther Island.

(491) **Culross Island** is mountainous and wooded to a height of about 1,000 feet. **Culross Island Light** (60°44.8′N., 148°06.8′W.), 40 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the NE point of the island.

(492) **Culross Bay,** on the N side of Culross Island, has good anchorage in 30 fathoms with limited swinging room about 0.9 mile inside the entrance just S of a prominent point on its NW side. The bay is open to NE winds, but no swell makes in, and it is not subject to williwaws.

(493) **Culross Passage,** between Culross Island and the mainland to the W, is used occasionally by fishing craft and cannery tenders. It is narrow and congested and should be used only with local knowledge. In May-June 1978, the NOAA Ship McARTHUR reported finding excellent anchorage in midchannel about 1 mile S of the N entrance in about 50 fathoms, mud bottom. No swell makes in, and the area offers protection from all but N weather. The small bay on the E side 1 mile from the N entrance affords good anchorage in 3 to 8 fathoms, mud bottom; water can be obtained from the streams at the head of the bay.

(494) **Goose Bay,** on the E side of Culross Passage 3.5 miles S of the N entrance, is narrow and extends NE about 1 mile. The entrance narrows to about 50 yards and has a reported depth of about 2 fathoms. The narrow entrance opens out into a bay with two arms; extensive flats and shoal water are reported in both arms.

(495) **Long Bay,** on the W side of Culross Passage across from Goose Bay, is narrow and extends SW about 2 miles. It is reported that the bay appears clear in midchannel with about 10 fathoms and shoals rapidly in the vicinity of the small islets at the SW end of the bay.

(496) It is further reported that anchorage for small vessels can be had in the vicinity of the small islets in 7 to 10 fathoms, fair holding ground. E winds funnel into Long Bay blowing from the NE with considerable force and gusts; vessels should guard against dragging onto the shoals at the head of the bay.

(497) **Routes,** Culross Passage, from the northward.–When entering the narrowest part of Culross Passage from the N, pass between the small islet, just off the W shore 2 miles inside the entrance, and a rock nearly awash, just E of the islet. Do not attempt to pass between the islet and the W shore as there is a rock, barely covered, making passage impossible. Continue S between the larger island in midchannel and the W shore, then shift to midchannel to avoid a shoal extending off the point on the W shore. One mile farther S and off Goose Bay, are numerous islands. The channel, with a least depth of 4¼ fathoms, passes to the E of the island. (This route from the N was reported to National Ocean Service in 1974.)

(498) In entering the passage from the **southward,** give a wide berth to the many dangerous rock ledges and rocks that extend off the S shore of Applegate Island on the E side of the entrance. Considerable current has been observed through this area.

(499) **Port Wells** extends N from Wells Passage along the W side of Esther Island for 13 miles to **Point Pakenham** where it divides into **Barry Arm** to the W and **College Fiord** to the E. A low spit extends well offshore from the W shore just S of the entrance to Barry Arm and 2.5 miles N of Hobo Bay. Depths of 2 fathoms have been reported 0.5 mile off the end of the spit. In May 1985, a reef was reported at the entrance to Barry Arm in about 60°59′N., 148°09′W. In September 1992, shoaling was reported in about 60°59′30″N., 148°08′25″W. Offshore depths in Port Wells are 100 to 200 fathoms. **Harriman Fiord,** about 5 miles above the entrance to Barry Arm, extends SW about 10 miles. Gravel bars, which uncover, extend across the entrance to Harriman Fiord from **Point Doran.**

(500) **Bettles Bay,** on the W side of Port Wells 7 miles above Wells Passage, is reported free from dangers in midchannel. Surveys in 1994 indicated a 3-fathom shoal just S of midchannel near the entrance in about 60°55′06″N., 148°16′00″W. Good anchorage is available in 25 fathoms, mud bottom, in midbay 1 mile above the entrance, and in 22 fathoms, mud bottom, in the NE corner of the bay. A stream and an extensive delta from a glacier are at the head of the bay. Vessels should approach with caution because depths are reported to rise abruptly from 20 fathoms to 1 fathom. An abandoned mine building is on the hillside NW of the stream.

(501) **Hobo Bay,** on the W side of Port Wells just N of Bettles Bay, is crossed at the entrance by a bar that is covered about 3½ fathoms. Vessels entering follow the N side of the bay at a reported distance of 100 yards. Several rocks, bare at low water, are along the S shore of the bay. A grassy rock is close offshore. A vessel entering this bay reported anchoring off the grassy rock in 5 fathoms.

(502) **Golden** is a mining camp on the E shore of Port Wells, about 3 miles NE of Esther Passage. Steamers anchor 200 to 300 yards S of the little island off Golden in about 20 fathoms, rocky bottom. It is regarded as a poor anchorage and it is probable that the anchor will not hold with strong winds drawing down Port Wells. The area between the island and the shore uncovers.

(503) **Pigot Bay,** on the W side of Port Wells just N of Passage Canal, has a rocky shore except at its head where sand and mudflats extend offshore about 0.2 mile and bare at low water. The bottom in Pigot Bay is heavy blue clay with good holding qualities. Depths near the entrance to Pigot Bay are too great for anchoring, but good anchorage is available for vessels near the head of the bay in 30 fathoms. A small area 1 mile from the head of the bay affords good anchorage in 12 fathoms, but is difficult to find because of its limited extent. A similar area 0.2 mile from the head of the bay affords excellent anchorage for small vessels in 13 fathoms. Mooring buoys are near the head of the bay. Good anchorage is available for small boats in the NE corner of the bay and in **Ziegler Cove,** on the N side of the bay immediately inside the entrance.

(504) The ruins of an abandoned logging camp are at the head of Pigot Bay, and an abandoned mine is a short distance up the river which empties into the bay.

(505) **Point Pigot** is the SE end of the peninsula between Pigot Bay and Passage Canal. Low valleys extend across the peninsula from Entry Cove and **Logging Camp Bay.** The S end of Point Pigot is a wooded, rocky headland 220 feet high. This headland is joined to the mainland by a sandy neck 6 feet high. **Point Pigot Light** (60°48.1′N., 148°21.3′W.), 25 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the S tip of the point. A rock that bares at lowest tides is 0.8 mile E of the light. A similar rock is 200 yards WNW of the light.

(506) **Entry Cove,** immediately W of Point Pigot, affords good anchorage in 13 fathoms, soft bottom, with swinging room for one vessel up to 200 feet long.

(507) **Cochrane Bay** empties into the S end of Port Wells opposite Point Pigot. The middle of the bay has depths of 100 to 200 fathoms and the shores are steep-to.

(508) **Surprise Cove** is on the W side of Cochrane Bay just S of the entrance. The SW arm of the cove appears clear of dangers with 33 fathoms in the middle decreasing towards the head, near which indifferent anchorage is available in 12 to 15 fathoms. The thin layer of glacial silt over the rocky bottom is poor holding ground. The W arm of Surprise Cove has a restricted entrance and can be entered only by small craft.

(509) **Blackstone Bay** empties into the S side of Passage Canal SW of Point Pigot. The middle of the bay has depths of 100 to 200 fathoms to **Willard Island,** a large island about 489 feet high near the head of the bay. A rock, bare at low water, is 0.1 mile N of the island. An islet and nearby rocks awash are on the E side of the bay about 3.7 miles inside the entrance in about 60°45′48″N., 148°31′42″W. A 15-fathom spot is about 1.6 miles SW of the islet in about 60°44′41″N., 148°34′00″W. The area between Willard Island and the E side of the bay is constricted by shoals extending from both shores. A shoal with two rocks awash at the end extends from the E side of the bay to about 60°42′12″N., 148°36′30″W.; extreme caution is advised. There are no known anchorages in the bay.

(510) Depths along the W side of Willard Island range from 29 to 66 fathoms. Glacial moraines, with little water over them at low water, extend from both shores of Blackstone Bay to Willard Island midway of the island's length. **Blackstone Glacier** is active, and there are generally numerous small icebergs in the head of the bay.

(511) **Passage Canal** has its entrance at the SW end of Port Wells between Point Pigot and **Blackstone Point,** the N extremity of the peninsula separating Cochrane and Blackstone Bays. The canal trends NW for 4 miles, then W for 8 miles.

(512) The principal approaches to Passage Canal and the canal itself offer little difficulty for navigation with the aid of the chart. These waters, including the Knight Island group and both shores of Knight Island Passage, are characterized by rocky and exceedingly broken bottom. Differences of 50 fathoms between adjacent soundings are not uncommon, and it is possible that on the broken areas there may be less water and possibly dangers not disclosed by surveys. As a measure of safety, vessels should avoid areas where abrupt changes are indicated by the chart to depths less than 50 fathoms.

(513) Passage Canal is 1 to 1.5 miles wide, has great depth and is clear except in a very few places near the shores. The shores rise abruptly and are wooded to about 1,000 feet. The higher peaks are bare or snow-covered rock.

(514) **Chart 16706.–Decision Point,** on the S side of Passage Canal about 3 miles W of Point Pigot, is marked on the N end by **Decision Point Light** (60°48.4′N., 148°27.2′W.), 35 feet above the water and shown from a skeleton tower with a red and white diamond-shaped daymark.

(515) **Shotgun Cove,** on the S side of Passage Canal 2.5 miles W of Decision Point, has depths through the middle of 30 to 35 fathoms, muddy bottom. Foul ground fills the narrow parts of the head of the bay; approaching slowly, a small vessel can select

anchorage just above this foul ground in 15 to 20 fathoms. Several mooring buoys are in the cove.

(516) The bight on the SE side of Shotgun Cove is obstructed near the middle by a rock covered ½ fathom. Anchorage with a clear width of 0.3 mile can be had in the NE part of this bight in 15 to 20 fathoms, mud bottom.

(517) **Trinity Point** is on the S side of Passage Canal 3 miles W of Decision Point. Tiny **Emerald Island** is 0.4 mile W of Trinity Point. A light, 39 feet above water, is shown from a skeleton tower with a red and white daymark on the outer end of the narrow point between Trinity Point and Emerald Island. Small **Emerald Bay** extends SW from the island and offers good shelter and anchorage for small craft in 3 to 5 fathoms, mud bottom; the entrance is narrow but clear of dangers.

(518) Anchorage in 12 to 18 fathoms, sticky bottom, can be had on **Bush Banks** which extend 0.3 mile from the S side of Passage Canal at a point 1 mile above Emerald Island and 3.5 miles from the head. The least depth is 4½ fathoms at the SW end of the banks.

(519) Small craft can anchor in the cove at the NW end of the head of the canal in 6 to 12 fathoms.

(520) **Whittier** is the Alaska Railroad terminus on the S side of Passage Canal, 1.5 miles from the head. The town has a sawmill and wood-treatment plant and a U.S. Army fuel depot.

(521) **Prominent features.**–In the approach to Whittier, the army tank farm at the head of Passage Canal and the buildings in town are prominent. The three large buildings in town were built by the army during World War II. The largest is 14 stories high and almost all of the living quarters and business activities in town are within this building.

(522) **Anchorages.**–Large vessels sometimes anchor clear of the 4½-fathom shoal on Bush Banks about 2 miles NE of Whittier or in Pigot Bay.

(523) **Routes to Whittier** (see also chart 16700).–**From the S via Prince William Sound Traffic Separation Scheme** (described earlier in this chapter under Prince William Sound). Depart the scheme N of Hinchinbrook Entrance and set courses to pass 1.5 miles NE of Smith Island, 1.5 miles N of Point Eleanor Light, 1.5 miles SW of Perry Island Light, 1 mile NE of Culross Island Light, 0.5 mile S of Point Pigot Light, 0.5 mile N of Decision Point Light, 0.5 mile N of Trinity Point Light, and thence to Whittier, clearing the S shore by 0.5 mile until up to the waterfront. **Caution:** Mariners are advised to adhere to the general principles for navigation when entering, departing, or crossing a traffic separation scheme. (See Traffic Separation Schemes, chapter 1.)

(524) **From the W via Elrington Passage.** Clear the E side of Evans Island by 1 mile, thence 0.5 mile E of Pleiades Light, thence 2 miles E of Crafton Island Light, thence 1.5 miles SW of Perry Island Light, thence the same as from the S to Whittier.

(525) Vessels from Valdez usually use Perry Passage when going to Whittier.

(526) **Tides and currents.**–The diurnal range of tide at Whittier is 12.3 feet. The currents have little velocity in Passage Canal.

(527) **Pilotage,** except for certain exempted vessels, is compulsory for all vessels navigating the inside waters of the State of Alaska. (See Pilotage, chapter 3, for details.)

(528) Vessels en route Whittier or Valdez meet the pilot boat as follows:

(529) (A) oil tanker traffic-about 3.6 miles SW of Bligh Reef Lighted Buoy 6 (60°50.5′N., 146°54.4′W.); or

(530) (B) nonoil-tank traffic-about 2.3 miles N of Busby Island Light (60°53.7′N., 146°49.0′W.).

(531) The pilot boat can be contacted by calling "BERING" on VHF-FM channels 10 and 16, or on 4125 kHz from 1300 to 1400 daily.

(532) **Towage.**–One 2,000 hp tug is available at Whittier.

(533) **Quarantine, customs, immigration, and agricultural quarantine.**–(See chapter 3, Vessel Arrival Inspections, and appendix for addresses.)

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

(535) **Wharves.**–There are two deep-draft facilities, two railroad-car barge facilities, a ferry dock, and a small-boat harbor at Whittier. For a complete description of the port facilities refer to Port Series No. 38, published and sold by the U.S. Army Corps of Engineers. (See appendix for address.)

(536) **DeLong Pier:** at the E end of Whittier; 675 feet of berthing space; 45 feet alongside; deck height, 22 feet; receipt of petroleum products; owned by The Alaska Railroad; operated and used by the U.S. Army as a fuel pier.

(537) **Alaska Railroad Wharf:** 550 yards WSW of DeLong Pier; 1,000-foot face with about 30 to 40 feet alongside; deck height, 22 feet; mobile crane; 32,000 square feet of covered area; receipt of general cargo, fish, and mooring of fishing boats; owned and operated by The Alaska Railroad.

(538) Railroad-car barge facilities are at each end of the marginal wharf.

(539) **Alaska State Ferry Terminal** is about 100 yards NW of the marginal wharf. The approach channel to the terminal is reported dredged to 20 feet. The ferry terminal is owned and operated by the State.

(540) **Whittier Small-Boat Harbor,** 0.25 mile W of the ferry terminal, is used mostly by pleasure craft and some fishing vessels. The harbor has about 344 slips; the **harbormaster** assigns berths. The harbormaster's office monitors VHF-FM channel 16.

(541) A floating breakwater, marked by a light on its W end, restricts the entrance to less than 80 feet. In 1973, depths of 15 feet were reported available throughout the harbor.

(542) Gasoline, diesel fuel, water (during summer), electricity, dry storage, launching ramp, small-boat grid, and a 30-ton boatlift are available, but there are no repair facilities. The harbor is owned by the State and operated by the city. A restaurant and a small grocery are in town.

(543) **Whittier Passenger Loading Dock** is just W of the entrance to Whittier Small-boat Harbor and is used by small tour boats and fishing vessels. The dock is marked by private lights.

(544) **Communications.**–Landline telephone service is available. The Alaska State Ferry makes daily stops in the summer, but offers no service in winter. The Alaska Railroad transports automobiles to the Seward-Anchorage Highway and has passenger service to Anchorage daily in the summer and biweekly in the winter. Charter air service is available in the summer.

(545) **Charts 16705, 16709.–Port Nellie Juan** extends 23 miles SW from its entrance between Culross Island and the mainland to the S. **Applegate Island,** on the NW side of the entrance, is low, flat, and wooded. **Port Nellie Juan Light** (60°35.9′N., 148°06.0′W.), 23 feet above the water, is shown from a skeleton tower with a red and white diamond-shaped daymark on the N end of the point on the SE side of the entrance.

(546) Port Nellie Juan is divided into three right-angled reaches into which many glaciers discharge. The innermost reach is **Kings Bay.** Midchannel depths of more than 100 fathoms are available to